Study of the Strategic Decision Making Process in Higher Education Institutions

A thesis submitted for the degree of Doctor of Philosophy

by

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Abstract

The strategic decision making process (SDMP) is a major issue in organisations. It is part of the larger topic of strategic management and related to strategic planning. Achievement of strategic objectives outlined in the strategic plan of an organisation depends on the decisions taken through the process. Yet the literature shows that the concept of SDMP is not well understood and organisations find it difficult to develop and implement an SDMP, particularly Higher Education Institutions (HEIs). The literature indicates that decisions are taken in organizations in different ways for example using intuition, data, collaboration and ad-hoc considerations. In addition contextual factors are argued to affect the SDMP although very little research has been conducted to explain how contextual factors affect SDMP they do in HEIs. Some examples of contextual factors namely decision process characteristics have been identified and discussed as part of the SDMP literature in industry. However, lack of knowledge about SDMP and how contextual factors influence SDMP is regarded as to be a major obstacle for HEIs in taking decisions and choosing the best alternative amongst available decisions. This research seeks to contribute to address this important issue.

Whilst there are many strategic decision characteristics (contextual factors) identified in the literature, this research focuses on decision importance. The rationale for choosing decision importance was that there is always some concern in the minds of the decision makers in the HEIs on what constitutes an important decision. What is considered as important decision while the decision is being taken may prove to be less important after implementation if there is no clear understanding of how to assign importance to a decision. Even in the industrial sector, Elbanna and Child (2007) it has been argued that decision importance has not been studied well.

Relying upon the theoretical model developed by Elbanna and Child and other arguments found in the literatue, this research argued that the SDMP is a combination of relationships between decision characteristics, SDMP characteristics and decision outcomes that are influenced by environmental factors. As far as environmental factors were concerned environmental uncertainty was chosen as an external environment factor while organisational performance was chosen as the internal contextual factor. These two factors were argued to moderate the relationship between SDMP characteristics and SDMP outcomes and theoretical support for this conceptualisation was taken from the model developed by Elbanna and Child.

A research model was developed to address the research questions, and the aim of the study was "to examine the different decision specific characteristic, SDMP characteristic and SDMP process outcome variables and develop a relationship amongst them in the context of HEIs in a changing environment". The research was conducted in the United States of America and data was gathered from faculty members involved in decision making at the department level and higher. A positivist epistemological and objective ontological stance was adopted and a deductive approach was used. The research model was tested using the data collected from 485 valid responses to a survey questionnaire. Linear regression was the primary analysis approach and supplemented by path analysis.

Results from the regression analysis showed that decision importance exerts influence on decision effectiveness through the mediators, rationality in decision making, intuition and decentralization in decision making. However, the outcome of path analysis showed that only rationality in decision making and intuition are important while decentalisation was not found to be statistically significant. Similarly environmental factors exerted pressure only on the relationship between rationality in decision making and decision effectiveness. The contradicting SDMP factors rationality in decision making and intuition were both found to be necessary to SDMP in the HEI context.

This research has contributed to knowledge in terms of establishing a relationship between decision importance and decision process effectiveness mediated by rationality in decision making and intuition and development of the model. Theoretically the findings of this research show that the modification imposed on the model developed by Elbanna and Child was found to be statistically significant and found support from the literature. Environmental factors affected the relationship between rationality in decision making and decision effectiveness.

This research has provided a model that can be used to help decision makers in HEIs to implement SDMP practically in the organization, to guide the process towards more robust decisions. The findings of this research find application in supporting policy makers to increase the likelihood of more effective decisions so that the decisions taken more effective.

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Chapter 1
Introduction

Worldwide the environment in which Higher Education Institutions (HEIs) operate is constantly changing. Challenges accompany the changes occurring in the environment. Competition, globalization, varying demands of students, changing requirements of the job market, pressure from regulatory bodies, demands of collaborating institutions, increasing student migration, increasing cost of education, dwindling resources, changing demography, changing technology and pressure to maintain high quality of education provision are examples of the challenges the HEIs are facing currently (Glass, 2014). Many of those challenges force HEIs to change the way they deliver education and operate as they affect the revenue, student enrollment numbers, success and their survival (Grant Thornton, 2016). Ladd (2016, p.2) amply demonstrates the current situation in the higher education sector and says "*Higher education is leaving its adolescence and entering adulthood. The post-World War II growth spurt is over. Sheer physical expansion — in tuition, enrollment, faculty and staff numbers, buildings, and everything else — is fast becoming a thing of the past. Simply following the traditional trajectory isn't a choice at all, for any institution*". Facing a more uncertain future and a dynamic environment, HEIs are forced to think of new ways to succeed both in the near-term and long-term. To tackle the near-term and long-term issues related to a changing environment, managers in HEIs have started thinking strategically (Hinton, 2012).

1 Need for strategic thinking in HEIs

Strategic management, strategic planning and strategic decision-making have been recognized as important in the HEI context recently, terms which were till recently considered to be proprietary to the industry (Divjak, 2016). For instance Birnbaum (2000) suggests that concepts like strategic planning affect academic values, whereas Cohen and March (1974) considered academic institutions are construed to be having ambiguous goals. Similarly Weick (1976) had argued that institutions are loosely coupled structures and Castells (2001) suggested they are perceived to have contradictory functions. Despite such arguments, it was not possible to ignore the benefits of strategic thinking and strategic management and the concept of strategic planning entered the HEIs at the end of the 20th century (Divjak, 2016). Best practices used in the business sectors in developing and implementing strategic plans to gain competitive advantage and succeed in a highly dynamic environment were gradually drafted into HEIs (Immordino et al. 2016). By the end of the

twentieth century, in the United States 70 percent of colleges and universities were engaged in strategic planning in one form or another (Sevier, 2000).

1.1 Strategic planning in HEIs

Governance within HEIs is becoming more and more complex and demanding. Changes occurring in the economic, social and technological sectors create new challenges for HEIs and decision making in HEIs (Divjak, 2016). According to Immordino et al. (2016), a direct response to those challenges is the strategic planning and decision making. Over the years it is seen that strategic planning in HEIs is still growing although it is no more a new phenomenon (Immordino et al. 2016). The reasons are many and include problems and barriers faced by HEIs in developing and implementing strategic planning. While strategic planning processes have gained momentum in HEIs, there were problems witnessed at both the planning and implementation stages. Tromp and Ruben (2010) noted that the process of strategic planning is a complex aspect for many organisations including HEIs. Tromp and Ruben (2010; p. 4) stated that "the challenge is particularly formidable in higher education, where there are generally few carrots and sticks available to leaders as incentives (or disincentives) and where the communication and organizational challenges are far from trivial ". Further, Sevier (2000) argued that most managers and teaching faculty understood at one level what strategic thinking is intuitively, but in reality were unsure of what strategic thinking really is, what benefits it can offer and how to make a beginning. Ironically it is observed that organisations that have the most need for strategic planning are the most resistant to its introduction (Sevier, 2000). Calls are growing on the need to understand how HEIs could effectively respond to challenges facing them using strategic plans (Grant Thornton, 2016; Divjak, 2016; Immordino et al. 2016).

Against this background one area that has been submerged is the strategic decision making process (SDMP) in HEIs (Pritchard et al. 2016; Hinton, 2012), which is essentially a part of strategic planning (Bryson, 2011). A major reason why HEIs need to focus on SDMP is that it enables the decision maker to choose the best alternative amongst alternatives by comparing the alternatives and evaluating them using the outcomes derived through the decision making process (Nooraie, 2014). SDMP is acknowledged to influence strategic planning (Elbanna & Child, 2007). Despite its importance to strategic planning and the fact that SDMP has been found useful in the industrial sector, it has not attracted the attention of researchers in the context of HEIs (Elbanna & Fadol, 2016; Pritchard et al. 2016; Hinton, 2012). There are increasing calls to examine the SDMP in the

context of HEIs as it has the potential to help HEIs in responding to the complex challenges they are facing. Interestingly even with regard to the industrial sector, Papadakis et al. (1998) claimed that the current knowledge on SDMP is limited and is largely grounded on outcomes of studies considered to be either normative or descriptive and on untested beliefs. In particular researchers concede that there is recognition on the need to know how contexts impact strategic processes explicitly for organisations (Nooraie, 2012; Papadakis et al. 2010) an argument that could be extended to HEIs. So, on the one hand SDMP is seen to be under-researched and on the other it has been found to have potential to enable HEIs to respond to challenges. Taking into account these observations and arguments of researchers, this research investigates the concept of SDMP in the context of HEIs.

1.2 Context of HEIs

This research was conducted in the context of HEIs. HE sector has seen massive expansion over the last few decades across the world, for instance in OECD countries. A major consequence of this expansion seems to be that worldwide education systems moved away from an elite form of education to enmasse participation. Modern HE sector is characterized by factors including broader access, greater diversity of programmes and students, greater flexibility, new student population, new institutions, distance learning mode education, adaptation to labour market changes, re-skilling adults through lifelong learning, high quality teaching, competition, decentralization, autonomy, transparency, accountability, increasing tuition fees, greater student demand and expectations, community engagement, regional develop and research (Glass, 2014). A notable feature of this character of HE sector is the broad spectrum of changes that take place in regards to the factors mentioned above and the difficulties faced by HEIs in coping with the changes.

Literature points out that HEIs are at the cross-roads unable to know how to tackle challenges thrown by a highly dynamic environment and fast paced changes taking place in the education sector (e.g. Grant Thornton, 2016; Divjak, 2016; Immordino et al. 2016). The annual report produced by Grant Thornton (2016) highlights that revenue challenges, demographic changes, technology transformations, enrollment, funding, alumni relations, and changes internal and external environment are important areas where HEIs need to focus if they want to be successful. For instance the report shows that in 2016 the growth in revenue and assets of most HEIs was considered to be very modest (3%). The report further highlights that the HE sector is faced with a zero-sum game leading to additions accompanying subtractions countering the rapid growth the

sector saw during the past decade. Similarly demographic shifts occurring in the USA have led to dwindling numbers of students who were traditional sources of enrollment. New populations need to be encouraged to join the HEIs which is essential for the survival of the HEIs. The digital revolution is transforming how institutions operate affecting pedagogy and the cost of education (Ladd, 2016). All these examples show that in the coming future HEIs need to take decisive actions to succeed by mitigating the challenges.

Apart from the challenges, the HEIs have opportunities also. For instance international student mobility is a major opportunity that can be taken advantage of by HEIs. In addition changing demography offers the potential of new students from different ethnic groups to join the HEIs in specific regions. For instance in the USA Hispanic and Latino students and students who live in the West and South are identified as new opportunities for HEIs (Ladd, 2016). So, challenges and opportunities together need to be carefully addressed by HEIs in order to succeed. Addressing those challenges and opportunities requires robust strategic planning and decision making (Page, 2016). It is clear that in developing strategic plans and decisions, the HEIs must take into account the changing factors particularly those related to external environment, comprehensive internal and competitive assessments, perspectives on potential outcomes, and the ability to adapt to change (Page, 2016).

While it is argued in the literature that the above factors can be tackled through a robust strategic plan and strategic plans are common place in universities, yet most HEIs end up with complex and more demanding missions, visions and strategic planning. This inevitably leads to challenges in strategic decision-making (Divjak, 2016). What is even more significant is that SDMP as an element of strategic planning is not well entrenched in HEIs. It is argued that loosely coupled institutions with an organisational structure that divests strong authority at the bottom find it difficult to make decisions (Machado & Taylor, 2010). Even otherwise, SDMP in any organization is a major process considered significant and has serious implications to an organisation. Lack of an appropriate SDMP can lead to erroneous judgements and decisions. For instance Ladd (2016) argues that most institutions find budgeting process as increasingly challenging yet continue to use the concept of incremental budgeting instead of using more modern methods. It is highlighted by Ladd (2016) that HEIs could benefit from better decision-making if they use budgeting process that is a short-term quantitative embodiment of the institution's strategic plan. These examples show that strategic decision making process in HEIs is in a state of flux an area of concern which has

become a challenge by itself. If HEIs gain knowledge on developing and implementing an SDMP then it may be possible that many plans could be implemented with better decision making. For instance HEIs face difficulties in deciding on how to position themselves in a competitive business climate few years down the line or what enrollment strategy needs to be adopted over the next few years when economic and demographic changes take place (Page, 2016). In such situations, there is a possibility the HEIs take erroneous decisions that are irreversible that could seriously affect the HEIs. It is necessary erroneous decisions are prevented from implementation and appropriate decisions are taken through an SDMP process that will yield most appropriate decisions prior to implementation. Ironically the concept of SDMP itself is not well understood with numerous factors affecting the SDMP yet to be investigated for their usefulness. Thus the next discussion focuses on the less known phenomenon of SDMP particularly in the context of HEIs.

1.3 Strategic decision making process (SDMP) in HEIs

As a concept of SDMP serves the purpose of helping an organization and its managers to make proper strategic choices (strategic decisions) from amongst alternatives that enable the implementation of plans related to allocating resources, organisational direction, administration, structure and future of the organization (Nooraie, 2012; Christensen et al., 1982; Hofer & Schendel, 1978). Strategic decisions are identified as those that are long-term, complex, unstructured to a great extent, built in risks and affect the future of the organization. Example of a strategic decision in a HEI could be whether to change the curriculum of an academic programme which is long term and decides the future of the institution with regard to enrollment of students and the utilization of the resources. Further SDMP has to deal with an unpredictable environment, unfamiliar problems, dynamic decision making, new opportunities, threats to business and weaknesses related to the organization (Divjak, 2016; Nooraie, 2012). The importance of strategic decisions thus explained, it can be argued with the support of the relevant literature the concept of SDMP although well investigated is still considered to be not fully understood (Papadakis et al. 1998). For instance Nooraie (2012) argued that research outcomes that have discussed the influence of contextual factors on SDMP are limited or produced contradictory results. Examples of contextual factors include decision importance, decision uncertainty, decision motive, environmental uncertainty, environmental hostility, firm performance and company size (Elbanna & Child, 2007). There is no consensus on how these factors could be related to enable a better understanding of how an SDMP could be implemented in HEIs. Thus there is a dilemma on the

part of the managers in HEIs how to make strategic decisions, where to begin and how to implement.

Literature shows that the SDMP as a process can be conceived to comprise three stages (Figure 1.1).

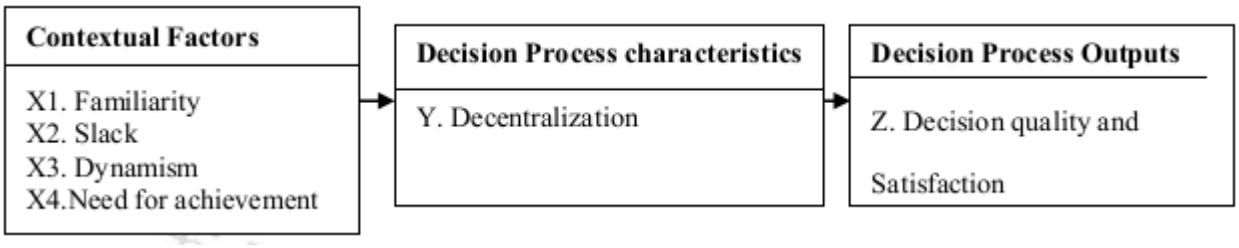

Figure 1.1, Stages of an SDMP (Source: Nooraie, 2014)

The first stage named as contextual factors (also called strategic decision making (SDM) characteristics (Papadikis et al. 1998)) acts as the determinant of the strategic decision making process (SDMP) output mediated by strategic decision making process (SDMP) characteristics. This is one type of a depiction of SDMP. There are other types of depictions of SDMP for instance the one depicted by Papadikis et al. (1998) and the other depicted by Elbanna and Child (2007). All the authors namely Papadikis et al. (1998), Elbanna and Child (2007) and Nooraie (2014) have said that SDMP is an important component in organisational strategic planning and could greatly contribute in making accurate decisions in organisations prior to implementing decisions. All the three models involve the three stages but have shown to be related to SDMP differently. This indicates that there is no one way of defining an SDMP although the three stages mentioned above appear to be common in those models. Further while literature shows that an SDMP in HEIs could be useful in taking accurate decisions and implement those decisions with less risk of a need to reverse those decisions, Nooraie (2014) and others (see also Papadikis et al. 1998; Elbanna & Child, 2007) have argued that current level of understanding of the SDMP is insufficient to be applied to newer contexts, say HEIs. Hence there is a need to investigate how the three stages of the SDMP depicted in Figure 1.1 could be can be integrated into the decision making process in HEIs by identifying and defining specific factors and relationships amongst those factors which could help the HEIs in understanding, developing and implementing an SDMP leading to accurate decision making and mitigating some of the challenges. Thus the problem that emerges is described next.

1.4 Problem statement

Reiterating the point shown in the literature review it can be posited that SDMP in organisations including HEIS is a major area of concern for both practitioners and researchers due to the many challenges an oraganisation faces while planning its strategies (Divjak, 2016). Particularly in HEIs where literature shows that not only strategic planning is a challenge, establishing an SDMP appears to be a bigger challenge. It is argued that these challenges are perhaps forcing HEIs to adopt an ad-hoc decision making process which is likely only to provide temporary solutions and not long term ones. In this situation it is imperative that HEIs find some way of establishing an SDMP that is able to support the HEIs to mitigate the challenges arising out of changing environmental factors. In fact, the literature shows that lack of an organized SDMP in HEIs is one of the major problems faced by HEIs (Divjak, 2016; Machado & Taylor, 2010) in dealing with challenges and changing environmental factors. However while there are SDMP and models that are discussed and implemented in the context of industry (e.g. Nooraie, 2014; Elbanna & Child, 2007), no such effort appears to have been focused on HEIs (Magd & Bindah, 2016). This has further compounded the problems of HEIs as no immediate remedial measures could be used by them with the help of research outcomes. In addition decision making has the risk that once a decision is made and implemented it cannot easily be reversed, bringing into focus the need to develop a robust SDMP that could be implemented in HEIs which produces decisions that are well-informed and need not be reversed in a changing environment. Taking into account the above problems and the discussions provided earlier, this research aims to mitigate the problem of lack of SDMP in HEIs to help to mitigate the problem by focusing on three important aspects of an SDMP. They are the strategic decision characteristic, the strategic decision making process characteristics and SDMP outcomes. While research outcomes in these areas in general are limited, they are almost non-existent in the context of HEIs (Magd & Bindah, 2016). Thus the main problem being addressed through this study is to support HEIs in establishing an SDMP using appropriate strategic decision specific characteristic, SDMP characteristics and SDMP outcome. The research questions (RQs) that translate from the problem statement are:

RQ1: What are the decision specific characteristics, SDMP characteristics and SDMP outcomes that contribute to SDMP in a HEI?

RQ2: What is the model that could explain the extent to which (a) strategic decision specific characteristics influence the SDMP characteristics; (b) strategic decision specific characteristics influence the SDMP outcomes; and (c) SDMP characteristics mediate in the relationship between

strategic decision specific characteristics and the SDMP outcomes in the context of HEIs in a changing environment?

While answers to the research questions are expected to guide the researcher to develop some model by which HEIs could surmount the problem of SDMP, the aim of this research is:

To examine different decision specific characteristics, SDMP characteristics and SDMP process outcome variables and investigate the relationship amongst them in the context of HEIs in a changing environment.

In order to achieve the aim the following were identifies as the objectives of the study.

- Objective 1: To study the decision specific characteristics, SDMP characteristics and SDMP outcomes as concepts and their theoretical underpinnings and specify those that need to be addressed in the context of HEIs through literature review.
- Objective 2: To develop a theoretical framework to relate the decision specific characteristic, SDMP characteristic and SDMP outcome variables and develop a conceptual model using base models and theories reviewed through the literature.
- Objective 3: To formulate hypotheses that could enable the researcher to test the conceptual model.
- Objective 4: To test the conceptual model/hypotheses and provide guidance on implementing the model in HEIs.

1.5 Significance of study

The significance of this study lies in investigating the relationship between strategic decision specific characteristic (decision importance), SDMP characteristics (rationality in decision making, intuition and decentralization in decision making) and SDMP outcome (decision effectiveness) in the context of changing external and internal environment factors. With regard to the decision process characteristics, literature shows that many factors have been identified which include rationality in decision making, intuition, decentralization in decision making, formalization and politicization, problem solving and dissension (Elbanna and Child, 2007; Papadikis et al. 1998). Similarly, decision process outcome factors identified in the literature include innovation, learning, decision quality, satisfaction, commitment, and effectiveness of the firm (Papadikis et al. 1998). Papadikis et al. (1998) and Elbanna and Child (2007) have recommended further investigations

into SDM characteristics, SDMP characteristics and SDMP outcomes in various contexts as the current level of knowledge is considered insufficient to be applied in varying contexts. For instance, the use of decision importance in HEIs could be different in another industry for example manufacturing.

Similarly in HEIs decision effectiveness or organization effectiveness could be considered in various ways, for instance number of graduates, whereas the same concept in manufacturing could be efficiency in production. Thus it is possible to conclude that research outcomes in one context may not directly be useful in another context. Where there are SDMPs implemented in different contexts for instance HEIs, it is worthwhile to investigate the SDMP aspects related to HEIs. The outcome of context specific research can be more useful to the organisations functioning in those contexts.

In addition, it is important to determine an SDMP model that could be tailored to a particular organization in a specific context taking into account the environmental factors that affect the SDMP. The reason for this is that each organization functioning in a context will have unique features including organizational size and performance. The environment in which the organization operates could be dramatically different. The changes occurring in and around the organization could vary (Nooraie, 2012). Thus it will be prudent to investigate the SDMP process pertaining to a firm or organization using an already developed model and adapt it to the needs of the specific organization under investigation. A useful beginning would be to choose a model that has addressed the most important elements of an SDMP. In this context the model developed by Elbanna and Child (2007) was found to offer support (See Figure 1.2).

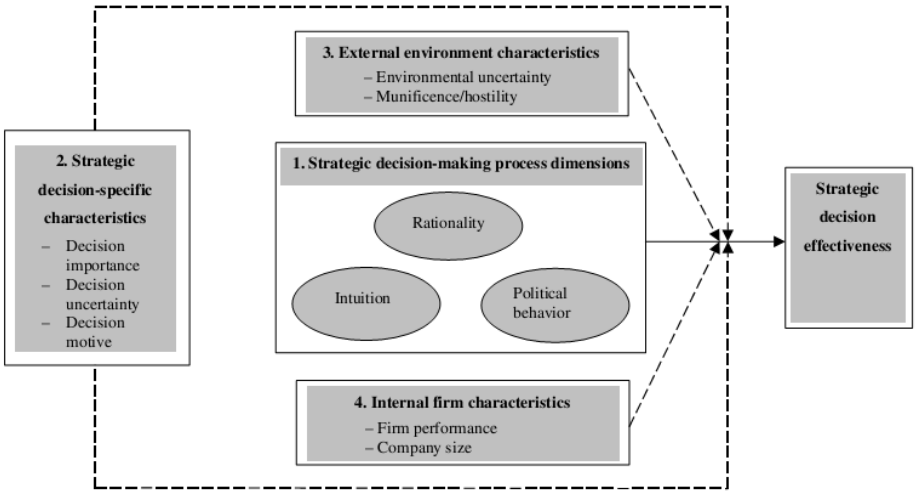

Figure 1.2, SDMP model developed by Elbanna and Child (2007)

This model was chosen for investigating the SDMP in HEIs as the model has been tested in a manufacturing industry and validated. The model includes all the three components of SDMP namely SDM characteristics, SDMP characteristics and SDMP outcome that are necessary to explain how the SDMP could operate in the HEI context. The main limitation of this model, however is that it has used SDM characteristics (contextual factors) namely decision importance, decision uncertainty and decision motive as moderating factors of the relationship between SDMP characteristics namely rationality, intuition and political behaviour on the one hand and strategic decision effectiveness on the other. This is in contradiction to the basic model developed by Papadakis et al. (1998) which has used the SDM characteristics as determinants of organisational top team performance. Despite the difference, the model developed by Elbanna and Child (2007) (Figure 1.2) provides the base to introduce SDM characteristics as determinant of SDMP outcome. Decision effectiveness was chosen as the predicted factor in the context of HEIs as this area is not clearly understood in the literature. An investigation in this regard could help to understand this aspect. Theoretical support to operationalize this factor is provided in Chapter 3.

While it is possible to modify the relationships depicted in Figure 1.2, theoretical support to modify the model was identified from the extant literature. Such a theoretical underpinning required the identification of the exact set of components that would go into the model to be developed. For instance, in HEIs, in the process of making decisions it is important to identify which decision is more important than the other as certain decisions could have greater impact on the organisation than the other. A decision, for example, that has bearing on the curriculum could be far more important when compared to a decision related to spending money on staff development. Thus, decision importance was considered important for this research. Decision importance was grounded in decision theory (see Section 2.4.1). Based on the arguments of Nooraie (2014), Elbanna and Child (2007) and Papadakis et al. (1998), in this research decision importance, identified as an SDM characteristic was considered as a determinant of the SDMP outcome. The model in Figure 1.2 was modified to accommodate decision importance as the determinant. Details on how this was accomplished are described in Chapter 3.

Similarly with regard to Figure 1.2, rationality in decision making and intuition were retained and political behaviour was left out to accommodate a more widely found phenomenon namely decentralization in decision making. Rationality in decision making and intuition are found to be in practice in HEIs despite the fact that HEIs are generally considered to be more irrational (Huber

2011) and intuitive decision making has been found to be very common in HEIs (90% of the decisions made in HEIs are said to be intuitive) (Nemeth & Klein, 2010; Klein, 2004; Klein, 1998). Political behaviour was found to be a more complex phenomenon to be investigated and was beyond the scope of the present study. A more detailed discussion is presented in Chapter 3 for choosing rationality in decision making and intuition in this research. A very important feature that required attention was that intuition and rationality in decision making were found to be two factors on the opposite ends of the same continuum (Sinclair & Ashkanasy, 2005). This makes the SDMP complex, thus providing further support for this study, a phenomenon that cannot be left without investigation in the context of HEIs. Finally with regard to Figure 1.2, decentralization in decision making was used to replace political behaviour as decentralization is a new concept that has found application in the context of HEIs (Hinton, 2012). Theoretical support for including these three factors as part of SDMP in the context of this study is provided in Chapter 3.

In addition, environmental factors were identified as important to this research (as depicted in Figure 1.2). Taking into consideration that changing environment is a major factor that is throwing up challenges to the HEIs, in this research one factor each representing external environment and internal context, namely environmental uncertainty and firm performance respectively were identified. These two factors were operationalized in the same way as suggested by Elbanna and Child (2007). Theoretical support to operationalize the environmental factors is provided in Chapter 3. Further the environmental factors have been operationalized as moderating the relationship between the SDMP characteristics (rationality in decision making and intuition) and SDMP outcome (decision effectiveness).

The outcomes of this research outlined in Chapters 6 and 7 indicate that a significant, positive but indirect relationship exists between SDM characteristic (decision importance) and SDMP outcome (decision effectiveness) in the SDMP model developed for this research. That is to say, that any change in decision effectiveness in the positive direction could be explained by a corresponding change in decision importance. The outcomes also show that the mediation of the relationship between SDM characteristic (decision importance) and SDMP outcome (decision effectiveness) in the SDMP model developed for this research by SDMP characteristics (rationality in decision making and intuition) is significant and positive. That is to say that any change in decision effectiveness occurring in the positive direction due to a change in decision importance in the positive direction is directly mediated by rationality in decision making and intuition with

corresponding change in the positive direction. The results of the outcomes indicate that environmental factors (environmental uncertainty and organisational performance) moderate the relationship between rationality in decision making and decision effectiveness positively. Thus when environmental uncertainty is high, higher is the influence of rationality on decision effectiveness and when organisational performance is high, the relationship between rationality in decision making and decision effectiveness is strong, although the same is not the case between intuition and decision effectiveness. Decentralisation in decision making was not found to be significant as a mediator and the effect of decentralization might not be well understood yet. Thus the results show that the model has the significant potential to be implemented in the context of HEIs.

1.6 Thesis layout

Chapter 2 reviews the literature relevant to strategic planning, SDMP, SDM characteristics, SDMP characteristics, SDMP outcome, and relevant theories, and sets out the gap existing in the literature that this study responds to.

Chapter 3 defines the theoretical framework drawn for this research based on the literature review and presents the hypotheses formulated for the research model.

Chapter 4 describes the research methodology that was developed for addressing the research questions, aim and objectives of this research. Includes definition of the methodology, framework, research design, research strategy, collection of data, sampling design and the data analysis aspects.

Chapter 5 analyses data using statistical tools and derives findings by testing the hypotheses.

Chapter 6 discusses the findings presented in Chapter 5 and compares the findings with the current research outcomes.

Chapter 7 provides the conclusions derived from the discussions provided in Chapter 6 alongside the contributions this research has made to knowledge, theory, methodology and practice. The chapter has brought out the limitations of this research as well as areas that could be addressed in future

Chapter 2
Literature Review

2 Introduction

Higher education institutions (HEIs) face challenges due to various factors, including fluctuating student enrolment, changing student demography and quality, inconsistent and sometimes declining funding (Hinton, 2012). HEIs have some difficulties dealing with these challenges, so strategic planning in HEIs has emerged as an important solution for them (Philbin, 2015; Cabrera et al. 2000) to, help them negotiate these challenges (Shah, 2013; Cabrera et al. 2000). Many managers in HEIs have not readily accepted that strategic planning could help them deal with their challenges as it was felt that the focus of strategic planning was industrial and not necessarily extendable to HEIs (Gordon & Fischer, 2016). However, the resistance to the concept of strategic planning has declined, as shown by the various examples of strategic plans developed by HEIs and posted on their websites for public consumption (e.g. Floyd, 2014). HEIs found that their problems in applying strategic planning ideas included inability to define properly who the customer is (for example is it the student, the employer, the parent, the government (as funder of education and research), or the research client Dahan & Senol, 2012)), and problems in collecting and maintaining data (Universities UK, 2011; Yanosky, 2009). A further problem has been found to be related to the implementation of the plan and its relationship to performance outcomes of HEIs, as implementation of a strategic plan depends on a strategic decision-making and implementation process being in place (El Banna 2011), and this was not the case with many universities (UPCEA and NASPA, 2014). These discussions highlight the need to review critically strategic decision-making processes (SDMP) in HEIs.

This chapter provides such a critical analysis of the literature, focusing on the SDMP of HEIs, Accordingly Section 2.1 defines strategy from a broad perspective. Section 2.2 reviews strategic planning and decision-making in the literature. Section 2.3 discusses strategic decision-making process components. Section 2.4 reviews the concept of decision importance. Section 2.5 analyses the SDMP in HEIs and reviews models and concepts that were previously used in different types of organizations. Section 2.6 analyses the concept of decentralisation in decision making, while Section 2.7 analyses rationality in decision-making. Section 2.8 discusses intuition, and Section 2.9 discusses strategic decision effectiveness. Section 2.10 reviews the concept of decision effectiveness as the strategic decision making process outcome while Sections 2.10 and 2.11

discuss the environmental factors. The gaps in the literature in relation to SDMP in HEI context are presented in Section 2.12 and Section 2.13 provides the summary of the chapter.

2.1 Definition of Strategy

Strategy has defined in many ways, in different situations. Mainardes et al. (2014) investigated and provided a detailed list of definitions provided by various researchers (Table 2.1).

Author/s	Definitions of Strategy
Barnard (1938)	Strategy is what matters for the effectiveness of the organization, the external point of view, which stresses the relevance of the objectives against the environment, in terms of internal stresses, the balanced communication between members of the organization and a willingness to contribute towards actions and the achievement of common objectives.
Von Neumann & Morgenstren (1974)	Strategy is a series of actions undertaken by a company according to a particular situation.
Drucker (1954)	Strategy is analysing the present situation and changing it whenever necessary. Incorporated within this is finding out what one's resources are or what they should be.
Chandler (1962)	Strategy is determinant of the basic long-term goals of a firm, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals.
Ansoff (1965)	Strategy is a rule for making decisions determined by product/market scope, growth vector, competitive advantage, and synergy.
Mintzberg (1976)	Strategy is the addition of the decision taken by an organization in all aspects, as much commercial as structural, with the strategy developing in accordance with learning process of the firm's manager.
McCarthy, Minicheiello & Curran (1975)	Strategy is an analysis of the environment where the organization is located and the selection of alternatives that will direct the resources and objectives of the organization, taking into consideration the risk and potential profits, and the feasibility that each alternative offers.
Glueck (1976)	Strategy is a unified, comprehensive, and integrated plan designed to assure that the basic objectives of the enterprise are achieved.
Michel (1976)	Strategy is to decide which resources should be acquired and used so they can take advantage of opportunities and minimize factors that threaten the achievement of desired result.
McNicholos (1977)	Strategy is embedded into policy-makers; it contains a series of decisions that reflect the basic objectives of the organization's business, and how to use the capabilities and internal resources to achieve these objective.
Steiner & Miner (1977)	Strategy is the formulation of mission, purpose and basic organizational goals, policies and programs to meet them, and the methods needed to ensure that strategies are implemented to achieve organizational objectives.
Nickols (2016)	Strategy is considered as perspective, position, plan, and pattern. Strategy is the bridge between policy or high-order goals on the one hand and tactics or concrete actions on the other.
Xue (2016)	A fundamental means of deploying organization resources that determines how the organization will achieve its goal and objectives; and a pattern of actions leading to defences against or influence on the environmental focus.

Table 2.1, Definitions of strategy identified by researchers (Source: Mainardes *et al*. 2014)

Table 2.1 highlights the lack of somewhat of a consensus amongst researchers on the meaning of strategy. Strategy as a concept may involve many aspects, including decision-making, (Gok & Atsan, 2016) (also see Katrinli & Gunay 2011; Payne et al., 1992; McNicholas, 1977 and Mintzburg, 1967). Definition of strategy, strategic planning and decision-making processes are important for HEIs (Labib et al. 2014). Strategic planning is a broad concept, under which the

SDMP falls (Butuner, 2016; Hinton, 2012; Sinha, 1990). The definitions of strategy given in Table 2.1 provide a general idea about the concept of strategy when viewed from different angles. Those definitions however, include some common factor that concerns strategy and strategic planning. For instance most of the definitions point out that strategy is a tool or perspective or a plan used to achieve the goals of an organisation. Thus it is possible to argue that most definition of strategy involve planning as an action that is strategic planning. While there is no single definition that could be applied to all situations, it is possible to apply an overarching definition of strategy to any particular context. Thus in this research where the focus is on SDMP, the definitions given by Ansoff (1965) and Mintzberg (1976) will be quite useful. Applying those definitions to this research the focus further narrows down to strategic planning and strategic decision making which are discussed next.

2.2 Strategic planning and decision-making in the literature

2. 2. 1 Strategic planning

Darabos (2013) argued the importance of strategic planning as a means to motivate their employees and as a set of actions to set their vision, mission and directions. Many researchers argue that strategic planning is a process, initiated with the identification of vision, mission and objectives (Athapaththu, 2016; Covin & Slevin, 1989; Storey, 1994; O'Regan & Ghoabadian, 2006) and that the strategic planning process helps organizations to manage their resources and plan to meet their objectives (Butuner, 2016; Ghoabadian, 2006; Storey, 1994; O'Regan and Covin and Slevin, 1989). Also, organizations should consider the internal and external environment, an important focus of the strategic planning process (Bagheri, 2016).

Darabos (2013) stated that many organizations do not spend enough time on their strategic plans, vision and mission, prioritising and taking difficult decisions. Darabos (2013) proposes that organisations must support and review their strategies, vision and mission by collecting data at the evaluation and control stage to enable appropriate decisions to be taken, rather than taking decisions based on intuition or experience. Bryson (2011; p. 26) argued that strategic planning is "a deliberate disciplined effort to produce fundamental decisions and actions that shape and guide what an organization (or other entity) is, what it does, and why it does it".

Despite its importance, the concept of strategic planning and hence the SDMP are major challenges for HEIs (Pritchard et al. 2016), This area appears to have been neglected by researchers (Hinton, 2012), though some argue that there is a need for further research on strategic planning in HEIs,

particularly with regard to the difficulties faced by HEIs in implementing strategic plans (Immordino et al. 2016). Evidence suggests that HEIs have failed in implementing strategic plans (Pritchard et al. 2016; Birnbaum 2001), while there are calls for research to help HEIs overcome this problem (Immordino et al. 2016). One area that promises to provide a way forward is to gain knowledge on the factors that help overcome challenges faced by HEIs with regard to implementing the strategic plan and decision-making (Najib & Baroto, 2016).

At this point it is worth analysing how the concept of strategic planning is applied in an organisational context and why it is needed. Drucker (1954) asserted that strategic planning is an analytical process and is a form of management by plans that focuses on making optimal strategic decisions. Ansoff (1991), while acknowledging that strategic planning is a process, argues that it aims to ensure that there is a match between an organisation's product or technology and the increasing uncertainty of the markets it serves. Ansoff (1991) suggests that the planning process prepares an organization to face changes in the environment, for instance the change from a familiar to an unfamiliar environment, where it may encounter new technologies, new competitors, new consumers with different attitudes and strange aspects of social control. Even the very role of the organization in the society could be questioned.

Other researchers suggest that strategic planning is a process through which organizations develop and maintain consistency between their objectives and resources on the one hand and the changing environment on the other (Bryson 2011; Ansoff 1991; Wendy 1997. According to Wendy (1997), strategic planning aims at creating satisfactory profits and growth through an approach of doing business that defines and documents such an approach. Emphasising the need to consider the changing environment, Hofer and Schendel (1978) explain that strategic planning is an evolving managerial response to changes in their environment, integrating strategy and structure as well as innovation, production, efficiency improvements, global diversification and expansion.

Taking a completely different view, Hax and Majluf (1996) define strategic planning as a process made of three components that enable an organisation's vision and mission to be turned into a near definite and achievable choice and strategic implementation, stressing that strategic planning orients an organization towards achieving its vision, mission and goals, includes determining the organisation's strategic intent and gaining knowledge about the market environment, leading to identification of strategic choices. This in turn requires the organization to evaluate and choose the most appropriate strategy. Leslie (2008) sees strategic planning as consisting of strategy and

planning, where strategy enables the matching of two aspects - the organisation's internal capabilities and its external relationships (Kay, 1995), while planning involves how this matching can take place. Strategic planning is said to help organisations anticipate and respond to a continuously changing environment (Bryson J. M., 1988).

2. 2. 2 Strategic decision-making

The literature suggests a relationship between strategic planning and strategic decision-making. For instance, Drucker (1954) argues that strategic planning enables an organization to make strategic decisions and that strategic planning is a continuous process of making entrepreneurial decisions at every stage of the planning process in a systematic manner, for instance, at the time of considering what the future holds, at the stage of understanding and organizing the efforts required to implement the decisions that the plans require the organization to make and while evaluating the results of the implemented the plan. Similarly, Ansoff (1991) refers to about an organisation's need to be prepared to face new technologies, new competitors, new consumers with different attitudes and strange aspects of social control, and do so by deciding on the set of objectives that the organization must achieve. This is supported by Day (1997), who defines strategic planning as a process that focuses in decision-making, information and the future of an organization. Johnson and Scholes (2004) assert that strategic planning is a special decision-making process and specific characteristics could be attributed to that process.

2. 2. 3 The idea of a strategic decision making process

A process is a more or less formalised way of undertaking something – anything from a set of decisions to a set of actions. An SDMP is therefore a formalised process for taking strategic decisions, identifying what steps need to be gone through in the process, what factors need to be investigated, who should do it and also possibly what kind of criteria or methods should be used in taking particular decisions. Some have argued that the SDMP is part of strategic management, which could be defined as a set of decisions and actions, which lead to the formulation and implementation of planned strategies that help an organization to achieve its objectives (Pearce II & Robinson, 1985). Thompson and Strickland (2003) argue that planning is the first step in strategic management. Sinha (1990) argues that the characteristics of strategic decisions influence planning systems and the decision-making process, significantly affecting an organisation's planning system, but also vice versa i.e. the planning system could affect the SDMP.

At this juncture it is possible to derive inferences about strategic planning and strategic decision-making process. The first inference is that strategic planning and the SDMP are intertwined but distinct. The second one is that strategic planning is a combination of strategy and planning while decision-making from strategizing or planning. The third is that while strategic planning deals with the uncertain future, internal and external environmental aspects and formulation of strategies to deal with a changing and dynamic environment, the strategic decision process supports such a planning process by enabling making the optimal choice from available alternatives. The fourth is that both strategic planning and the decision-making process can be brought under the umbrella of strategic management. Therefore, it is reasonable to conclude that the strategic planning and decision-making process form an inseparable part of strategic management and strategic decision-making is involved in every step of strategic planning.

The SDMP has been a major area of interest amongst researchers for decades (Papadakis & Barwise, 1998a, p.1, Child, 2007). Managers in organizations need to make decisions in order to execute many different functions of an organization and ensure that activities are carried out in order to achieve the goals of the organization. Literature shows that decision making is a process and involves the decision maker, who, while taking a decision, chooses from the available alternatives, compares the chosen alternatives amongst themselves and evaluate those choices with the outcomes derived (Nooraie, 2014).

2. 2. 3. 1 SDMP: a complex concept and the notion that decisions are 'strategic'

It is common to notice organizations are involved in a variety of activities that involve developments, events and trends that can potentially impact the long term goals of the organization. These developments, events and trends are considered as strategic issues (Ansoff, 1980; Dutton & Duncan, 1987). Any decision taken on those strategic issues are generally considered as strategic decision making. It is widely recognized that strategic decision making is a complex phenomenon. The complex nature of SDMP could be witnessed in the multitude of decisions that decision makers in organisations are forced to take in a complex and fast changing world of business even if those decision makers are not normally inclined to take decisions. While decision making is inevitable, it can be seen from the following scenarios the inevitable nature of the decision making process (Toffler, 1980).

1. Too many decisions to be taken at a time
2. Decisions need to be taken too fast about too many
3. Decisions have to be taken in an unpredictable environment.

4. Many times decision making involves strange and unfamiliar problems
5. Strange and unfamiliar problems introduce a new element into management decision making
6. Those new elements force decision makers to make more and more decisions at even faster pace.

The above sequence of events form a vicious circle getting out of which is can be difficult. In such an environment making the most appropriate decision perhaps becomes the hardest part of managing an organization (Mark, 1997). Strategic decisions are generally long term, highly unstructured, complex, inherently risky and would greatly impact the future of the organization. In such a situation, literature shows that choosing the most appropriate alternative is a very difficult choice. Further decisions may be programmed or non-programmed (Simon, 1977), generic or unique (Drucker, 1956), routine or non- routine (Mintzberg et al. 1976) and certain or uncertain (Milliken, 1987). In this situation choosing the most appropriate alternative is not easy especially when the most appropriate alternative may not be feasible (Nutt, 1998).

- Some of the reasons why strategic decision making process is an intensely researched area are:
- They are the most important decisions that will necessitate an organization to allocate large amounts of organisational resources.
- Strategic decision making requires consideration of the environment.
- In the strategic decision making process the senior management plays a nodal role (Hofer & Schendel, 1978).
- Strategic decisions and decision making affect the organizational direction, administration and structure (Christensen et al., 1982).

An important aspect of the decision-making process is the variety of ways through which the decisions could be made. For instance, decisions could be made using intuitive judgement or using analytic methods or using problem-solving methods (Pretz, 2008). However, no single method has been found to be applicable to all situations as the SDMP has been recognized as very complex, and some argue (Pretz, 2008) that there is a need for greater understanding of the SDMP process (Nooraie, 2014). Contextual factors exert strong pressure on the SDMP (Bateman and Zeithaml, 1989; Bryson and Bromiley, 1993; Rajagopalan et al., 1993, 1997; Schneider and De Meyer, 1991; Schwenk, 1995). Questions have been raised about the factors that affect the decision process (Papadakis & Barwise, 1998), as well as the extent of variation in the SDMP. Further research on

strategic decision-making processes seems necessary as the literature does not seem to address the many different concerns of decision makers.

Research on strategic decision-making can be broadly brought under two groups - content research and process research (Elbanna et al. 2014). Content research is concerned with strategy related to content such as portfolio management, diversification, mergers and alignment of an organisation's strategies with the environmental characteristics. Process research is concerned with how strategic decisions are made and implemented and the factors that influence it. For instance, process research could be related to how of an organization influences its strategic position through its strategic planning (ElBanna, 2006). Some feel that content research on strategic decision-making has dominated research on SDMP over the years, although the interest in process research has been revived lately (Rajagopalan et al. 1997). Content and process research interact with and influence each other (Mintzberg & Waters 1985).

As far as theoretical support for examining the SDMP is concerned, this research takes direction from the arguments of Elbanna (2006), who argued that the SDMP can be anchored in two distinct perspectives, synoptic formalism and political incrementalism (Goll and Rasheed 1997; Johnson 1988). While models under synoptic formalism are based on analysis and considered an extension of the rational model (Elbanna, 2006), political incrementalism is construed to clarify the actual way in which strategic decisions are made in organisations (Mueller, 1998). An example of a factor representing synoptic incrementalism is rationality in SDMP, while an example of a factor representing political incrementalism is decentralization (Lindblom, 1979). The construct rationality has been widely discussed (e.g. Dean & Sharfman, 1993; Elbanna & Child, 2007b; Collier et al. 2004; Mueller et al. 2007), while decentralisation is recommended for investigation by a number researchers (e.g. Bower, 1997; Papadakis & Barwise, 1997). Given the above discussion, and the fact that HEIs are currently facing a highly volatile and uncertain environment, it can be argued that strategic planning and the SDMP are both vital for the survival and growth of HEIs, but that unlike within industry. HEIs may not be fully geared to meet the future challenges due to lack of adequate ability to plan, decide and implement strategies the topic of the next section.

2.3 Strategic decision-making process components

The SDMP has been previously investigated, primarily by e.g. Papadakis et al. (1998), Papadakis and Lyriotaki (2013), Elbanna (2006), Elbanna and Child (2007) and Noorie (2014). One of the many ways in which SDMP could be portrayed conceptually is shown in Figure 1, which is derived

from the ideas of Noorie (2014), Papadakis and Lyriotaki (2013) and Elbanna and Child (2007). The research of Elbanna and Child (2007) and Noorie (2014) suggests that process outcomes must be considered when discussing the influence of contextual factors -without knowing the intended outcome it is difficult to implement the decision.

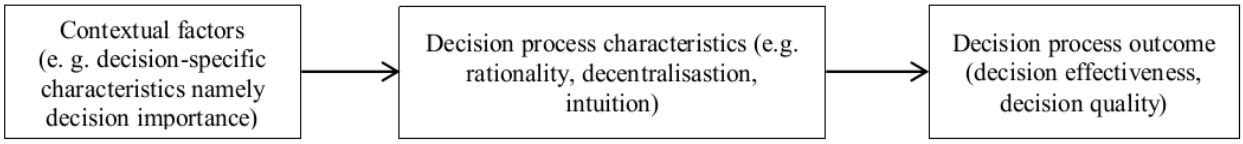

Figure 2.1, Conceptualisation of SDMP

Figure 2.1 proposes that contextual factors indirectly influence decision process outcome mediated by decision process characteristics. While many contextual factors have been identified in the literature e.g. external environment, internal environment, management characteristics and decision-specific characteristics (Papadakis & Lyriotaki, 2013), this research focuses on decision-specific characteristics for two reasons. One is that investigating all the types of contextual factors would be too difficult in a single research study and the other is that decision-specific characteristics have been sparingly addressed in the extant literature and the literature on their relationship with the SDMP is limited (Nooraie, 2012). There is also evidence in the literature to suggest that decision-specific variables must be taken into account while studying SDMPs because they can affect the relationship between decision process and organisational outcomes (Rajagopalan et al. 1997). Decision-specific characteristics refer to how decision makers group and tag a strategic decision at the initial stages of decision-making, and as it is expected to affect strongly the responses of an organization (Elbanna, 2011). Several decision-specific characteristics have been identified, including decision importance, decision uncertainty and decision motive (Elbanna, 2011). None of these seem to have been addressed in the SDMP literature, and Elbanna (2011) strongly suggested that more investigation is needed to understand their influence on SDMP.

As far as decision process characteristics are concerned, much attention has been given to this variable, although not all factors have been addressed despite the fact that it is considered to be an essential variable that must be included while investigating SDMPs (Papadakis et al. 1998). Decision process characteristics include comprehensiveness/rationality, rule formalization, hierarchical decentralization, lateral communication, politicization and intuition (Papadakis & Lyriotaki, 2013; Elbanna, 2006). Some argue that the decision-making process is a significant part of the managerial function and is a complex phenomenon that is affected by the external environment and the internal context of an organization, involving determining and choosing

alternatives in accordance with an understanding of the values and preferences of the decision maker (Hussain, 2006). Most studies that have investigated SDMPs to date, have addressed the influence of rationality, intuition and political behaviour on SDMPs by linking them to organisational performance and decision-specific characteristics such as magnitude of the decision's impact (Noorie, 2014; Papadakis et al. 1998; Elbanna & Child, 2007). However, no study has simultaneously used rationality, intuition and such variables as decentralization as decision-making process variables in one study. In HEIs decentralization has been highlighted as an important aspect that could affect the decision-making process (Heredia-Ortiz 2007; Fiske 1996; Hanson and Ulrich 1994) and hence knowledge about the combined influence of rationality, a widely used and recommended factor in SDMP research, intuition a widely used component in practice in the SDMP and their association to decentralization could enable a better understanding of how HEIs could tackle decision making process.

Hence, in this research it was proposed to use at least three decision-making process variables namely rationality in decision-making, intuition and decentralisation, which have been very sparsely studied in the context of HEIs. Further, combining rationality in decision-making and intuition in one research study in the context of HEIs is a novelty as these two concepts are considered to be contrasting with each other in the SDMP literature at the conceptual level, and past research has focused either on rationality on decision-making or intuition (Batool et al. 2015). Research on the combined influence of both on performance or decision-making is lacking (Eling et al. 2014).

In a similar vein it can argued that SDMP outcomes are an important component of the SDMP, but the SDMP literature seems to have largely ignored it, with a few exceptions (Elbanna, 2011). Further, antecedents have been linked to SDMP characteristics in the extant literature (e.g. Elbanna and Child, 2007) implying that antecedents of SDMP characteristics can be linked to SDMP outcomes. Wilson (2003) suggests that not including organisational outcomes as part of SDMP research will not provide a complete picture about the decision-making. Thus there is a need to link organisational outcomes as part of the SDMP which include decision quality (Hough and White, 2003; Olson, Bao, and Yogjian, 2007; Olson, Parayitam, and Yongjian, 2007), decision effectiveness and efficiency (Elbanna and Child, 2007b; Nutt, 2008), decision pace (Baum and Wally, 2003; Daniel, 2005), decision commitment (Olson Bao, and Yogjian, 2007; Hough and White, 2003; Olson, Parayitam, and Yongjian, 2007), new product performance (Atuahene-Gima

and Li, 2004), satisfaction with the decision (Nooraie, 2008), timeliness and value (Nutt, 1998b, 2000b, 2005).

Only some of the strategic decision-making process outcome variables have been investigated empirically (Elbanna & Child 2007). This research focuses on strategic decision effectiveness, a strategic decision outcome that has only been sparingly studied in the SDMP literature and less so in the context of HEIs. The following sections thus review the literature related to decision importance, rationality in decision-making, intuition, decentralisation in decision-making, decision effectiveness, external environment and internal contextual factors.

2.4 Decision Importance

As indicated Section 2.3, decision importance has been considered as a strategic decision characteristic in SDMPs, with strategic choices being important decisions taken by managers in organisations, influenced by contextual factors, which in turn play a role in reducing the importance of the managers' choice processes (Elbanna, 2011). Decision importance signifies the extent to which a strategic decision is important or not, given that all strategic decisions may not be considered evenly by managers. Managers may therefore like to deal with those decisions differently, with decision importance becoming specific to a strategic decision, but with lack of consensus amongst researchers regarding the definition and operationalization of the concept of decision importance as a decision-specific factor, its definition and operationalization (Elbanna, 2011). The literature on how decision context influences decision process characteristics, taking into account the effect of organisational and environmental contexts, is sparse.

2.4.1 Theory on decision importance

Decision importance is related to decision-making and is grounded in decision theory (Hansson, 2005). According to Hansson (2005) decision theory as a subject is not a unified one and there are various ways to conceptualize decisions, implying that there are many different research traditions that are found in the literature. Decisions are about human being's activities and every activity involves decisions. While people do not decide continuously, in the history of an activity, there are times when decisions are made and at other times those decisions are implemented. Hansson (2005) argues that decision theory is associated with that period of time when the decision is being made. Furthermore, decision theory is considered to be multi-disciplinary in nature and has developed over the years with contributions from economists, social science, politics, psychology and statistics (Hansson, 2005). There is a large overlap between the theories associated with decision

theory. This has led researchers to apply decision theory using a variety of methods to address the same or similar problems (Hansson, 2005).

If one builds on the arguments of Hansson (2005), then normative and descriptive decision theories need to be understood as these two theories describe how people should behave (e.g. how decisions should be made) and how people actually behave (e.g. how decisions are actually made) respectively (Suhonen, 2007). In both cases, Suhonen (2007) argues that the concept of rationality is involved in the decision-making process, which involves decisions themselves and their importance. This implies that decision theory could be construed to be applied to rationality in decision-making., and for the purposes of this study therefore decision theory was considered the most suitable theory that could support the inclusion of decision importance as part of the decision-making process.

2.4.2 Relationship between decision importance and strategic decision process dimensions

Sutcliffe and McNamara (2001) argue that decision importance is an important factor that determines subsequent processes in the decision-making chain. Papadakis and Lyriotaki (2013) argue that in a stable environment, in one organization, processes may differ across decisions because of factors that are decision-specific which include for example decision uncertainty, familiarity, and magnitude of impact (Elbanna & Child, 2007; Nooraie, 2008). A feature of this argument is that decision importance can also be considered a decision-specific factor and hence included in the list of decision-specific factors identified by Elbanna and Child (2007) or Nooraie (2008). Thus on the one hand decision importance can be seen to affect the decision processes, involving decision process dimensions and decision process output, and on the other, decision importance is considered to be a decision-specific factor found to act in a manner similar to other decision-specific factors mentioned above. Thus, like the linkages established by researchers (e.g. Papadakis et al. (1998); Elbanna and Child, 2007; Nooraie, 2008) between decision-specific characteristics like decision uncertainty or decision magnitude of impact and decision process dimensions such as rationality, it is possible to think of a relationship between decision importance and any other decision process dimension.

Based on the arguments above, this research suggests that decision importance as a construct be linked to rationality as a decision process dimension taking the support of the decision theory. Such a linkage could explain how important decisions influence rationality as a decision process dimension and eventually influence decision process output. Lack of knowledge about the influence

of decision importance on rationality could result in decision-makers ignoring the necessity to include rationality in the decision-making process.

2.5 SDMPs and HEIs

The literature shows that HEIs need to gear up to face the challenges surrounding them. There is broad consensus amongst researchers (e.g. Hinton 2012, Birnbaum 2001, Darabos 2013) that HEIs need to develop and implement strategic plans to successfully negotiate those challenges (see Section 1.3 Chapter 2). For instance, in a recent report on Ireland'sish strategy for higher education to 2030, the Strategy Group (2011) identified the following challenges faced by HEIs.

- What are the emerging economic and social challenges which compel the HEIs to develop new approaches in higher education?
- Does Ireland require more graduates?
- What role will the graduates produced by HEIs play in the economic development of Ireland?
- How will the skills that graduates need be built in students by HEIs?
- How will HEIs ensure wider economic, social and civic benefits that come with the increased participation of students in higher education?

These questions could be asked in many other nations. There is a need to understand how HEIs plan to overcome these challenges, especially when serious questions are being raised about the ability of HEIs to develop strategic plans and implement them. An important element of strategic planning is the SDMP. HEIs have been found to be facing problems in developing effective decision making processes (Universities UK, 2011). Creating and applying a SDMP appears to be a major challenge in HEIs, and there are growing calls from researchers for conducting deeper investigations into this area (Minor, 2004). For instance, Minor (2004) strongly recommends that research must be undertaken to support HEIs in their decision making processes as there is a serious problem concerning effective involvement of faculty in decision making process in HEIs. Universities UK (2011) highlight that the decision making process appear to be a major challenge in HEIs with regard to investments and prioritization, as conflicts erupt between business units and back office functions. Similar examples can be found in the literature (Chapter 2) that point to the need to investigate the SDMP process in HEIs. This is a major gap in the literature, as the SDMP in HEIs has hardly been investigated (see Section 2.12).

HEIs are finding it hard to understand the changing environment, which had been relatively stable, with changing circumstances forcing them to develop strategic plans and establish SDMPs processes to tackle the challenges, and lack of SDMP is argued to have led to either ad hoc decisions or decisions not taken through a scientific process, leading to the development of an ineffective strategy and its execution (Papadakis et al. 1998). Little research has been conducted to understand what decision-making process mechanisms HEIs (Magd & Bindah, 2016) could use to successfully negotiate the challenges and control the factors that contribute to those challenges. The following sections review the SDMP literature to identify what factors could be considered as affecting the SDMP in HEI.

2.5.1 Academics and decision-making

Academics who are decision makers in HEIs are observed to be more intuitive in making decisions than analytical (Kuncel et al. 2013; Goldstein & Katz, 2005), while the environment around them is becoming increasingly complex with many alternatives to choose from. Simply being intuitive does not help academics choose the best alternative (Cerigioni, 2015; Jamieson & Hyland, 2006), so there are strong reasons to examine how decisions are and could be made in the SDMP. Thus, in this research, decision-specific characteristics will be addressed in the context of HEIs. Amongst the decision-specific characteristics identified in the literature, this research focuses on decision importance, a variable not investigated in the context of HEIs.

Considering the importance of coupling strategic decision-making process to organisational outcomes, an investigation into decision importance as a decision characteristic factor becomes necessary, given that in the field of higher education managers are forced to take decisions which are often irreversible. For instance, Raluca and Alecsandru (2012) argue that Romanian education is in the process of transition to maturity and sustainability. In this process, Raluca and Alecsandru (2012) argue that Romania is shifting all its main coordinates and is orienting itself to follow general European trends. HEIs in Romania are forced to either participate in or oppose this trend and this calls for strategic decisions. The importance of such decisions is likely to affect the individual HEI, yet the importance of such decisions as part of the SDMP has not been well understood and investigated.

If one applies the arguments of Papadakis et al. (1998), then the magnitude of impact of the decisions made by HEI managers assumes significance. Elbanna (2011) argues that the magnitude of impact of the decisions act as an important indicator of decision-making behaviour and could be

considered as a strategic decision characteristic pertaining to 'decision importance'. The magnitude of impact of decisions taken in HEIs could have far reaching consequences if the HEIs fail to recognise the importance of the decisions taken. For instance, technology is changing the landscape of the traditional methods of offering education by HEIs. E-learning, relatively a recent advent in the field of education that has its origin in the invention of the internet, is forcing HEIs to adopt practices that affect current methods of teaching and learning. Sae-Khow (2014) argues that in the face of continuous expansion of e-learning operations and development, HEIs must strategize to keep up with competition and rapid changes in technology. Sae-Khow (2014) posits HEIs e-learning strategy management and development as an indicator of e-learning quality. Sae-Khow (2014) claims that HEIs must have management systems to assist decision-making of managers. It can be seen that these arguments underline the importance of strategic decision-making in HEIs and how such decisions have the potential to affect the HEIs. For instance, any wrong decision taken by managers regarding adopting a particular e-learning technology can affect the efficiency of delivery of education while the right decision could enhance the competitive advantage of the HEI.

Dayan and Elbanna (2011) highlight the need for decisions to demonstrate rationality, implying that rationality is another aspect linked to decision characteristic factors. Examples of the need to link rationality to important decisions by HEI managers can be seen in the ambiguity that prevails in HEIs, leading to lack of direct supervision of the work of the main group of employees, the faculty, while there are no detailed operating rules governing performance of academic responsibilities (Blau, 1973, p. 11). Lack of rational thinking in strategic decision-making can lead to important decisions that are rational not being implemented. Thus, if a HEI decides to adopt e-learning, a necessity dictated by changing environmental conditions with competitors gaining advantage, such a decision may be easy to adopt for academics may resist adoption of e-learning as they may not be capable of handling the technology. Managers may consider this as an important decision but due to the resistance may not be able to implement the decision with understanding the rationality involved in the decision. Under these circumstances it is important to understand the link between important decisions and rationality so that the implications of taking and implementing such decisions could be understood.

In the context of HEIs where important decisions need to be taken which have implications for the effectiveness of their decision-making processes and have bearing on the teaching and learning aspects, knowledge on the linkage between decision importance and rationality could provide

useful insights into the extent rationality should be built into the decision-making process. In addition to rationality, considering the recent arguments of researchers suggesting that universities are increasingly moving towards decentralized decision-making processes, this research argues that rationality and decentralization together may have a greater influence on the decision-making process outcome, and hence decentralization as a dimension also needs to be understood when linked to decision importance. Such a linkage could provide a deeper understanding of how decision importance as an antecedent of rationality and decentralization influences the decision process output. Such knowledge could be useful in enabling the HEIs to determine whether effective decisions could be taken and whether such decisions could be implemented. The contemporary literature does not address this linkage and lack of knowledge on the combined influence of decision importance as the independent variable and rationality and decentralization as mediating variables in the decision-making process on decision process output leaves an important gap in the understanding of the strategic decision-making process as a whole. This gap needs to be addressed (Pritchard et al. 2016).

2.6 Decentralisation in decision-making

Decentralisation is a concept that has attracted the attention of researchers because of the implications the concept can have on policy making, conditions for its success in governance (UNESCO, 2016; Neven, 2003), and empowerment of the people and democratization within an organisational context (UNESCO, 2016; Naidoo, 2005). The theory of decentralization or theories associated with decentralisation have been investigated to understand and explain many aspects concerning decentralization as well as applying the concept of decentralization in organisations (UNESCO, 2016; Yazdi, 2013). For instance, some researchers argue that decentralization is a complex and multifaceted concept (Hart & Welham, 2016), requiring identification of different types of decentralization (Yazdi, 2013), as it is associated with different characteristics, policy implications and conditions for success (Ryan; 2017; Yazdi, 2013; Neven, 2003). Some contend that current research outcomes provide only partial evidence to support the argument that those outcomes can be successfully applied to HEIs (Naidoo, 2005). Further while much of the successful application of decentralization has been in fields such as politics, administration, finance and economics, each of these fields has been found to require different types and designs of decentralization (Eaton et al. 2010). This is significant in the context of HEIs. The literature has largely discussed decentralization as a concept with regard to autonomy of institutions and such autonomy has been often achieved (Schneider, 2003). However, decentralization as a concept could also be applied in the context of the central management of a university and the various colleges in

the university as well as departments offering a programme under a college (Hart & Welham, 2016).

2.6.1 Theory behind Decentralisation

Decentralisation has been considered as a decision-making process dimension in the strategic decision-making literature (Papadakis et al., 1998). Nooraie (2014) argues that none of the decision-making processes can be construed as best for every situation, as decision-making processes vary between organisations, managers, environment and tasks. Higher education decentralization as a strategic decision process dimension has not been investigated to understand how decentralization is related to decision characteristics as inputs and how it is affected by environmental factors. Where strategic decision-making processes need to be chosen based on different settings, the main theory that could be used to ground decentralization as a decision-making process dimension is contingency theory (Nooraie, 2014), which explains the relationship between organisations and the environments that affect them. Contingency theory supports the argument that the choices and actions of organisations are governed by different external pressures and requirements, making it necessary for the organisations to respond to those pressures successfully (Boezerooij, 2006).

Another important aspect of the decision-making process is the influence of context, which points towards the support offered by contingency theory to the SDMP and hence the process dimensions including decentralisation. This research uses contingency theory in investigating decentralization as a concept in the SDMP. The concept of decentralization as a contextual factor is also seen to be grounded in behaviour, upper echelon and system theories although the relevance of their application to the concept of decentralization in HEIs may require a separate investigation and is not considered to be within the scope of this research. One of the purposes of this research is to understand the relationship between contextual factors and decentralization (Nooraie, 2014). Here, decision theory may also help understanding of decentralization, as the choice of any decision process dimension itself including decentralisation is seen to be grounded in decision theory in the literature, raising the question as to whether decision theory could be used alongside contingency theory (Nooraie, 2014).

The definition of decentralization within organisations is a contentious issue amongst researchers, with a wide range of definitions concept in the literature (Schneider, 2003). For instance, Lee and Gopinathan (2004) argue that decentralization in the context of educational institutions supported

by governments is about shifting power, authority and achieving desired outcomes and highest value for public money dedicated to the sector. For traditional universities, Bolden et al. (2012) imply that decentralization is a decision-making process in terms of the concept of leadership and shared responsibility of leadership, and that in the process of explaining decentralization in terms of leadership, there is a growing practice of applying corporate and entrepreneurial approaches to leadership and management in universities. Faguet (2012) argues that decentralization is defined as a reform achieved via effective devolution of power and resources from central to sub-national levels of government.

An important inference that can be derived from an analysis of the definitions is that decentralization involves, in general, delegation of power and resources by the central body (in the case of a HEI it could be the top management) to the branch (in the case of HEIs, it could be the college). Such a simplification of the definition of decentralization may serve the limited purpose of understanding what decentralization is with respect to delegation of power and resources to the branch by the central body. The wider aspects of context, purpose, factors affecting decentralization, various conceptualisations of decentralization and how it can affect strategic decision-making in HEIs also need further examination. There is a need to understand these aspects through review of the literature. As such, they are discussed in the next section.

2.6.2 Decentralization in decision-making in HEIs

Until recently, HEIs were largely funded by national governments. However this trend appears to be changing creating challenges to the HEIs. Apart from funds other challenges have also appeared on the horizon including increasing demand of students, globalization of education, increased choice of universities, increase in competition, variations in the cultural background of students and government regulations. Such changes have forced HEIs to think of how those changes can be managed. While the SDMP in HEIs has been found by researchers to be an important contributor to how HEIs can negotiate the changes, an area that promises to offer some support to HEIs in the SDMP is decentralization (Hinton, 2012). The SDMP in HEIs is by and large centralized (Cloete et al. 2016; van Vught, 1995). Research shows that a strong reason for this has been that success achieved through decentralization in HEIs has not been widely reported (Khan et al., 2014). However, research also indicates that decentralization can improve the SDMP in HEIs (Rouwelaar & Bots, 2008), especially when one considers the success of decentralization in the industrial sector. This begs the question as to the reasons for the lack of reported success in implementing decentralization in HEIs. Research shows different ideas concerning the concept of decentralization

in HEIs, suggesting that there is a need to understand this further (Ballarino, 2011; Bok, 1986). Furthermore, research at the conceptual level on decentralisation shows that in the context of HEIs supported or aided by government there is little knowledge of how decentralization is put into practice (Taira, 2004).

Decentralization as a concept has already been adopted by some HEIs and some cases reported in the literature indicate positive results of implementing decentralization. For instance, in the USA, in the nineties, some universities started decentralization by gaining autonomy from the state. MacTaggart (1998) reported that St. Mary's College of Maryland successfully adopted decentralization although the decentralization focused on procedural autonomy (another term used for decentralization). In another similar instance, in the case of Michigan, decentralization was found to be successful (Mac Taggart, 1998). In some other countries decentralization of HEIs was found to be successful e.g. Argentina (Galiani, Gertler and Schargrodsky, 2008), Sweden (Barankay and Lockwood, 2007) and the UK (Clark, 2009). Although these success stories have been reported, in some cases decentralization was not successful or the success was mixed, as in the case of the decentralization in New Jersey where the results were mixed, because it created contention with respect to policy autonomy (Greer, 1998). Despite this, decentralization has occurred in some more states in the USA (McLendon, 2000a, 2001) and other countries (Soderqvist, 2007).

Some other factors may also contribute to the lack of progress made by HEIs in adopting decentralization as a concept. For instance, while Soderqvist (2007) explains that decentralization is fairly recent and HEIs are still trying to understand the concept, others argue that decentralization has created administrative problems (Khan et al., 2014). Therefore, it is reasonable to conclude that there is a need to understand the concept of decentralization further in the context of HEIs. This also applies to SDMPs. Different types of autonomy or decentralization have been discussed, such as policy autonomy (McLendon, 2000a, 2001) and procedural autonomy (Mac Taggart, 1998). In HEIs, decentralization of the SDMP has only stated to be discussed lately. This leaves a gap in understanding of how decentralization could influence the SDMP (and subsequent implementation of decisions taken through some SDMP). Thus there is a need to study the concept of decentralization further as a factor affecting the HEI SDMP.

2.6.3 Factors that influence or affect decentralization in the SDMP literature

Decentralisation as a concept has been considered to affect a number of factors including governance, quality of governance, structure, resources, institutions as a whole and decision-making processes to quote a few (Faguet, 2011; Treisman, 2002). However, in the strategic decision-making literature a few researchers (e.g. Papadakis et al., 1998; Elbanna, 2012; Nooraie, 2014; Naidoo, 2005) have either highlighted the importance of decentralization in the strategic decision-making process or have used it as a mediating variable between two constructs of the decision-making process (e.g. Papadakis et al., 1998 and Nooraie (2014), although such efforts have not considered the context of HEIs. Papadakis et al. (1998) link strategic decision characteristic dimensions such as magnitude of impact or threat or crisis to the top management team, mediated by decentralization, whereas Nooraie (2014) attempted to link contextual factors such as familiarity or slack or dynamism or need for achievement to decision quality or satisfaction in the context of industrial organisations. However, the outcomes produced by Papadakis et al., (1998) and Nooraie (2014) are promising and lend support to linking constructs either classified as decision characteristics or as contextual variables to decentralization and provide the basis for developing the relationship between those variables and decentralization. The researcher, in reviewing the context of HEIs, identified decision importance and munificence as two important variables that significantly affect HEI SDMP. So, while recognizing the fact that decentralization may be linked to other decision characteristic constructs such as magnitude of impact or threat or crises, this research focuses on decision importance because hardly any insight about the link between decision importance on the one hand and decentralization on the other exists, even in industrial sectors.

Decision dimensions such as decentralization have also been shown to be influenced by environmental factors. For instance, Papadakis et al., (1998) showed that both internal (e.g. internal firm characteristics, size, performance and corporate control) and external environment (e.g. heterogeneity, dynamism and hostility) factors influence decision dimensions including decentralization. Although the research conducted by Papadakis et al., (1998) was is in the context of industrial organisations, the outcomes produced by them may be extensible to other contexts including HEIs, an argument supported in the literature (Reichert, 2009). This research posits that both internal and external environmental variables may need consideration when investigating HEI SDMPs as examining their influence on decentralization as an important SDMP dimension is an area yet to be investigated in the context of HEIs.

An important factor warranting consideration is SDMP output, and how it is affected by decision process dimensions such as decentralization. For instance, Elbanna and Child (2007) argued that decision process dimensions such as rationality or intuition or political behaviour act as mediators in the relationship between decision characteristic variables (e.g. decision importance, decision uncertainty and decision motive) and decision process output variables (e.g. strategic decision effectiveness) in industrial organisations. The work of Elbanna and Child (2007) provides the basis to extend these concepts to other contexts as HEIs. When this argument is extended further to other decision dimension variables, the influence of decentralization as a decision process dimension variable on decision process output variables such as decision process effectiveness is yet to be investigated, particularly in the context including HEIs - an important gap in the literature. Although decentralization has the potential to affect the SDMP in organisations, lack of investigation on its influence over decision process output variables as part of the SDMP in HEIs is a gap in the SDMP literature which needs to be addressed.

2.7 Rationality in decision-making

The concept of rationality has remained central to the SDMP process and has figured prominently in SDMP research (Elbanna & Adol, 2016), although some researchers (e.g. Prusty & Mohapatra, 2016; Elbanna & Adol, 2016; Elbanna & Child, 2007) have questioned its universal acceptability under all circumstances. Rationality as a factor is discussed in the literature. Interesting exchanges are witnessed amongst researchers about rationality. In the HEI context, the concept of rationality has found mixed utility with some arguing for and some against introducing it in HEIs (Hall, 1977 (for); Hardy et al. 1983 (against); Becher & Kogan, 1992 (against); Ganesan et al., 2002 (against); Thomas, 2006 (for and against); Fioretti & Lomi, 2010 (for)). For instance Ganesan et al., (2002) argue that in the HEI context, learning design (considered as a professional and creative activity) involves more of a probabilistic and fuzzy activity rather than rational curriculum planning. However, in the context of research in HEIs in Norway the system of funding for research was changed in 2006 from one based on number of employees in HEIs to a rational process of credits achieved and research published through scientific channels (Haukland, 2014). This system of funding for research was criticized by Heinze (2008) as undermining the possibilities for ground-breaking research, indicating that rationality as a concept is not always useful in HEIs in all contexts. These examples clearly show that rationality as a concept does not find consistent application in the decision-making process of HEIs. If this is the case, how does one know conceptually whether rationality finds any application in the decision-making process of HEIs or

not? Thus there is a need to investigate the concept of rationality further in the context of HEIs. A review of the relevant literature was thus needed to know more about this concept which follows.

Research on the SDMP has shown that degree of rationality is an SDMP characteristic (Fredrickson, 1984, 1985). The literature further shows that some factors, including those that are environmental, organisational and decision-specific, affect rationality (Rajagopalan et al. 1993). Although rationality in decision-making is considered by some an important decision-making process factor (e.g. Miller, Droge, and Toulouse, 1988; Shrivastava and Grant, 1985; Dutton, 1986), it is not without its share of controversy. For instance, Dean and Sharfman (1996) found that the relationship between procedural rationality and organizational outcomes is not affected by environmental variations. Similarly, Ormerod (2005) supports the argument that if rationality as an approach is continued for too long, it will fail eventually. Amidst contradictory opinions and findings, rationality as a decision-making process characteristic continues to be examined by researchers while addressing the issue of strategic decision-making as a process (e.g. Papadakis & Lioukas, 1996); Elbanna & Child, 2007; Cheng et al. 2010). While the foregoing discussions indicate the need to investigate rationality in the SDMP further, the requirement to gain a greater understanding about rationality in the context of HEIs is even more important because HEIs are beset with contradictions, which may affect the SDMP (Mead-Fox, 2009).

2.7.1 What is rationality in decision-making?

Rationality in decision-making has been defined and explained variedly in the literature. Table 2.2 below provides the different definitions found in the literature. From Table 2.2 it can be seen that the various definitions and explanations about rationality in the SDMP provides an opportunity to view rationality through multiple perspectives such as a process or a tool or measure or theory. Despite defining and explaining rationality in varying ways, some feel that these definitions are more or less identical and could be used interchangeably (Goll & Rasheed, 2005). For instance, the arguments of Langley (1989) and Walter et al., (2008) indicate that rationality is an analytical tool for decision-making. Dean and Sharfman (1993a, 199b, 1996) and Schwenk (1995, p.475) consider rationality as a process by itself that influences strategic decision-making. These arguments indicate that rationality can be used in multiple contexts interchangeably. Taking a cue from the definitions, it can be argued that rationality as a concept could be applied to HEIs although some reearchers suggest that they cannot make rational decisions (Huber 2011). There are contradictions in HEIs which indicate the need to know whether rationality as a factor affects the SDMP in HEIs or not.

No.	Definition	Author	Remarks
1.	Rationality equates to utility maximization.	Elbanna & Child (2007)	Economic theory
2.	Decision-makers are seen to be rational within the limits of their own capabilities. That is this definition points to ways in which the decision-making process is limited by cognitive and political realities. Given these limitations, decision-makers aim to achieve objectives which are 'good enough rather than the best'.	Snyman & Drew (2003); Eisenhardt (1997, p. 1)	Bounded rationality
3.	Another definition defines rationality in decision-making as the exploration of how strategic decisions are actually made and why they are made in such a manner.	Dean & Sharfman, (1993b)	Organizational tradition
4.	Rationality is the reason for doing something and to judge a behaviour as reasonable is to be able to say that the behaviour is understandable within a given frame of reference.	Butler (2002, p.226)	Interpreted as a factor related to strategic decision-making process
5.	Degree of rationality in strategic decision-making process depends on context (competitive threat, perceived external control and uncertainty).	(Dean & Sharfman, 1993b)	Points out that context is an important influencing factor of rationality in decision-making
6.	Rationality in terms of behaviour is found to characterize completeness (the degree in which all the relevant data were considered), thoroughness (the degree in which all the required analyses were conducted) and focus (the degree in which discussions were felt to be centred around the key issues).	Dean and Sharfman (1993a, 199b, 1996)	This definition argues that rationality as a concept comprises sub-processes namely completeness, thoroughness and focus.
7.	Formal analysis which refers to "the use of written documents supporting the results of some systematic study of a specific issue".	Langley (1989)	Rationality is viewed as an analytic tool.
8.	The "extent to which the decision makers follow a systematic process in reaching carefully through-out goals".	Schwenk (1995, p.475)	Rationality is considered as a process
9.	Comprehensiveness is considered as an aspect of rationality.	Fredrickson (1984)	Rationality as a measure of comprehensiveness
10.	Rationality is the extent to which the decision process involves the collection of relevant information and the reliance upon analysis of this information in making a choice.	Walter et al., (2012)	Rationality is viewed as an analytic tool.

Table 2.2, Definitions and explanations of rationality

2.7.2 Rationality in decision-making in HEIs

In the everyday life of an institution, decisions are taken by both faculty and staff members on many issues. For instance, deans of colleges may be concerned about issues related to recruitment and selection of additional faculty to meet the demand created by growing number of students. Chairpersons of departments may be concerned about enhancing the student performance in particular subjects and may need to take decisions on whether market-oriented courses need to be introduced. In the administrative area, the head of human resource may be concerned about the

staff development needs of both faculty and staff and may take decisions regarding their training needs. All of these decisions affect the institution in various ways. How such decisions are made in those institutions however is arguable. For instance, deans of colleges are often faced with the need to recruit additional faculty for the college, not always by applying the criteria stipulated by the institution for such selections, but by using other factors such as intuition or subjective norms. In such situations it can be seen that rationality as a factor has not been used in the decision-making, leading to questions on the merits of the decisions made. In the above example it can be seen that the contention of some researchers (Whittemore, 1998; Hazelkorn, 2008; Sharp, 2009; Nutt & Wilson (2010); (Machingambi & Wadesango, 2012) who argue that HEIs are irrational by nature may find resonance. However, such contentions might be anecdotal as the evidence produced by those researchers is highly subjective and hence there is a need to know whether rationality as a factor could affect the process of decision-making in HEIs at all. In the literature, it is argued that institutions can show two types of strategic decision-making behaviour- clear and consistent; or ambiguous, inconsistent, and chaotic (Barwick, 2014). The most relevant to this research is the former, i.e. clear and consistent behaviour of HEIs that offers the necessary support to the premise that rationality could be a useful factor in HEIs, despite existing criticisms. Thus, rationality as a factor is critically reviewed in this research in the context of HEIs, and it is suggested that further investigations could reveal how rationality could be operationalised in SDMPs in HEIs.

2.7.3 Theories concerning rationality in decision-making

The concept of rationality is well grounded in a number of theories including organisational theory (e.g. see Ostrom, 2006; Jones et al. 2006), behavioural theory (e.g. see Ostrom, 2006), social-choice approach (Arrow's, 1963), classic economic theory (Downs, 1957), successive limited comparisons model (also known as incrementalism) (Lindblom, 1959), game theory (e.g. see Fudenberg & Levine, 1997), statistical decision theory (e.g. see Simon, 1955), psychological theory (e.g. see Simon, 1955), rational choice theory (e.g. see Friedman, 1953; Monroe, 1991; Kahneman 2002), bounded rationality (March & Simon, 1958), prospect theory (Kahneman and Tversky, 1979), comprehensive rationality (e.g. see Jones et al. 2006) and expected utility theory (Camerer and Thaler, 1995). However, it has been argued that the application of these theories to research on rationality has not produced conclusive results and that these theories may not be useful for application in all contexts or situations (e.g. see Jones et al. 2006). For instance, Jones et al. (2006) argue that rational choice theory is more idealistic than realistic as its application to decision-making behaviour under uncertain circumstances is rarely found to support results derived in real life situations. Simon (1985) argues that comprehensive rationality ignores the process of individual

decision-making as it essentially focuses on outcomes of decision-making. Bounded rationality has been criticized for not explaining the seamless movement of individuals between ranked goals as it posits that individuals find it difficult to trade off one goal in preference to another in making choices (Slovak 1990; Tetlock 2000). Detailed examples of these criticisms have not been provided here to maintain the focus of this research on the SDMP and not deviate into a discussion on the theories of rationality. However, the literature shows that extensive research on rationality has produced reasonable evidence to suggest that many different theories like those mentioned above could be useful in particular instances to explain certain phenomena under investigation.

Although rationality as a concept has been grounded in a number of theories (see above), in the context of HEIs researchers have rarely focused on rationality. Much of the literature shows that organisational, politicization and behavioural theories dominate the discourse on rationality in HEI decision-making, with bounded rationality and comprehensive rationality also finding their place (Jones et al. 2006). Thus from the literature review above it can be seen that rationality as a concept can be explained using many different theories in explaining the HEI SDMP.

2.7.4 Schools of thought of rationality in decision-making

There are various schools of thought on rationality. Mintzberg et al (1998) classified it as ten schools (Table 2.3), though Kalberg (1980) argued that rationality as a concept has been well examined. Quoting from Max Weber (1920-1923), Kalberg (1980) highlighted that rationality is polymorphous and identified four types of rationality - practical, theoretical, substantive and formal (Table 2.4).

Rationality Schools of thought	Explanation about what strategy formation means to the school of thought
Design School	Treats strategy formation as a process of conception
Planning School	Views strategy as a process that is formal
Positioning School	The perspective of strategy in this school is one of analytical process
Entrepreneurial School	In this school strategy is formulated as a visionary process
Cognitive School	Mental process forms the basis of strategy formation
Learning School	Strategy formation is considered as an emergent process
Power School	The process of negotiation is central to this school in strategy formation
Cultural School	A process that is collective in nature is the feature of this school
Environmental School	Formation of strategy in this school is described as a reactive process
Configuration School	This is a school in which strategy formation is a transformation process

Table 2.3**,** Schools of thought of rationality (adopted from Mintzberg et al 1998)

Rationality types	Explanation about what strategy formation means to the type of rationality
Practical	Accepts given realities; analyses the most expedient means of dealing with the difficulties real situations present; manifests in the form of man's capacity for means-end rational action.
Theoretical	Involves a conscious mastery of reality through the construction of increasingly precise abstract concepts rather than through action.
Substantive	Directly orders action into pattern in relation to a past, present, or potential "value postulate".
Formal	Relates to spheres of life and a structure of domination that acquired specific and delineated boundaries only with industrialization: most significantly, the economic, legal, and scientific spheres, and the bureaucratic form of domination.

Table 2.4**,** Weber's conceptualization of types of rationality (adopted from Kalberg, 1980)

The different schools of thought and types of rationality explored by researchers provide a very wide view of rationality as a concept. Further, critics of the schools of thought and Weber's rationality types have pointed out that there is no single way of understanding rationality as a concept. For instance, Kalberg (1980) criticizes Weber for the lack of clarity that surrounds Weber's analyses of rationality. Kalberg (1980) argues although not unequivocally that long term processes of rationalization are grounded in values rather than in interests. This shows the duality prevailing in the understanding amongst researchers about the concept of rationality. The ten schools of thought identified by Mintzberg et al (1998) also have been criticized by researchers (e.g. Elfring & Volberda, 2001). Elfring and Volberda (2001) argued that the ten classifications indicate that every school of thought is related to a certain point of the total picture but is not concerned with other points of the total picture that are relevant to rationality. Elfring and Volberda (2001) identify that when one considers the various contributions, limitations, conjectures and context of the ten schools of thought, then the fragmentation in the domain of strategic management by those schools becomes very clear. Thus any attempt to understand rationality as a concept and applying the principles and interpretations underlying those explorations of the ten schools of thought or Weber's types of rationality could lead this research to focus on the theory of rationality and its limitations rather than focusing on the central theme of this research which is the HEI SDMP. However, keeping in view the importance of rationality for the SDMP, the researcher used parsimony as the basis to involve rationality as a decision process characteristic in this research, taking into account the usefulness or otherwise of the concept to the HEI context.

2.8 Intuition

Although its association with other factors is not well discussed in the SDMP literature, intuition as a decision process factor has been argued to be important in the organisational decision-making process (Kolbe et al. 2013). For instance, Kolbe et al. (2013) claim that the relationship between political behaviour and intuition in the SDMP is not well understood and there is a need to study the inter-relationship between these two decision process dimensions as the interaction between these two factors has the potential to affect the SDMP. They also argue that in the SDMP literature, some (e.g. Agor, 1986, Dane & Pratt, 2009, Elbanna & Child, 2007, Shapiro & Spence, 1997) have attempted to establish an association between rationality and intuition based on certain assumptions, but such assumptions are not backed by rigorous empirical data. While many authors (e.g. Agor, 1986; Blattberg & Hoch, 1990; Shapiro and Spence, 1997; Kathri and NG, 2000; Dane & Pratt, 2007) have argued that intuition plays an important part of the SDMP in organizations, some have contradicted this, for instance Elbanna & Child (2007) who argue that the relationship between intuition and decision-making effectiveness is weak. Thus, it is reasonable to infer that in the SDMP literature, the role of intuition as a primary factor is not well established and is unclear and that there is a need to know what role it has in the SDMP, especially in HEIs. Even the limited evidence available that claims that intuition is an essential decision process dimension is not generalisable, clearly leaving a vacuum in our understanding of the role of intuition in the decision-making process.

2.8.1 What is intuition?

The concept of intuition has been variedly described in the literature. For instance, Stanovich and West (2002) claim that there are two types of decision-making systems, one equated to the intuition or instinct of the decision maker as in this system the decision-making process is fast, automatic, effortless and emotional (Miller and Ireland 2005). This is in contrast to the other system of decision-making that is slow, controlled, requiring effort, rule-governed, and flexible (Kahneman 2003) and is seen to be more typical of the rational decision-making process (Bazerman 2006). Dane and Pratt (2007, 2009) characterize the intuitive decision-making process as one where the decision maker quickly synthesizes and integrates information and uses his or her experience. Locke (1979) makes a serious charge that intuition is not a well-defined concept and suggests that it is not well grounded in applied literature or research literature, arguing that what some perceive as intuitive may not be innate. Despite this confusion about intuition as a concept, empirical research on intuition has been a major focus in the strategic decision-making literature (e.g. Agor, 1986; Blattberg & Hoch, 1990; Shapiro and Spence, 1997; Kathri and NG, 2000; Dane & Pratt,

2007). There have nevertheless been calls from researchers (Kolbe et al. 2013; Cowlrich et al., 2011; McNally et al., 2007) to investigate its influence on the strategic decision-making process in organisations including HEIs.

2.8.2 Theories supporting intuition

Literature shows that the concept of intuition is grounded in various theories concerning decision-making. Epstein (1990) anchored the concept of intuition on psychological theories of information processing, which found empirical support from others (e.g. Burke and Miller, 1999). Epstein (1998) postulated a new theory, the Cognitive-Experiential Self-Theory, which explained that information processing is done in two very different ways, one based on emotion (experiential-intuitive), the other on intellectual capacity (called rational-analytical). In this research the focus is intuition and so it is reasonable to argue that experiential-intuitive plays an important role in decision-making. Simon (1987) argued that intuition as a factor of decision-making rests on dispositional and contextual factors. From the classical theorists' angle, when one views intuition through the rational angle, it is seen as a distinct pattern of thought (Jung, 1971). From the transpersonal theorists' angle, intuition is considered an independent phenomenon but one complementing rational behaviour (Goldberg, 1983; Vaughan, 1979). Salton (1996) proposed Organizational Engineering theory to explain how people use intuition, and Maslow (1970) anchors intuition on the theory of denial. However, it is Agor (1983c) who has been credited with conducting the most extensive of research on the concept of intuition, suggesting that in future decision makers will be forced to make decisions more rapidly and with less complete data or missing data or with problems related to data integrity (KPMG, 2016), implying that intuition will play a leading role. So, while there has been much thinking and research on intuition, the resulting theories do not conclusively explain how intuition as a factor performs in decision-making (Fields, 2001), as the outcomes are disparate and not generalizable. Thus, there is a need to know which of the theories could be chosen for anchoring intuition as a factor affecting the HEI SDMP. There is hardly any research that clearly explains how intuition could underpin particular theories, a lacuna that needs to be addressed.

2.8.3 Intuition in HEIs

The concept of intuition is an intriguing one. While most researchers in their discourse on decision-making behaviour have viewed intuition as representing the opposite of rationality, some (e.g. Klein, 2004), argue strongly that almost every decision taken by decision makers in organisations is intuitive (including possibly HEI academics), suggesting that 90% of the decisions people make

are intuitive, citing a study of army officers in the US that showed that 96% of them used intuition in planning (Nemeth & Klein, 2010; Klein, 2004; Klein, 1998). This argument is strongly opposed by others, for instance Wideman (2002), who quoting measurements conducted by Keirsey and Bates (possibly on North American population which might have included HEI academics) using Myers-Briggs Type Indicator (MBTI), argues that intuitive type of people are about 25% of the population and introvert-intuitive form about 5%. These arguments are highly controversial. although some have argued that teachers as a whole are vastly intuitive in behaviour (Ivanko, 2013), and this could include decision-making behaviour. In a case study of the grading and moderation procedures for classification of degrees on a part-time franchised degree course conducted by Ecclestone (2001), it was found that academics agreed on explicit criterion-based as well as implicit intuitive methods to assessment. However Simon (1993) argues that many of the problems related to administration and education faced by HEIs have become complex and involved, and such problems seem to have more than one solution, leading to difficulties in using intuition to select a particular solution in the organisational context. This identifies the need to include other HEI SDMP characteristics such as rationality alongside intuition. However, Tat et al. (2012) show that hardly any study has been conducted related to academia with regard to intuitive decision-making style. This is a major lacuna in the decision-making literature that needs to be addressed, and this could be highly beneficial to both the HEIs and the academic staff themselves.

2.8.4 Relationship between intuition and other SDMP characteristics

While hardly any empirical research has been conducted on intuition in the SDMP, there is a growing recognition that intuition could be used as a viable approach in the SDMP. However, the literature shows a wide divergence on views on the role of intuition (see Section 2.8.1). There is little empirical evidence to show how intuition as a concept interacts with SDMP factors or strategic decision characteristics or decision outcomes or environment. Some researchers (e.g. Padakis & Barwise, 1997) have suggested that intuition should be combined with rationality in the SDMP while others (e.g. Agor 1989a; Mintzberg 1994; Quinn 1980) have suggested that intuition may be used by top executives in unstable environments. Khatri and Ng (2000) point out that intuition is related to firm performance. Butler (2002) points out that managers take decisions using both political and rational processes. Others show that intuition is the opposite of rational and political processes (Sadler-Smith and Shefy, 2004). These arguments show that while intuition is used in the SDMP, there is no consensus between researchers on its significance to the SDMP. Thus there is a need to investigate intuition as an SDMP component particularly in HEIs.

2.9 Strategic decision effectiveness

Considered as a decision outcome, strategic decision effectiveness has been recognized as a factor influenced by SDMP process characteristics by Elbanna and Child (2007), an argument echoed by Butler et al. (1993). There have been calls to investigate how SDMP characteristics influence decision process outcomes because of the purported need to understand whether decisions taken through the SDMP can help achieve an organisation's objectives. For example Dean and Sharfman (1996), suggest that at the time of decision-making, strategic decision effectiveness as a concept may be able to explain whether the decision taken through the SDMP in reality achieves the stated objectives of the organisation. However, considering strategic decision effectiveness as an SDMP outcome is not without controversy. Some consider strategic decision effectiveness as indicating organisational performance e.g. Brown (2005) who found a direct relationship between strategic contributions and organizational performance during the evaluation of strategic decision-making. However, there is agreement among some researchers (e.g. Butler et al.1993; Elbanna and Child, 2007; Eisenhardt & Bourgeouse, 1988; Dean & Sharfman, 1996) that in the first instance strategic decision effectiveness needs to be considered as an SDMP outcome rather than the outcome as the implementation of a decision.

To understand how strategic decision effectiveness as a decision process outcome is important for this research, two aspects were considered. One is that the SDMP literature shows that there is relationship between SDMP characteristics and decision process outcomes (Rajagopalan et al. 1993) and knowledge about such relationships enable an understanding about the decisions taken through the SDMP (Trull, 1966). The second is that the context of organisations' SDMP outcomes and their relevance to implementation has hardly received any attention, an argument that could be extended to HEIs also. HEIs seem to have a serious problem in making effective strategic decisions because they are often flooded with too much information, which can hamper effective judgement and decision-making (Diamond et al. 2014). Examples include barriers in decision-making concerning curricular change (Oliver & Hyun, 2011), which has been identified as a major aspect affecting the well-being and effectiveness of delivery of higher education (Barnett & Coate, 2005, p. 7), and making decisions to implement policies affecting ethical issues, which is a major problem in HEIs (Couch, & Dodd, 2005). If HEIs have difficulty in making effective decisions, then implementation of those decisions could bring poor results.

The theoretical underpinnings of the concept of strategic decision effectiveness can be traced to many theories including the theory of decision-making of Cohen et al. (1972), of problem solving

behaviour of Simon (1960), of contingency (Miller and Friesen, 1983; Fredrickson & Mitchell, 1984; and Baum & Wally, 2003), of information processing (Atuahene-Gima & Li, 2004) and of goal-setting (Locke & Latham, 1990b). Although other theories, for instance commitment theory (Guth & MacMillan, 1986), motivational theory (Moorhead & Griffin, 1989), self-efficacy theory (Bandura, 1977, 1986) and theory of user calibration (Kasper, 1995) have also been applied in understanding decision-making processes, this research argues that decision-making theory, problem solving behaviour and contingency theory provide the required support in understanding the decision-making processes in organisations, including HEIs. For instance, decision-making theory has been argued to contribute in understanding the managerial decision-making process (which includes decision-making process outcomes) with a focus on the external view as well as internal view of the process (Abril, 2001).

Since decision effectiveness is considered to be the outcome of a decision process, the relevance of decision theory to any research related to the SDMP can be explained. The use of Simon's problem-solving ideas in investigation of the SDMP can be explained by the support it lends in understanding how managers solve problems as part of decision-making, for instance using bounded rationality (a variant of rationality, a decision process construct) or prior experience (a part of intuition (Brandenburg & Sachse, 2012) which is a decision process construct). The concept of problem solving has been considered significant to any decision process outcome including decision effectiveness (Abril, 2001). Similarly, it is found that contingency theory finds application in the decision making process. For instance, some decisions are taken under varying environmental conditions including those that are uncertain and changing. Using them as contingency variables in the decision-making process (Atuahene-Gima & Li, 2004) it is possible to explain the decision-making process a part of which is the decision-making effectiveness (Elbanna & Child, 2007). Contingency theory can be applied in such situations to explain the decision making process. These arguments are applicable to the context of HEIs, where managers face a similar situation in the decision-making process. For instance, Machingambi and Wadesango (2012) argue that in HEIs there is always contention about who has the right to make certain decisions and on what basis. An academic may feel that he or she is right with regard to a certain decision while such a decision may not be carried through by the dean to whom the faculty reports because the dean may be constrained due to limits on the authority given. Further, faculty members across the spectrum are identified by their area of specialization, so a decision could the faculty split along the lines of specialization and their views on what they consider as truth or reality or values (Machingambi & Wadesango, 2012). In such situations within the same department in a college, there can be

divisions amongst the faculty on what constitutes an effective decision and whether the decision-making process is effective.

To explain these situations, it is reasonable to apply theories such as contingency theory, that takes into account the various contingent aspects affecting decision-making, for instance, whether majority of the faculty are in favour of a certain decision. Faculty behaviour or attitudes could be considered a problem-solving characteristic, so it is possible to apply Simon's problem-solving theory to understand how faculty members or their managers handle complex situations. If such contingencies are taken into account then it is imperative to apply decision-making theory to understand whether the process is effective. These examples show that the three theories, namely the decision-making theory, the problem solving behavior theory and the contingency theory, are useful in the context of HEIs. Applying these three theories to the HEI decision-making process could provide new knowledge on whether the decision-making process and decisions made through such a process are indeed effective or not.

2.9.1 Relationship between decision characteristics, decision process characteristics and decision effectiveness

Most literature on the HEI decision-making process focuses on strategy formulation but not decision implementation (Li et al. 2008). So, if decisions have to be implemented then decision outcomes must be understood. If decision outcomes are to be understood, it is necessary to understand the linkage between SDMP characteristics and decision process outcomes. Thus deriving support from the arguments of Elbanna and Child (2007) and Rajagopalan et al. (1993), it is posited that SDMP characteristics affect the decision process outcome. In the present research, this argument can be translated into a link between such aspects as rationality, intuition and decentralisation in HEI decision-making on the one hand and strategic decision effectiveness on the other. However, the literature suggests the need for a closer look at the relationship between decision process characteristics and decision effectiveness (Elbanna & Child, 2007; Rajagopalan et al.1993), due partly to the benefits that could be brought out, leading to better understanding of the HEI decision-making process. This argument could be extended to the relationship between decision characteristic variables (e.g. decision importance) and decision effectiveness as literature argues that there could be some relationship between the two (Elbanna & Child, 2007; Rajagopalan et al.1993). This could lead to debate on whether decision characteristics such as decision importance can in reality affect decision effectiveness and if so what role the decision characteristics play with regard to decision-making process effectiveness.

The foregoing discussions have critically reviewed the different aspects pertaining to the strategic decision characteristic variables, strategic decision process variables and the strategic decision process outcome variables. The review covered focused on the possible relationship amongst some of the variables identified in the literature and their purported importance to the HEI decision-making process . However one aspect, namely environmental factors (both internal and external), has not yet been addressed. In the HEI context these have been identified as a major influence on the SDMP (Ashmos et al. 1997; Goll & Rasheed, 1997; Rodrigues & Hickson, 1995). Thus, the following sections critically discuss the external and internal environmental factors that could influence the HEI SDMP.

2.10 External and Internal environment components

There appears to be a broad consensus on the part of researchers that environmental factors, both external and internal to an organization, influence the strategic decision-making process (e.g. Rajagopalan et al. 1993; 1994; 1997; Papadakis et al. 1998; Krishnan & Singh, 2004; Elbanna & Child, 2007; Rajagopalan et al.1993; Soetanto & Dainty, 2009). Examples of external environment factors include uncertainty, complexity and financial impact (Eisenhardt, 1989; Fredrickson & Mitchell, 1984; Fredrickson & Iaquinto, 1989), while internal factors include administrative context (Collis & Montgomery, 1997; Miller, 1987; Fredrickson, 1986), decision-making level and power distribution (Burgelman, 1983a; Bourgois & Eisenhardt, 1988; Pfeffer, 1992), management team characteristics (Eisenhardt et al. 1997; Hitt & Tyler, 1991), systems, performance, size and ownership (Papadakis et al. 1998).

Environmental factors have been differently treated in the strategic decision-making literature. For instance, Elbanna & Child (2007) argue that environmental uncertainty (external environmental factor) and firm performance (internal contextual factor) act as moderating variables in the relationship between SDMP characteristic and the SDMP outcome variables. Richter & Schmidt (2005) consider environmental factors as contextual factors and treat them as antecedents of the SDMP, an argument that is echoed by Rajagopalan et al. (1993). This inconsistency is not surprising as the impact of environmental factors on the SDMP appears to not to have been not well understood. The explanations and arguments of Elbanna & Child (2007), Richter and Schmidt (2005) and Rajagopalan et al. (1993) in regards to environmental factors are seen to be contradictory. For instance, Elbanna & Child (2007) argued that environmental uncertainty (external environmental factor) and firm performance (internal contextual factor) moderate the

relationship between the SDMP and process outcome. However, the results of their research on manufacturing firms in Egypt showed contradictory results. Environmental uncertainty as a moderator was not found to affect the relationship between the SDMP and process outcome whereas firm performance was found to be a significant moderator of the relationship between the SDMP and process outcome. They also reported that the relationship between rationality as a decision-making process and decision effectiveness was not moderated by firm performance.

In considering environmental factors as antecedents of the decision-making process in the context of investigating strategic decisions in manufacturing firms in Greece, Papadakis et al. (1998) found that external environmental factors heterogeneity and complexity were not found to influence the SDMP whereas environmental dynamism was found to influence SDMP negatively and significantly, while internal contextual factors, namely formal planning, firm performance and decision control type were found to influence SDMP significantly, whereas firm size was not found to exert any influence on SDMP. Their research contradicted the arguments of Hannan and Freeman (1977) and Jemison (1981), who argued that external environmental factors are primary factors that influence strategic decisions but not the internal organisational factors. The discussions above lead to the following inference. That is there is no concrete evidence in the literature to suggest environmental factors act as moderators of the relationship between SDMP and decision process outcomes or antecedents of SDMP. Some research outcomes (e.g. Papadakis et al. 1998; Elbanna & Child, 2007) are not consistent with regard to the influence of various environmental factors. There is evidence to suggest that some environmental factors affect the SDMP and its relationship with the process outcome significantly and hence it is not possible to ignore the influence of environmental factors on SDMP and its relationship with the process outcome.

Therefore, it is reasonable to assume that environmental factors could play an important role in SDMP research, although choice of environmental factors affecting the SDMP could depend on the context in question. Thus there is a need to choose those environmental factors based on their relevance to context of HEIs for critical examination of their role in the SDMP of HEIs – the subject of the next section.

2.10.1 External environmental factors

One of the important environmental factors that affects strategic decision-making is environmental uncertainty (Andesto, 2016; Abou-Moghli, 2016). Environmental uncertainty affects the performance of the organization and has major implications for the SDMP (Andersen et al. 2016).

It is often suggested that failing to notice changes in the external environment can harm the organization, an aspect that should be considered while making strategic decisions (Page, 2016). Uncertainty in the external environment is particularly prevalent and therefore important to HEIs, which are constantly faced with problems such as the impact of changing demography on enrolment and the impact of the business climate (Page, 2016).

2.10.2 External environmental uncertainty

Planning for the future is complex and the complexities arise due partly to uncertainties in the external and internal environment (Soetanto & Dainty, 2009). Any planning process that does not take into account these uncertainties is likely to lead to problems. For example, if the SDMP does not take into account how technology is likely to change, an organisation's competitive advantage could be eroded due to lack of updated technology (Teece, 2010). Although the impact of environmental uncertainty on strategic planning is evident, literature highlights that investigations on environmental uncertainty, in particular external environmental uncertainty, is sparse (Nooraie, 2012).

As strategic planning is related to the SDMP (see Section 2), environmental uncertainty can be argued to affect the SDMP. The concept of uncertainty in business environments can influence the SDMP (Daft & Macintosh, 1981; Eisenhardt, 1989; Gal-braith, 1973; Tushman & Nadler, 1978). Atuahene-gima and Li (2004) studied the moderating effect of technology uncertainty and demand uncertainty on the relationship between strategic decision comprehensiveness and new product performance in Chinese firms. Atuahene-gima and Li (2004) found that technology uncertainty moderates the relationship between strategic decision comprehensiveness and new product performance negatively while demand uncertainty influences the relationship positively. Eisenhardt (1989) (also see D'Aveni, 1994) points out that under uncertain circumstances it is hard to achieve consistency between corporate strategy and strategic decisions over time as managers in organisations may have to handle continuous change.

Although uncertainty in the environment has been identified as an important factor that could affect the SDMP, what is not clear is how to cope with such uncertainties. Black and Farias (1997) argue that actions that are initiated to minimize uncertainties can create non-linearity and unpredictability. Mason (2007) argues that when organisations make changes in a market it can create a ripple effect which may disturb the whole market, leading other firms in the market to attempt to change their strategy. Do these arguments apply to HEIs? a question that does not yet to have been answered in

the literature. Papadakis et al. (1998) argue that customer's buying habits, the nature of competition, market dynamism and market uncertainty, impact the SDMP. These aspects affect HEIs. For instance, HEIs are facing greater competition, with more educational options available for students (see Section 2.5.1).

The education sector is faced with many uncertainties, including faculty availability, curriculum issues, and changing technologies (Thomson Reuters, 2010; Ivory et al. 2006; Ivory et al. 2007; Hawawini, 2005). The question that arises is how to tackle these external uncertainties. According to Louis (1980), uncertainty leads to different interpretations of what is happening and what needs to be done. Literature strongly emphasizes that there is a need to study the complex factors that make up environmental uncertainty and their influence on the SDMP, though little attention seems to have been paid to the concept of environmental uncertainty in this context. Soetanto & Dainty (2009) suggest that how a firm's members assume the future would be in terms of associated uncertainties and risks and use this assumption in strategy formulation is little understood. The influence of environmental uncertainty on HEI SDMPs has been under-researched (Nooraie, 2012). This present research examines how external environmental uncertainty could affect the HEI SDMP. However, such an examination must also clarify how uncertainty as a factor could be represented and included in the SDMP.

2.10.3 Relationship between environmental uncertainty and SDMP

Environmental uncertainty has been described as affecting the SDMP (Nooraie, 2012). For instance, Dean and Sharfman (1996) investigated the moderating effect of environmental uncertainty on the relationship between procedural rationality (SDMP characteristic) and organisational outcome (SDMP outcome) although they found that environmental uncertainty does not moderate that relationship. Elbanna and Child (2007) investigated the moderating effect of environmental uncertainty on the relationship between rationality, intuition and political behaviour on the one hand and decision effectiveness on the other, although they also found that environmental uncertainty does not affect those relationships. However Wally and Baum (1994 used environmental uncertainty (industry structure) as a determinant of its influence on the speed of SDMP and found that centralized structures were positively related to speed of SDMP while formalized structures were negatively related to it. Thus, research on environmental uncertainty has viewed it both as a moderator and determinant with regard to its influence on SDMP, and there seems to be no agreement on what conception of environmental uncertainty is most suitable to investigate its influence on SDMP.

As far as theoretical propositions are concerned, Elbanna and Child (2007) argue that the contingency approach has been used by one set of studies (Khatri & Ng, 2000; Fredrickson, 1983) while others have depended on rationality theory (e.g. Eisenhardt, 1989). Elbanna and Child (2007) also report that some studies have not adopted either line of thought (e.g. Dean & Sharfman, 1996). Applying the contingency approach, the SDMP is explained to be affected by environmental characteristics, while the rationality theory enables the understanding of SDMP through the use of data and information and explains how faster decision-making takes place. Although adoption of different approaches have produced contradictory results (Elbanna & Child, 2007), it is necessary to know how the operation of environmental uncertainty can be explained using one of those theories or approaches.

The foregoing discussions have highlighted how environmental uncertainty is explained in the literature as a concept and has been treated and operationalized in different studies on SDMP. The importance of environmental uncertainty in studying SDMP in the context of HEIs has been identified although research shows that the concept of environmental uncertainty and its impact on SDMP have only been investigated in the industrial sector, not the education sector. This is a major gap. After reviewing the literature on the environmental uncertainty the next section discusses the internal context that affects SDMP in HEIs.

2.11 Internal context

Literature shows that many internal factors affect the SDMP (Elbanna & Fadol, 2016). Context-rich research is increasingly being sought in management disciplines (Galvin, 2014). Many internal contextual factors have been identified as affecting the SDMP e.g. systems, performance, size and ownership (Papadakis et al. 1998). HEIs' performance is under constant scrutiny by stakeholders. So, research on HEIs, particularly on their SDMPs, must include the impact of organisational performance on SDMP.

2.11.1 Internal firm characteristics: organisational performance

The importance of organization performance or firm performance to the SDMP has been acknowledged by many researchers of the SDMP (e.g. Elbanna, 2011; Elbanna & Child, 2007a; Phillips & Moutinho, 2000; Khatri & Ng, 2000; Jones et al., 1992; Fredrickson, 1985; Bourgeois 1981), yet it has received limited attention in the research (e.g. Elbanna, 2011). Although there are differences in the conceptualization of organisational performance as a construct, organisational performance is considered a driver of the strategic decision-making behaviour of managers

(Elbanna, 2011). Elbanna & Child (2007a) conceptualized firm performance as a moderator of the relationship between SDMP characteristics and SDMP outcomes, while others have treated organisational performance as the outcome of SDMP (e.g. Fredrickson & Mitchell, 1984; Eisenhardt, 1989; Priem et al., 1995). This may be because some researchers (e.g. Elbanna & Child, 2007a) have used past performance as important determinants of future decisions, in which case it can be treated as a moderator of the SDMP and its outcomes. Other researchers (e.g. Fredrickson & Mitchell, 1984; Eisenhardt, 1989; Priem et al., 1995) argue that organisational performance is the net outcome of any decision-making process and is an important indicator of organisational effectiveness. Thus, there is no unanimity in how organisational performance is conceptualized in the SDMP literature. For instance, Papadakis et al. (1998) examined the findings of the research by Bourgeois (1981) and March and Simon (1958), and concluded that lean resources enable organisations to adopt a strategy of satisficing and making suboptimal decisions. This conclusion was interpreted by Papadakis et al. (1998) as indicating a negative relationship between performance and rational decision-making, a SDMP component. Papadakis et al. (1998) report that others (e.g. Jones et al. 1992; Smith et al. 1988) have found a positive relationship between performance and comprehensiveness (an SDMP component) in decision-making in small and large firms. These arguments clearly portray conflict in how organisational performance is understood with regard to SDMP.

Organisational performance is considered an internal factor of an organization in all the arguments cited above, and is treated as an important internal contextual component that impacts the SDMP, either as a final predicted (e.g. Fredrickson & Mitchell, 1984; Eisenhardt, 1989; Priem et al., 1995), moderating (e.g. Elbanna & Child, 2007a) or determining factor of decision processes (Papadakis et al. 1998). Elbanna and Child (2007a) identify the paucity of research that treats organisational performance as a moderator in the relationship between the SDMP and SDMP outcomes. This argument is supplemented by Rajagopalan et al. 1993), who say that studies that have investigated the relationship between past performance of an organisation and its SDMP are rare and that much SDMP literature has investigated organisational performance with regard to strategy as content, planning and strategy formulation processes, rather than decisions that are strategic in nature.

2.11.2 Organisational performance as a factor affecting SDMP in HEI

While the importance of organisational performance as an internal contextual factor to SDMP is highlighted above, the research work and the discussions cited above are largely related to industry settings and not HEIs. Before discussing organisational performance as a factor affecting the HEI

SDMP, it is important to understand what triggers the need to investigate organisational performance as a factor in regard to HEIs. Cabrera et al. (2000) argue that international experience on HEIs points out that performance indicators of HEIs are set to play an important role in HEIs performance indicators were not considered important until recently. The reason why such a claim emanates could be attributed to the possible fluctuation in performance of HEIs caused by the pressure social, economic, and technological factors exert on HEIs. Those factors may have significant influence on the performance of HEIs. For instance, the workplace is changing both within and outside the HEIs. Work roles are changing with such quick succession as never seen before and people have an enlarging number of careers over their lifetimes. The knowledge explosion is redefining academic programmes, leading to shortening of the useful life of particular programmes. There is a constant need to update and enhance the knowledge and skill people possess. The number of students enrolling in HEIs is rising, with changing demography, wider diversity of student interests, varying abilities of students and greater variation in the preparation by students for studying in HEIs. These forces tend to affect the organisational performance of HEIs, as identified by Cabrera et al. (2000), who explain that internal factors, particularly those related to financial performance, play a leading role in determining whether the academic units of an institution and the institution itself have performed effectively. All these arguments show that HEIs must place a greater emphasis on the need to embed value and quality in the programmes delivered and services provided by them as they are faced with increasing competition, necessitating finding ways to perform better, quicker and in a more cost-effective manner. According to Cabrera et al. (2000) one way by which this can be achieved is by changing discourse from one that focuses on specific schemes to one that is grounded in strategic planning of performance and outcomes. This implies that HEIs need to move towards an organized way of dealing with internal and external factors, which includes organisational performance using strategic planning tools, an important aspect of which is the SDMP.

However, hardly any research has been conducted in understanding how organisational performance affects HEI SDMPs, with a few exceptions (e.g. Mador, n.d.). Even those that have attempted to study HEI SDMPs (e.g. Pfeffer & Moore, 1980; Hills & Mahoney, 1978), have not investigated the influence of organisational performance on SDMP. Nevertheless, in HEIs the importance of organisational performance has been well articulated in the literature (e.g. Higher Education Strategy Group, 2011). Given that organisational performance has been one of the main foci of many HEI funding programmes, strategic decisions taken by HEIs may not be able to ignore the importance of organisational performance in the SDMP. Cabrera et al. (2000) argue that it is

important to set performance goals at different levels of decision-making in institutions even before indicators of the performance of institutions are formulated. This implies that organisational performance should occupy a central position in decision-making at different levels in HEIs. Another model explains that it is not easy to measure the performance of HEIs that is the garbage can model, which criticises universities as organizational anarchies, implying that the SDMP is not organized. These arguments imply that it may not be easy to predict the performance of HEIs, although HEIs are one of the oldest types of organisation along with churches and the military (Janczak, 2005).

As far as including organisational factors in any investigation of HEIs, there are severalof reasons that justify why organisational factors need to be included in those investigations. Cabrera et al. (2000) reported in their study on institutional strategic decisions and performance indicators that many academic units in HEIs questioned the need to set explicit budgeting goals for their units , that academic units did not pay much attention to strategic decision-making and resource allocation and that the institutions they studied did not allocate funds in their budgetary process for investments relevant to curricular reform, distance learning or technological updating and upgrading. Similar sentiments are echoed by the Higher Education Strategy Group (2011), Ireland, who argue that the higher education system in Ireland is characterized by poor performance in the areas of lifelong learning, and upgradation of employee skills and competencies. There is a growing recognition that HEIs need to respond to these observations and improve their performance so that they increase the variety and diversity of providing education and improve the link between university education and training on the one hand and enhance support to students to increase their progression opportunities on the other. So, investigations may be necessary to address issues and aspects related to performance of HEIs at the conceptual level. One direction researchers suggest that could help in this situation is strategic planning and decision-making (Cabrera et al. 2000; Mador, n.d.); Universities UK, 2011).

The foregoing discussions amply demonstrate the importance of the need to include organisational performance as an internal contextual factor in any study pertaining to HEIs and in particular that is focusing on SDMP. However, a search through Google and different electronic databases (Ebsco and Proquest) revealed that there is a paucity of research into linkage between HEI performance (both past and future) and SDMPs.

However, using organisational performance as a factor to enhance decisions or decision process outcomes is not without its critics. For instance Talbot (2005) argues that performance is not a complete indicator, tending to obscure more than reveal, and claims that it is overly-complex, making it unusable, while performance measurement is expensive and prone to manipulation when it is linked to rewards and penalties. Despite such criticisms it is widely acknowledged that organisational performance is a major factor that needs to be taken into account in any research into SDMPs as it provides measurable indicators against which performance of the various academic units in an institution could be assessed. Thus the use of organisational performance is important in any SDMP research.

As far as theoretical underpinnings of organisational performance are concerned, as an environmental and contextual factor it has been grounded in contingency theory, which says that the SDMP is affected by environmental aspects (Elbanna, 2011). Romanelli and Tushman (1986) have linked organisational performance to firm characteristics, which in turn has been linked to the "inertial" perspective that they posit. According to this perspective, current organisational arrangements, structures, systems, processes and resources impact future SDMPs, although initially these aspects may be determined by management and environmental factors (Papadakis et al. 1998). Performance of an organization is linked to the “resource perspective”, a theory that posits that all strategic initiatives necessarily need resources, with resources needing to be considered as one of the determinants of the SDMP (Bourgeois, 1981; Pfeffer & Salancik, 1978). In summary, the organisational performance of HEIs assumes importance in SDMP and, arguably therefore, any investigation of the SDMP in HEIs must take it into account.

The discussions above have reviewed the literature with regard to the context of HEIs, the concepts of strategy, strategic planning and SDMP. The components of SDMP in terms of strategic decision, which include specific characteristics (decision importance), strategic decision-making process characteristics (rationality in decision-making, intuition and decentralization in decision-making), strategic decision-making outcome (decision effectiveness) and environmental factors (external environment – environmental uncertainty; internal context: organisational performance), have been critically reviewed. The need for understanding SDMP in HEIs has been discussed. Those discussions have also highlighted the gaps in the literature which have been brought out in the relevant sections. In order to understand in a nutshell what those gaps in the literature are the next section summarises the gaps found in the literature.

2.12 Examples of other strategic decision process characteristics that have been discussed in the literature but not addressed in this research

While this research has argued that three SDMP characteristics namely rationality in decision making, intuition and decentralisation in decision making, there are other SDMP characteristics that were considered in this research for investigation but not used. These were formalization, and politicization.

Formalisation is a phenomenon that addresses the extent to which certain policies, rules, plans or charts are articulated explicitly and formally in strategic decision making processes (Eisenhardt & Bourgeois, 1988). One of the important characteristics of HEIs is decision formalisation (Eurydice, 2008). The inclusion of this SDMP characteristic could provide knowledge on the extent to which formalisation say planning formalisation is related to organisational outcomes (SDMP outcome). However formalisation as a concept is seen to be opposed to uncertainty in organisaitons as literature shows that during uncertain times managers in organisaitons make formal rules obsolete and act intuitively (Papadakis et al. 1998). Considering the fact intuition is already part of the investigation and uncertainty is the environment variable that is addressed in this research, adding formalism in uncertain times would have meant somewhat of a repetition in this research. Hence formalism as an SDMP construct was not included. However this construct could be examined in studies that have used stable environments.

Another important SDMP construct that is usually seen in operation in organisations including HEIs is the politicisation of issues. According to Elbanna and Child (2007) political behaviour is a perspective that affects strategic decision making and is witnessed when decision makers have different goals and form groups to achieve their goals. In such a situation the choice of the most powerful group will prevail. While Child and Tsai (2005) argue that political behaviour is widely recognised as affecting decision making, Papadakis et al. (1998) argue that this construct is largely affected only by decision uncertainty (a SD specific characteristic). Thus in this research where the focus is on decision importance, an SD specific characteristic, politicisation was not investigated although politicisation is considered to be an important aspect of SDMP in any organisation (Child & Tsai, 2005) which could include HEIs.

2.13 Gaps found in the literature

The literature review provided in this chapter highlights a number of gaps in the SDMP literature. Particularly in the context of HEIs, section 2.2 shows that the importance of the concepts of

strategic planning and SDMP are major challenges for HEIs (Pritchard et al. 2016) and it appears to be a neglected area by researchers (Hinton, 2012). This is a major problem in the HEIs as if SDMPs are not implemented properly, decisions may be considered important when they are not and vice versa. In addition, decisions once implemented cannot be easily reversed making it all the more important to understand the concept of SDMP in HEIs because those decisions affect students, teachers and other stakeholders.

Sections 2.3 and 2.4 showed that SDMP as a concept needs further investigation both in the context of industries and HEIs. Studies by researchers like Papadakis and Barwise (1998) and Elabnna and Child (2007) clearly show that SDMP and its components as concepts are still not well understood and need further investigation, especially in different contexts. Most importantly, decision-specific characteristics, decision process characteristics and SDMP outcomes have been found to be under investigated and their potential to support HEIs in SDMP implementation has been overlooked. Thus there is a need to study these three components of SDMPs and find out how those components could be effectively used in HEI SDMPs prior to implementing decisions.

Furthermore, Sections 2.2 and 2.3 highlight that some studies (e.g. Papadakis & Barwise, 1998; Elabnna & Child, 2007) have linked the three components, although variedly, giving rise to disagreements in conceptualising those components and their linkage. For instance, Papadakis and Barwise (1998) have conceptualised decision-specific characteristics as independent variables while Elabnna and Child (2007) have conceptualised decision-specific characteristics as moderators of the relationship between decision process characteristics and SDMP outcomes. Such variations in conceptualisation raise validity and generalisability concerns relating to developing conceptual models, and provide different meanings for the relationship between decision-specific characteristics, decision process characteristics and SDMP outcomes and their operationalisation. This is another area that needs investigation as it is not clear how the decision specific characteristics operate in the SDMP.

Extending the arguments given above further to the actual constructs identified as decision-specific characteristics, SDMP characteristics and SDMP outcomes, some (e.g. Papadakis et al. 1998) have developed conceptual models to discuss how those constructs could operationalised and linked to each other and explain the relationship existing amongst those constructs. For instance Elbanna and Child (2007) developed a conceptual model depicting decision uncertainty, decision importance and decision motive as strategic decision specific characteristic and explained how those constructs

affected SDMP by using them as moderators. However Papadakis et al. (1998) have identified decision uncertainty as a determinant of SDMP characteristics and argue that it could affect rationality in decision making. This points out the lack of consistency in operationalising the constructs of SDMP and the knowledge available currently about SD specific characteristic is not comprehensive. More research is needed to know and understand how particular strategic decision specific characteristic constructs could be operationalised. This is a major gap in the literature.

Apart from the above, section 2.3 also identified several contextual factors representing the concepts of decision-specific characteristics, decision process characteristics and SDMP outcomes (e.g. decision importance, decision uncertainty, rationality in decision-making, intuition, decentralisation in decision-making, decision effectiveness and decision quality (see Sections 2.5 to 2.9). But in the HEI context, it is important to decide which of those contextual factors could illuminate the linkage between the three components of SDMP, bearing in mind that such a linkage should enable an understanding of the decisions made prior to implementation. Thus choice of the contextual factors representing the three components and their linkage in the SDMP needs understanding, a major lacuna in the literature.

Similarly as far as strategic decision making process is concerned constructs that symbolise SDMP have been treated differently in the literature by different authors. For instance some argue that while the constructs identified as SDMP constructs (e.g. rationality in decision making, intuition, decentralisation, formalisation and politicisation) have been used in various theoretical models of SDMP, those models seem to reflect the different conceptualisations of various organisations (e.g. Hart, 1992; Thompson & Strickland, 2003; Hacklin,& Wallnöfer, 2012; Schiavone, 2011). In those theoretical explanations the underlying suppositions about the decision context and decision specific characteristics appear to differ to a large extent. Those theoretical models have not established uniformly how those factors that are derived as SDMP characteristics interact with the SD specific characteristics or SDMP outcomes or environmental factors. For instance in the model developed by Elbanna and Child (2007) the relationship between rationality in decision making and decision importance has been depicted as moderated and moderator whereas the model developed by Papadakis et al. (1998) it has been shows as a predictor (decision importance) and predicted (rationality in decision making). Similar arguments have been posited in the SDMP literature regarding the lack of agreement in the theoretical models that have attempted to conceptualise the various factors derived from the concepts of SD specific characteristic, SDMP characteristic and SDMP outcomes that point towards the lack of a unique conceptualisation that

is acceptable. In fact in the HEI concept hardly any such conceptualisation has been produced. This is a major gap in this research.

Finally Sections 2.10 and 2.11 provide an outcome of the review of the literature with regard to environmental factors that affect any SDMP. The review shows that a number of factors (both external and internal) affect the SDMP. Research on SDMP shows that those factors can be operationalised as moderators of the SDMP. However it is not clear how those environment factors affect the relationship between decision-specific characteristics, decision process characteristics and decision outcomes. Lack of knowledge on how environmental factors moderate the linkage between decision-specific characteristics, decision process characteristics and decision outcomes can lead to decisions that are not related to the effects caused by changing environment. Especially in the HEI context, this lack of knowledge assumes significance due to the challenges changing environments pose to HEIs. Thus, this is another area that needs understanding as SDMPs react to different environmental factors differently.

2.14 Summary

This literature review has identified significant gaps in the literature. Reviewing the context of HEIs and the concepts of strategy, strategic planning and SDMP, it raises several questions and provides the basis to find ways to answer those questions. Significant areas that need to be understood are SDMP, the components of SDMP namely decision-specific characteristics, decision process characteristics and decision outcomes, contextual factors representing the three components, the linkage amongst those factors and the influence of environmental factors on SDMP. The review enabled the researcher to develop the theoretical framework for this research.

Chapter 3

Theoretical framework

3 Introduction

The previous chapter provided a comprehensive review of the SDMP literature with a focus on HEIs. The challenges faced by HEIs due to changes taking place within and around them and the limitations of those HEIs in dealing with these challenges have been discussed. In particular, the limitations related to making strategic decisions to tackle those challenges were highlighted in the review. In addition, the inadequacy of research outcomes in terms of providing suggestions to help HEIs to overcome the challenges was identified. The available models and application of theories to understanding SDMPs in organisations including HEIs were critically reviewed. The gap in the literature was identified. Taking into account the above, this chapter develops a conceptual model, with support of appropriate theories and models, to address the research questions and enable the researcher to attempt to fill the literature gap.

3.1 The status of the SDMP in HEIs

While the need for investigation into the SDMP in HEIs has been shown to be necessary, from the literature review provided in Chapter 2, it can be seen that the SDMP as a process is affected by strategic decision-specific characteristics, decision process characteristics and strategic decision process outcome factors (see Figure 2.1). Further, the review of the literature shows that it is necessary to examine these components in greater detail in order to identify the relationship between them and develop a mechanism or a conceptual model for developing a SDMP that could be implemented in a HEI. Such an examination is provided in this chapter, using appropriate theories and concepts reviewed in Chapter 2, leading to the development of the conceptual model that will enable the researcher to answer the research questions.

Amongst the different decision process outcome factors that were identified as determined by the SDMP (see Section 2.9), it was found that the decision effectiveness is a major factor that has serious implications for the implementation of the decisions. Thus, decision effectiveness becomes an important construct for this research. Since this construct is driven by the SDMP, the process characteristics assume importance as they influence the decision process outcome. Three decision process constructs have been identified in this research based on the review of the literature (see Section 2.3) namely rationality in decision making, intuition and decision decentralization. Details

regarding the choice of the process variables and their relationship with decision effectiveness are discussed below. In addition, from Figure 2.1 it can be seen that SDMP is influenced by antecedents (see Section 2.3). Amongst the different antecedents that have not been addressed well in the literature is decision importance, a significant factor that could influence the SDMP and the SDMP outcome. Details on how it affects the SDMP are discussed in Section 3.6.

Finally, the importance of environment factors was recognized. As explained in Section 2.10, environment factors are likely to determine the focus and nature of the SDMP. Amongst the different environment factors, environmental uncertainty was considered as important for this research, as it is the most widely considered external environment factor in the literature, as most decisions are made under uncertainty (Taghavifard et al. 2009). Similarly, organisational performance was chosen as the internal context factor for HEIs, as this factor is related to the outcome of any decision that is implemented. The influence of decision uncertainty and HEI performance on SDMP is discussed later in this chapter.

3.2 Decision effectiveness

From Section 2.3, Chapter 2 it can be seen that decision effectiveness has an important role to play. Despite its importance for the SDMP, Elbanna and Child (2007) argued that the nearest practical equivalent of decision effectiveness is organisational performance. A review of the literature also shows that decision effectiveness has an important bearing on the implementation of decisions (CIMA, 2008). For instance CIMA (2008; p. 9) says: "Effective decisions are those that achieve impact. An effective decision making process spans from how strategic decisions are informed and considered, through how performance and risk are assessed and managed, to how routine operational decisions are guided, made and governed so the intended impact is actually achieved". Implied in this assertion is the fact that decision effectiveness must be considered in any SDMP. This research applies these arguments to the context of HEIs and posits that any decision making process must drive organisations to make effective decisions as outcome of the process. Thus in this research, decision effectiveness has been identified as the final dependent variable - SDMP outcome characteristic. In support of this, this research relies upon decision theory, problem solving behavior and contingency theory (see Section 2.9). Using these theories, it is posited that any SDMP process outcome factor must be explained by the decision process adopted by managers (e.g. Deans of Colleges) in HEIs (e.g. use of intuition in decision making), problem solving behavior of people involved in decision making (e.g. using rationality in decision-making) in a

department or college (e.g. members of a College Council) and the various contingencies such as changing environment or contextual factors (e.g. decision decentralization) that affect HEI decision-making and effectiveness. An understanding of the concept of decision effectiveness and its relationship with SDMP characteristics is expected to answer the research question concerning how SDMP characteristics are related to HEI decision effectiveness in.

Next, it is argued in the literature (see Section 2.9) that the decision process outcome factors is the output of the SDMP and is driven by SDMP process characteristics (Elbanna & Child, 2007; Dean & Sharfman, 1996). As mentioned in the previous paragraphs, this research focuses on three specific SDMP characteristics, namely rationality in decision making, intuition and decision decentralization. Each one of these characteristics is discussed next regarding their relevance to this research and relationship to decision effectiveness in the context of HEIs.

3.3 Rationality in decision making and its relationship with decision effectiveness and antecedents

From the literature review (Section 2.7) it is seen that rationality is considered a major decision process characteristic in the SDMP literature. It is not clear whether rationality in decision making, although considered as important in the SDMP, is useful in the context of HEI SDMPs and whether it can support HEIs in enabling them to take effective decisions. While rationality is found to be useful in taking effective decisions where the environment is fast paced and highly politically charged (Barwick, 2014), it is also argued that final goals may be shrouded in cloud, while the process could consume too much time (Eisenhardt & Zbaracki, 1992). In addition, institutions are characterized by two kinds of SDMP behavior, namely, clarity and consistency on the one hand and ambiguity, inconsistency and chaos on the other (Barwick, 2014). Nutt and Wilson (2010; p. 34) noted that: “When decision-making is clear and concise, the institution is anarchical and acts as a background for decisions that may not be linear in process and may not be logical in a consistent sense”. Here the contradictory behavior of institutions could be witnessed. Hence there is a need to understand in such situations how SDMP can be made effective using rationality. In doing so, this research relies upon the organisational, politicization and behavioural theories that can be applied to rationality of HEI decision-making (see Section 2.7).

While rationality in decision-making has been identified in this research as an SDMP characteristic that influences SDMP effectiveness, rationality as an SDMP process characteristic is influenced by antecedents, for instance the strategic decision characteristic (see Section 2.3). In this context, using arguments provided in the literature review (see Section 2.4) the researcher has chosen decision importance as the antecedent of SDMP process variables including rationality in decision-making. Theoretical support for this choice is provided by decision theory, which explains how people should behave (e.g. how decisions should be made) and how people actually behave (e.g. how decisions are actually made) respectively, and involves rationality (Suhonen, 2007). Thus in the HEI context, it is posited in this research that the main antecedent of rationality is decision importance. It is expected that the examination of the relationship between decision importance and rationality in decision-making will enable the researcher to understand how HEIs handle decisions and whether the decision-making process is effective or not. This argument is supported by the model developed by Elbanna and Child (2007) which linked rationality in decision-making directly to decision effectiveness.

In summary, the above discussions enable the researcher to make the reasonable assumption that rationality in HEI decision-making influences decision effectiveness, an argument supported by the literature and the above analysis. In addition, one can assume that as an antecedent of rationality in decision-making, decision importance influences rationality in decision-making.

3.4 Intuition and its relationship with decision effectiveness and antecedents

Based on the literature review, intuition and decentralization were chosen as two other decision process variables that operate together with rationality to explain how decision effectiveness is affected by different decision process characteristics. The combined influence of the decision process characteristics on decision effectiveness may provide greater control for decision makers in HEIs during the SDMP. The choice of intuition is supported by the fact that intuition is considered to be opposite of rationality in decision-making (see Section 2.8). Researchers argue that rationality is a slow process, but certain decisions e.g. how to resolve urgent student problems, cannot wait. Sometimes intuition is thought to be an important component of the SDMP, although the opinion of researchers on use of intuition in the SDMP is divided (see Section 2.8). Use of intuition in SDMP research is supported by many theories. However, there is no concrete evidence in the literature that specifies which of the theories are more suitable for a particular situation, for instance, situations where the environment is unstable. This researcher uses the model proposed by

Elbanna and Child (2007), which links intuition directly to decision effectiveness. As far as antecedents of intuition as an SDMP variable (namely the decision characteristics), the researcher applies the same explanation given the previous paragraph for rationality in decision making. The researcher adopted the arguments of Elbanna and Child (2007) with one deviation. While the model developed by Elbanna and Child argues that SDMP process characteristics, including decision importance, moderate the relationship between intuition and decision effectiveness, it is argued here that decision importance, as a decision process characteristic, influences intuition. This argument is posited based on the idea that decision characteristics influence SDMP process variables, as argued above. Thus, a decision process characteristic - intuition in this case - is posited to be influenced by the decision characteristic variable - decision importance. While this linkage is not discussed in the literature in-depth, this approach provides an opportunity to investigate the concept of intuition and understand how this relationship works in HEIs.

The foregoing discussion enabled the researcher to make the following proposal: intuition in HEI decision-making influences decision effectiveness - an assumption supported by the extant literature and the analysis above. It is also reasonable to assume that decision importance as a decision characteristic influences intuition as an antecedent of intuition.

3.5 Decentralisation in decision-making and its relationship with decision effectiveness and its antecedents

Decentralisation in HEIs is not well understood (see Section 2.6) as far as its role and effect on the SDMP and the SDMP outcome is concerned. The choice of decentralization for this research stems from the fact that decision decentralization can occur under different contexts, for instance, between the parent university and its branches or between a college and its departments. A study of its role in SDMP and its influence on decision effectiveness can illuminate its functioning as a decision process characteristic. This, in turn, can help HEIs identify whether, and if so, how far their SDMP should be decentralized. In addition, like rationality in decision-making and intuition, decentralization as a decision making characteristic could also be influenced by its antecedents. While there is no specific antecedent that has been discussed in the literature as a determinant of decision decentralization, this research posits that decision decentralization could be affected by decision importance as an antecedent. While this relationship is mentioned as a possibility in the literature (e.g. Papadakis et al. 1998), no conclusive prior investigation of this has been found in the literature. However, this research adopts on the findings of Elbanna and Child (2007), who

posited that decision importance as a construct does not moderate between SDMP characteristics and decision effectiveness.

Taking into account theoretical arguments that importance of a decision can influence SDMP characteristics, for instance rationality (Dean and Sharfman, 1993), this research argues that instead of treating decision importance as a moderator of the relationship between SDMP characteristics and decision effectiveness, decision importance can be treated as an antecedent and hence a determinant of any SDMP characteristic. Based on this argument, here decision importance is proposed as an antecedent of decision decentralization, a relationship that is not studied well in the literature. In theoretical support for the inclusion of decentralization, it can be seen that both decision theory, which suggests how decisions are taken by managers in organisations, and contingency theory, which helps understanding of the influence of environment on HEIs, can be applied to understand the influence of decision decentralization on decision effectiveness. The above analysis prompted the researcher to form these reasonable assumptions: decentralization in HEI decision-making influences decision effectiveness, while decentralization in decision-making as a decision process characteristic, may be influenced by decision importance as its antecedent (i.e. as a decision characteristic).

After understanding the theoretical support and basis for the choice of three decision characteristics in this study and establishing the basis for the linkage between these three decision characteristics and SDMP outcomes on the one hand and their antecedent decision importance on the other, the next step was to summarise and explicitly set out what place decision importance has in this research.

3.6 Decision importance, its relationship with decision effectiveness and SDMP characteristics

It is seen from the literature review (see Section 2.4) that SDMP characteristics are influenced by strategic decision characteristics, for instance decision importance. It is posited that decision importance as a decision-specific characteristic can influence the SDMP. Support for this argument comes from Papadakis et al. (1998), who argue that decision importance is a decision-specific characteristic that should be investigated as an antecedent of the SDMP. In the HEI context, decision importance assumes importance because it is affected by many factors, including the type

of stakeholders involved in decision-making (see Section 2.4). Based on discussions in the previous chapter (seen Sections 2.3 to 2.7), it is posited that decision importance influences the SDMP and that decision importance influences all the three decision process characteristics, namely rationality in decision-making, intuition and decision decentralization. In turn it is argued that decision importance could influence the SDMP outcome, namely decision effectiveness through the SDMP process characteristics. Theoretical support for this argument is provided in the previous sections (see Sections 2.3 to 2.7). The theoretical underpinning for arguing that decision importance can influence SDMP characteristics and SDMP outcomes is decision theory (see Section 2.4). This research uses the model developed by Elbanna and Child (2007), where it is shown that decision importance is a moderator between the relationship between SDMP characteristics and outcomes, to argue that useful knowledge may be gained by treating decision importance as a determinant of decision effectiveness through the mediating effect of SDMP characteristics instead of as a moderator.

Taking into account all of the arguments put forward so far, the following hypotheses can be formulated.

H1: Decision importance positively influences rationality in decision making

H2: Decision importance influences intuition positively

H3: Decision importance influences decision decentralisation positively

H4: Rationality in decision making influences decision effectiveness positively

H5: Intuition influences decision effectiveness positively

H6: Decision decentralisation influences decision effectiveness positively

After formulating the relationship between decision characteristics, SDMP characteristics and SDMP outcome, the next step is to understand how the environment factors chosen for investigation influence the SDMP as a whole.

3.7 Influence of the external environment factor "environmental uncertainty"

The literature review showed that external environment factors affect the SDMP. For instance Elbanna and Child (2007) argue that environmental factors (environmental uncertainty and munificence) moderate the relationship between SDMP characteristics (rationality in decision-making, intuition and politicisation) and SDMP outcome (decision effectiveness). However, Elbanna and Child (2007) argue that there could be a relationship between SDMP characteristics and outcomes. Taking this into account, this research chooses environmental uncertainty as the external environment factor for study and investigates its influence on the relationship between the SDMP characteristics chosen for study (namely rationality in decision-making, intuition and decision decentralization) and SDMP outcome (namely decision effectiveness). The choice of environmental uncertainty as the sole factor arises from the fact that researchers suggest that uncertainty is a variable that affects almost every decision made in organisations including HEIs (see Section 2.10.2). Theoretical support is largely available from contingency theory, which says that environmental factors affect organisational performance. Thus, taking into account the findings of Elbanna and Child (2007) and contingency theory, the researcher argues that environmental uncertainty influences as a moderator the relationship between SDMP characteristics chosen for study here and SDMP outcome.

In summary, the above discussions the researcher to propose that environmental uncertainty is a factor affecting HEIs and influences as a moderator the relationship between on the one hand the three decision process characteristics (rationality in decision-making, intuition in decision-making and decentralization in decision-making) and on the other hand decision effectiveness - an argument that finds support from the literature.

3.8 Influence of the internal contextual factor "organisational performance"

Like the external environment factor chosen for this research, the literature shows that internal contextual factors influence the relationship between the SDMP characteristics chosen for study (namely rationality in decision-making, intuition and decision decentralization) and the SDMP outcome (namely decision effectiveness). Examples of internal contextual factors include organisational performance and size (Elbanna and Child, 2007). In this research, organisational performance was chosen as the internal contextual factor affecting the relationship between SDMP characteristics and SDMP outcomes. The choice was based on the findings of Elbanna and Child (2007), who found significant influence of firm performance as a moderator of the relationship

between the SDMP characteristics chosen for study in this research and SDMP outcomes. Taking this and the application of contingency theory into account (see Section 2.11), this research posits that organisational performance influences the relationship between the SDMP characteristics chosen for this research and SDMP outcomes as a moderator.

Based on the above, the following proposition is made: organisational performance as an internal contextual factor of HEIs influences the relationship between the three decision process characteristics (rationality in decision making, intuition in decision making and decentralization in decision making) and decision effectiveness as moderator.

Based on the above, the following hypotheses were formulated:

H7: Environmental uncertainty moderates the relationship between rationality in decision-making and decision effectiveness.

H8: Environmental uncertainty moderates the relationship between intuition and decision effectiveness.

H9: Environmental uncertainty moderates the relationship between decision decentralisation and decision effectiveness.

H10: Organisational performance moderates the relationship between rationality in decision-making and decision effectiveness.

H11: Organisational performance moderates the relationship between intuition and decision effectiveness.

H12: Organisational performance moderates the relationship between decision decentralisation and decision effectiveness.

The resulting conceptual model based on the above hypotheses is presented in Figure 3.1.

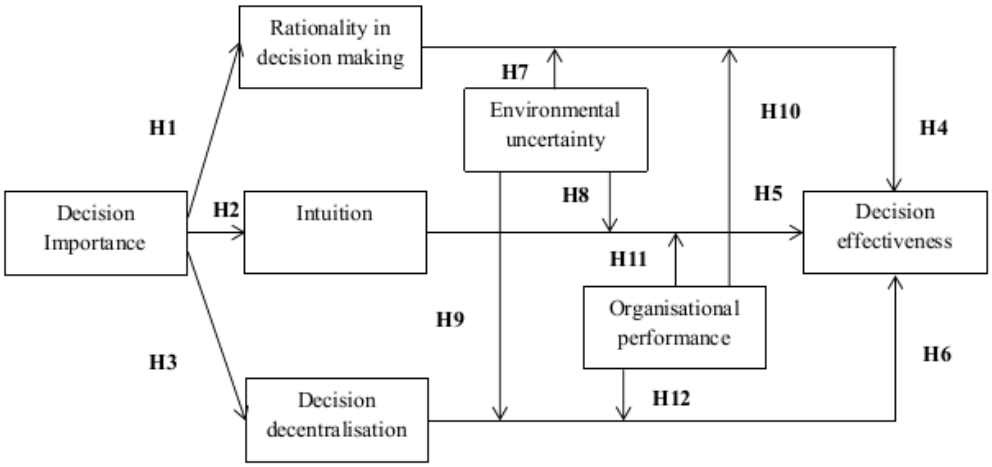

Figure 3.1, Conceptual model of SDMP in HEIs

3.9 Summary

This chapter has identified the theoretical model that can be used to respond to the research questions identified in Chapter 1. The hypotheses related to the relationships amongst SDMP attributes have been developed. The theoretical support for explaining the relationships has been provided. Moreover, the chapter provides the basis now, for defining the research methodology needed to be developed to test this model.

Chapter 4
Methodology

4 Introduction

This chapter reports the research methodology adopted for answering the research questions raised in this research. The research questions are concern with the strategic decision making process in higher education institutions and hence involves people who take such decisions and implement them. To develop a research methodology that could address the research questions, a research philosophy, approach and method need to be chosen so that the empirical investigation could be systematically conducted, leading to the identification of the target population from whom data was to be collected, the process of data collection and analysis of the collected data. The first section thus deals with the choice of the research philosophy. The following sections deal with the research approach and method chosen for this research, the research framework used in this research, and the research design developed. Finally the chapter deals with the data collection aspects and data analysis details.

4.1 Epistemology and ontology

According to Uzun (2016) epistemology is concerned with knowledge and inquires into such aspects as what knowledge is and how knowledge is created, understood and propagated. Similarly ontology is said to be concerned with what reality is and the nature of reality (Uzun, 2016). The assumption of a particular epistemological stance by a researcher depends on what is considered as acceptable knowledge, for instance whether collection of facts about the strategic decision making process in HEIs can be considered as acceptable knowledge. Similarly the ontological position to be adopted by the researcher depends on the nature of the strategic decision making process. Strategic decision making for instance, could fall into either objectivism or subjectivism; with some arguing that it is guided by objectivism as strategy almost completely depends on the objective measure of success (Zidane et al. 2016), and some others arguing that it depends on the subjective feeling of the decision makers (Andersson et al. 2016). Identification of philosophical idea in research is considered important as it influences the practice of research (Creswell, 2014).

In addition to identifying the philosophical idea, researchers must determine the research approach and method so as to answer the research questions. For instance the deductive approach is recommended to be used in research if a researcher is using theory at the beginning of the study

whereas an inductive approach is recommended if the researcher is building from the data to broad themes to a generalized model or theory (Creswell, 2014; Punch, 2005). As far as the strategic decision making field is concerned, it is seen that several studies have used existing theories, for instance Papulova and Gazova (2015) who have argued that both decision making theory and strategic management theory are used in the strategic decision making process (also see Godiwalla, 2016; Robbins & Coulter, 2013).

In contrast an inductive approach is recommended by some (e.g. Haidar, 2016) as decision making is considered to be more naturally inductive in reasoning. According to Thorne (2015), inductive reasoning involves interpretation and structuring of the meanings a researcher can derive from the information or data collected. As far as strategic decision making is concerned, the literature shows that inductive reasoning has been used by many researchers (for further details refer to Eisenhardt, 1989).

After adopting the philosophical stance and the research approach, the researchers must choose the research method most suitable for their research. Widely used research methods include qualitative and quantitative methods. Creswell (2014) explains that qualitative method is used to explore and understand the meaning a group or an individual assign to a social issue or human problem. Qualitative research method involves collection of information and data from the actual settings of the people under study about an emerging question or phenomenon. Further, during data analysis in qualitative studies the researcher inductively builds general themes from a specific situation and derives findings through an interpretation of the meanings. The advantages of qualitative studies include achieving deeper insights into issues, better understanding of the participants feelings, opinions, and experiences in specific settings, detailed interpretation of the meanings of actions of subjects under study, involves the researcher to gain experience being part of the phenomenon under study and offers flexibility in the construction and deconstruction of information resulting in reducing complex situations to be understood easily. Qualitative research is usually related to interpretive philosophy, subjective ontology and inductive research approach Creswell (2014). Often perceived limitations of qualitative approaches include greater focus on meanings and experience leaving out contextual sensitivities, lack of credibility of results amongst stakeholders, insufficient sample size, lack of generalizability to the whole population under study, interpretation of data could be complex and difficult and usually takes long time (Rahman, 2017).

Quantitative methods are concerned with testing objective theories by verifying the relationship between variables. Variables under investigation could be measured using a research instrument so that numerical data could be analysed using statistical methods (Creswell, 2014). Quantitative studies are generally characterized by assumptions of the researcher about testing theories, use of deductive approach, ensure researcher bias is not involved, controlling for alternative explanation, generalization of the findings and testing the reliability and validity of the findings. Quantitative study is widely considered to be related to the positivist philosophy, objective ontology and deductive research approach (Creswell, 2014). Benefits of using quantitative studies include generalization of research findings across population as large sample size can be involved, data analysis can be carried out using computer software like SPSS, less time consuming, results are considered trust-worthy and wider use of variables that could be measured and analysed for better understanding of phenomenon. Generally perceived disadvantages of quantitative studies include lack of understanding of how social reality is shaped and maintained, neglect of common meanings of social events, lack of in-depth understanding of underlying deeper meanings and disregard for detail in favour of the holistic picture (Rahman, 2017).

Recent literature shows that researchers have started using mixed method approaches in strategic decision making research, for instance Cantini et al. (2016) who studied strategic decision making in the context of the national education system in Italy. Mixed method research can integrate methods, techniques and instruments of both qualitative and quantitative research (Creswell, 2011; Teddlie & Tashakkori, 2009). Mixed method offers advantages including a better understanding of the research problem as well as a complex phenomenon by combining both quantitative and qualitative approaches, use of triangulation of one set of results with another, and complementarity (Creswell & Plano Clark, 2007; Greene et al. 1989). However mixed method is criticized to be not easy to conduct, requiring more work and financial resources, taking more time and requiring the researchers to develop a broader set of skills that spans both the quantitative and qualitative methods (Molina-Azorin, 2016; Bryman, 2007; Creswell & Plano Clark, 2007).

In the context of strategic decision making in HEIs, literature shows that recently there is a more focused attempt to choose a particular research methodology or a combination of methods depending upon on the research questions being addressed. An example of the different methodologies used in the SDMP in HEIs is given in Table 4.1.

Phase of the cycle	Approaches	Specifics of HE and e-learning	Methods
Identification and research of the problem	Needs and situation analysis Readiness assessment Diffusion of innovation	Stakeholders' involvement E-readiness Consciousness raising	Situation analysis Case study research Different types of qualitative analysis Structural Equation Modelling (SEM) Social Network Analysis (SNA) Upgraded CID methodology for e-readiness assessment
Development of methodology for DM	Analysis of potential solutions MCDM Cost-benefit and risk analysis	Benchmarking of HEIs Modelling dependencies and group DM (AHP & ANP with BOCR)	BOCR AHP and ANP, PROMETHEE, ELECTRE Ideal point-based MCDM Multi-criteria variant of cost-benefit analysis Hybrid methodology of risk management - Monte Carlo simulation and Sensitivity analysis Different types of qualitative analysis Factor analysis, Clustering
Implementation and strategic decision monitoring	BSC, KPI, BPM CMMI PPM	Interpretations of econometrics and use of KPIs and PPM	BSC Balanced Scorecard Enterprise Architecture for BPM (Business Process Management) CMMI (Capability Maturity Model Integration) Econometric methods (ROI, productivity, efficiency, profitability)
Evaluation of effects of the strategic decisions	Qualitative, quantitative and mixed methods Structural causal models	Stakeholder perspective analysis, In-depth case study to find out causes & effects	Qualitative methods - stakeholder perspective, document analysis, internal consistency of the strategy and external effectiveness, benchmarking, in-depth case study, Delphi Quantitative methods - econometric analysis, cost-benefit analysis, multi-criteria analysis and regression analysis Innovative approaches - Pearl's structural causal models

Table 4.1, Examples of research methods used in SDMP in HEIs (Source: Divjak & Redep, 2015)

After discussing the research philosophies, approaches and methods that need to be understood and chosen for a particular research this research provides the research framework developed to answer the research questions set. The framework provides the choice of a particular philosophy, research approach and method alongside the rationale for the choice.

4.2 Research framework

The research framework for a study broadly defines the philosophical stance adopted by the researcher and the research approach, method and technique to be used to answer the research question. In addition it determines the research design, data collection details and steps involved in data analysis (Omotayo & Kulatunga, 2015). The research framework developed for this study requires the researcher to understand to what extent decision importance as a decision specific characteristic determines the decision effectiveness of the SDMP in the context of HEIs mediated by decision process characteristics namely rationality in decision making, intuition and decentralization in decision making. The conceptual model aims to examine the moderating effect

of external and internal environment factors on the SDMP. From Chapter 3 it can be seen that a conceptual model has been developed alongside the hypotheses that need to be tested to answer the research questions. To test the model the epistemological and ontological issues need to be addressed to begin with. Since the research begins with established theories the underlying belief is that there is a link between the independent and dependent variables that have the support of theories, the positivist approach was chosen as the philosophical position to be adopted by the researcher.

An objective ontological stance was adopted because the nature of the relationship between the independent and dependent variables in the SDMP are real and were to be tested objectively using measurement. Furthermore the adoption of positivist and objective positions led to the use of deductive approach as the researcher would deduce conclusions based on the interpretation of measurements and findings of data analysis (using statistical methods). Finally quantitative method was more useful because the testing of hypothesis involves the measurement of the variables using a research instrument to collect numerical data from a large sample of the target population. In addition quantitative method has been commonly used in management research as most research efforts have tested conceptual models (e.g. Camfield et al. 2015) including SDMP research (e.g. Nooraie, 2014; Elbanna & Child, 2007; Papadakis et al. 1998; Rajagopalan et al. 1993).Thus the research framework at the philosophical level will be as depicted in Figure 4.1.

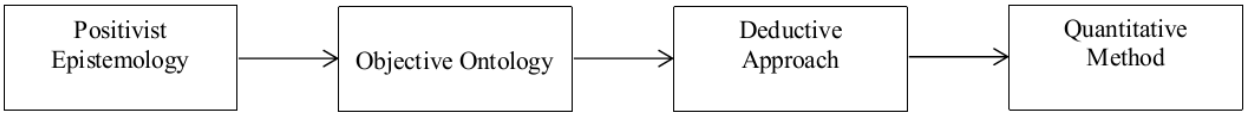

Figure 4.1, Research framework

The next step in the research framework is to determine the research design. Research design encompasses a number of steps.

4.3 Research design

According to Creswell (2014), quantitative research designs include true experiments, quasi experiments, applied behavioural analysis, non-experimental research (e.g. causal comparative), correlational design, structural equation models, factorial designs and repeated measure designs. In addition, research design involves purpose of study, type of study, type of data collected, subjects

from whom the data was collected, population size and sampling design, data analysis, reliability and validity, time horizon of study, territory and research strategy (Sekaran & Bougie, 2016). The purpose of this research was to develop determinants of SDMP outcomes using propositions derived, set, and explain the relationship between the independent and dependent variables. The type of study used was hypothesis testing which led to the analysis of the correlational and cause and effect amongst the variables. Main data (primary data) was collected from faculty members of universities and higher education institutions. The data was collected as numerical responses through a research instrument developed for this research (See Appendix 4.1). The population size was estimated to be in the range of 8,000-10,000 faculty members in 9 universities. Sampling procedure was adopted to collect responses efficiently. The faculty members approached were those who were part of any decision making body in a university. Data was analysed using statistical procedures which included descriptive statistics, correlation matrices analysis, regression analysis and path analysis which is a part of Structural Equation Modelling (SEM) (see Section 4.13). Reliability and validity measures were used to verify the research instrument and the data collected. Time horizon of study was cross-sectional as one time data collection was considered essential to test the model due the dynamic nature of the environment. The territory chosen for study was one state in the United States of America (USA).

4.4 Research strategy

There are many strategies a researcher can adopt. Research strategies are guided by the research questions the researcher is addressing. In addition Saunders et al. (2013) argue that researcher strategies are dependent on the extent of existing knowledge, the amount of time and other resources available, as well as philosophical underpinnings. Research strategies commonly adopted by researchers include experiment, survey, case study, action research, grounded theory, ethnography and archival research. The research question being addressed by the researcher aimed to investigate the influence of decision specific characteristic on SDMP outcome mediated by SDMP characteristics in an uncertain external environment and taking into account the performance of HEIs as internal contexts. The research question was addressed using a conceptual model comprising relationship between specific variables that represented decision specific characteristic (decision importance), SDMP outcome (decision effectiveness), SDMP characteristics (rationality in decision making, intuition and decentralization in decision making), uncertain external environment (uncertain environment) and internal context of HEIs (organisational performance). Data was to be collected from decision making faculty in the HEIs

to explain the relationships by testing the hypotheses developed to represent the relationships. Collection of data used sampling technique as the number of faculty members in each institution was in hundreds. The institutions were distributed over a wide area. Thus the following strategy was devised.

Since this was an explanatory study using which the researcher aimed to verify the hypotheses representing the theoretical relationships established in the conceptual model, the strategy required was to collect numerical data to measure the variables and test the relationships using statistical techniques. In order collect data from the faculty members of universities, survey strategy was used, a commonly used strategy in business and management research. It is used most often to answer questions how many (Sunders et al. 2013). To conduct the survey usually a questionnaire is administered to a sample to collect data. The strategy thus used the questionnaire as the instrument to collect quantitative data through survey of a sample population of participants. Cross-sectional data was collected. The details about the questionnaire development are given next to understand how the constructs were measured.

4.5 Questionnaire

According to Saunders et al. (2013) the reliability and validity of the collected data and the response rate to the questionnaire depend on the design of the questions, the format of the questionnaire and the rigour of the pilot test. Reliability of the collected data called consistent collection of data and the validity of the collected data indicated by the accuracy of data depend on the questionnaire. Questionnaire method has advantages including that it (Saunders et al. 2013):

- is one of the most widely used methods to collect data within survey strategy
- is an efficient way to gather responses from a large sample as every participant in the survey is asked to respond to the same set of questions
- is useful to descriptive and explanatory research
- is possible to identify and describe the variability in different phenomena
- is possible to use to discover customers' attitudes, opinion and behaviour
- normally requires less skill and sensitivity to administer

There are also limitations to the use of questionnaire. For instance, poor questionnaire design can affect response rate and the reliability and validity of the data collected, the researcher is unlikely to get more than one chance to gather the data and develop a good questionnaire (Saunders et al.

2013). Despite some limitations questionnaires offered the advantage of cost effectiveness and faster collection of data over a wider region (Sekaran & Bougie, 2016). Thus in this research, questionnaire survey method was used to collect data in the survey.

4.5.1 Design of the questionnaire

As far as the questionnaire was concerned, it was developed by adapting tested and validated scales found in the extant literature in the field of SDMP. According to Sekaran and Bougie (2016) the questionnaire design should take into account such aspects as wording of the questions, address issues including planning on how the constructs to be measured need to be categorized, scaled and coded after receipt of the responses, and the format and appearance of the questionnaire. Keeping these aspects in mind the questionnaire was designed. The items, that is the questions used to measure the constructs in the research model, were based on previously developed measurement instruments already used in earlier research in similar topics by other researchers namely Elbanna and Child (2007a), Dayan and Elbanna (2011), Dean and Sharfman (1996), Khatri and Ng (2000), Pretz and Totz (2007), Rodrigues and Hickson (1995), Elbanna et al. (2015) and Abernethy et al. (2004). The items extracted from the already validated instruments were adapted as part of the research instrument used in this research. The details of the sections of the questionnaire that have been developed for this research and authors who initially developed them are given in Table 4.2.

No.	Variable measured	Number of items	Scale	Authors
1	Decision importance	6	Questions 1-5 – 5-point Likert scale. Question 6 – Interval scale	Elbanna and Child (2007a), Dayan and Elbanna (2011)
2	Rationality in decision making	4	5-point Likert scale	Elbanna and Child (2007); Dean and Sharfman (1996)
3	Intuition	5	5-point Likert scale	Pretz and Totz (2007)and Khatri and Ng (2000)
4	Decentralisation in decision making	5	5-point Likert scale	Abernethy et al. (2004)
5	Decision effectiveness (G1)	10	This is a quantity number, that indicates the amount of effectiveness of decisions made which lies between 0 and 20	Elbanna and Child (2007)
6	Decision effectiveness (G2)	5	5-point Likert scale	Elbanna and Child (2007)
7	Environmental uncertainty	18	5-point Likert scale	Elbanna and Child (2007)
8	Firm performance (Department Performance)	10	5-point Likert scale	Elbanna and Child (2007)

Table 4.2, List of prior scales used in the research instrument and the authors who initially developed them

The language used was English because the language of communication in the territory in which the survey was to be conducted was English and the target population were faculty members in Universities whose proficiency in English language was very high. The items were carefully worded keeping in mind that the participants should not experience any difficulty while responding to the questionnaire.

The questionnaire was divided in two sections. Section 1 dealt with the characteristics of respondents and Section 2 was related to the constructs under investigation. A description about the survey and information considered as useful to respondents were provided in the covering letter. The information included about the PhD research at Brunel University London, the title of the research, the aim of the study, confidentiality, anonymity, use of the collected data for the sole purpose of the research and the voluntary nature of participation in the survey. Details about the contents in the two sections are provided next.

4.5.1.3 Section1

Four items were included in this section to collect data using nominal scales about the demographic characteristics which included the gender of the participants, the age, the number of years the participant has worked in the university and the membership in any council or committee (e.g. department council or college council or university council or any other decision making committee or council).

4.5.1.4 Section 2

This section comprised questions that measured the constructs related to the SDMP. There are seven sub-sections in this section (A to G). The sub-section related to G was further segmented into two parts namely G1 and G2. Description about the scales in these sections is provided next.

4.5.1.2.1 Section A

This section aimed at collecting data about the strategic decision specific characteristic "decision importance". This construct is the determinant of the dependent variable that is strategic decision outcome namely "decision effectiveness" in the context of the universities in USA. In addition, this construct acts as an antecedent to strategic decision process characteristics namely rationality in

decision making, intuition and decentralization in decision making. This construct, its relationship with the SDMP and the theoretical underpinning to supporting the investigation have been provided in Chapters 2 and 3. The scale for measuring the construct was developed based on the earlier work of Elbanna and Child (2007). The questionnaire tested and validated by Elbanna and Child (2007) was adapted to this research. This section comprised six items and aimed at measuring the importance of the strategic decisions that would be taken in a department in the college. Decision aspects such as anticipation of a decision to change things in the participant's department, extent to which the participant expected that decision to set parameters for subsequent decisions, seriousness of the consequences for the participant's department would be if something in that decision went wrong, seriousness of consequences would be if that decision was delayed (e.g. lower enrolment of students or lower revenue to the institution), importance of the decision to the participant's institution and how far ahead in the future did the participant initially expect the decision to significantly influence the whole institution. While first two items were measured using a 5-point scales ranging from 1 (very little) to 5 (great deal), the next two items were measured using a 5-point scales ranging from 1 (not at all serious) to 5 (extremely serious), the fifth item was measured using a 5-point scales ranging from 1 (not important at all) to 5 (extensively), the last item was an interval scale measuring the expected number of years it would take for the decision to significantly influence the institution as felt initially by the participant. This is spread over 1 to 10 years with an interval of one year.

4.5.1.2.2 Section B

This section gathered data to measure rationality in decision making. This construct is a strategic decision process characteristic variable and mediates between decision importance and decision effectiveness. Theoretical underpinning for using this construct in the model has been discussed in Chapters 2 and 3. The scale measures the rationality in decision making of the faculty members in the universities and characterizes that behaviour which is logical in pursuing goals. This scale was developed adapting the items from the scales developed by Elbanna and Child (2007) and Dean and Sharfman (1996). Four items were used to measure rationality in decision making to measure the level of rationality used by the participant's department usually in making important strategic decisions to gather and analyse relevant information, use analytic techniques and focus attention on crucial information. The measure used was a five point Likert scale with 1 indicating "very non-comprehensive" and 5 indicating "very comprehensive".

4.5.1.2.3 Section C

This section dealt with data collected to measure intuition used in SDMP and is a strategic decision process characteristic variable. Along with rationality in decision making this construct mediates between decision importance and decision effectiveness. Theoretical support for using this construct and establishing its operation were provided in Chapters 2 and 3. Intuition refers to where/when choices were made intuitively by the decision-makers, drawing on their prior experience or knowledge of the situation. Thus, participants were requested to respond to five items that were used to measure the construct adapted from the scales developed by Pretz and Totz (2007) and Khatri and Ng (2000). Measured on five point Likert scale the points vary with 1 indicating "very little" and 5 indicating "very great deal". Participants responded to questions such as "While making decisions in your department: to what extent the chairperson/dean relies on personal judgment?; to what extent the chairperson/dean depends on gut feeling? (gut feeling could mean the chairperson's/dean's instinct); how much emphasis is placed on past experience? (emphasis placed on past experience means the decision made by chairperson/dean using their previous experience in a similar situation); how much emphasis is placed on intuition as a useful decision making tool? and to what extent does the chairperson/dean trust in their intuition?".

4.5.1.2.4 Section D

This section was developed to measure the construct decentralization in decision making and has been used as a mediating variable between decision importance and decision effectiveness as a SDMP characteristic along with rationality in decision making and intuition. It refers to the level of autonomy delegated to managers (chairpersons or deans) in the context of HEIs. Theoretical underpinning to establish construct as an SDMP characteristic and its operation as a mediator between decision importance and decision effectiveness has been provided in Chapters 2 and 3. This construct was measured using five items adapted from the scale developed by Abernethy et al. (2004). The measure is a five point scale with 1 indicating decisions taken "100%BU" (meaning decisions taken by the business unit manager not referring to the corporate office) and 5 indicating decisions taken "100%Corp" (meaning decisions taken by the corporate office, in this case the central office of the university not the business unit that is the department/college concerned). The items measured the percentage of decisions made either by the central office of the university or the department or college concerned. The decisions made concerned strategic decisions (e.g. development of new programme; unit strategy), investment decisions (e.g. acquiring new assets and financing information systems), marketing decisions (e.g. campaigns; promotions, decisions

on fee fixation), decision regarding internal processes (e.g. setting academic priorities; inputs used and/or processes employed to deliver programmes) and human resources (e.g. hiring/firing; compensation and setting career paths for the personnel employed within your unit; reorganizing your unit; creation of new jobs).

4.5.1.2.5 Section E

This section gathered data about the performance of the department concerned in which the participant was working as an internal contextual factor. This is an indicator of the outcomes of the department and is measured in terms of aspects that include growth rate in student retention, academic standards, market share, growth rate of tuition revenues, growth rate of student enrolments, research outcomes, quality of programmes offered, academic and administrative employee satisfaction, efficiency of operations and community engagement. The items used to measure this construct were adapted from the scale developed by Elbanna and Child (2007). The construct was measured using 10 items using a 5-point scale with 1 indicating "very poor" performance and 5 indicating "excellent performance". The participants were asked to rate the performance of their department in comparison to departments similar in size and scope over the period of making a strategic decision on ten criteria namely student retention, academic standards, market share, growth rate of tuition revenues, growth rate of student enrolments, research outcomes, quality of programmes offered, academic and administrative employee satisfaction, efficiency of operations and community engagement. This construct was established as a moderator and has been conceived based on the model developed by Elbanna and Child (2007).

4.5.1.2.6 Section F

This section measures the environmental uncertainty, an external environment factor and has been conceived to be a moderator based on the model developed by Elbanna and Child (2007). It means that decision makers do not have sufficient information about environmental factors, and they have a difficult time predicting external changes. This was measured using 18 items based on the scale developed by Elbanna and Child (2007). The 18 items were classified under programme (5 items), economy (4 items), competition (4 items) and governmental policies (5 items). The items were measured using a 5 point scale with 1 indicating "very unpredictable" environment and 5 indicating "very predictable". The participants were asked to describe the environment in which their

department was operating during the making of a strategic decision. The set of factors are provided in Appendix 4.1.

4.5.1.2.7 Section G

This section measured the SDMP outcome variable decision effectiveness and was conceptualized based on the model developed by Elbanna and Child (2007). It refers to the outcome of the decision making process in terms of aspects that include the right choice of a decision, successful achievement of the objectives of a strategic decision and expected revenue. The construct was conceived as the dependent variable. The concept was measured in two sub-sections G1 and G2. Section G1 measures the decision effectiveness prior to implementation of the decisions using 5 items whereas Section G2 measures the effectiveness of the implemented decisions corresponding to those 5 items measured in G1. These items were adapted based on the scale developed by Elbanna and Child (2007).

The five items under Section G1 were related to the strategic objectives set in the participants' departments. Participants were asked to identify the objectives that their department planned to accomplish with a strategic decision, and then allocate 100 points among these objectives in terms of their relative importance to the department as they thought during the making of that strategic decision. (Examples of a strategic decision could be implementing a quality management system or investing money in creating infrastructure for offering programmes for a higher number of student enrolments etc.). Five objectives were given to the participants (for details see Appendix 4.1) and participants were asked to give points against each one of those objectives ranging between zero and twenty with zero indicating (relatively) no importance assigned to the objective and twenty indicating (relatively) maximum importance assigned to the objective. The maximum number of points that could be scored was limited to 100.

The five items under Section G2 measured the success in attaining the five objectives set in Section G1 that is the success of the decisions taken. Five items measured the success of the implemented decisions using a 5 point scale with 1 indicating "complete failure" and 5 indicating "complete success". The participants were asked to determine the extent to which their department was successful in attaining each one of the objectives stated in Section G1. While this was not the aim of this research as it is limited to understanding the operation of the SDMP in HEIs prior to

implementation of decisions, the data collected using the items in this section revealed whether the SDMP model developed in this research can suggest whether the decisions taken prior to implementation are indeed implementable. Hence analysis of the data collected using the items in this section has treated the decision effectiveness (G1) as an outcome variable to know whether SDMP model developed in this research could be really meaningful and support decision implementation.

After developing the questionnaire, the next step taken was to conduct a pre-test on the questionnaire to check whether the questionnaire could be launched. Pretest is usually conducted to gain knowledge about the participants' understanding of survey content and to get feedback about the survey questions (Marshall et al. 2016). Commonly pretest is conducted by distributing the questionnaire to experts or academics and a few participants with the same characteristics as those in the main sample (Sa & Chai, 2015). Accordingly, the questionnaire developed for this research was pretested by distributing the questionnaire to three academics, two researchers in the field of SDMP and two decision makers in the HEIs. Minor correction to the format and contents of a few items therefore were made prior to launching the pilot survey.

After deciding on the survey strategy, the next decision to be made was the way to administer the questionnaire. According to Saunders et al. (2013) questionnaires could be self-administered, or sent electronically over the internet or intranet, or sent by mail to the respondents who could return them after completion, or given by hand to every participant and gathered later. Since the data was to be collected from faculty members in nine universities in the USA and the sample size for a population of around 8,000 to 10,000 faculty members was expected to be high, the researcher decided to use the internet to collect data electronically. Surveys conducted on the internet, called web surveys, are faster and cheaper and can be conducted over a large territory (Neuman, 2014).

According to Neuman (2014) college respondents are more responsive to web surveys an argument that was used as a support for this research. There are some limitations that can affect web surveys, which include potential lack of attention to the quality as they are inexpensive. Further web surveys are argued to create some concerns with regard to coverage, privacy and verification, and design issues (Neuman, 2014). However these concerns did not significantly affect the conduct of web survey for this research as these surveys were administered to academia, who could access internet

in their workplace as well as outside, using secure passwords and targeting those who have an e-mail account. An organization called the Survey Monkey was approached to enable uploading the survey instrument on the website. Survey Monkey offered a variety of facilities such as ease in uploading the questionnaire, editing of the questionnaire online, access to a large number of respondents, ease of access to the respondents, ease of use, ease of coding the questions, ease of providing choices to the respondents like Likert scale, ease of saving the responses, descriptive statistics about respondents and their response, and ease of downloading data in multiple formats like spreadsheet, SPSS or PDF. A print out of the first two pages of the survey instrument uploaded on Survey Monkey is provided in Appendix 4.2. Once uploaded Survey Monkey provides a URL (Universal Resource Locator) like the one below that could be sent by e-mail to the respondents who could simply click on the URL and start responding to the questionnaire. URL generated by Survey Monkey:

https://www.surveymonkey.com/r/Preview/?sm=hO4NbmVTV1FPA6ZfXq0O2bztFR5NjTV_2Btxn_2Bwa0BLk6xTspictxDNxL6dl9CeEb2

It was ensured that the collected data was only accessed by the researcher using a username and password thereby protecting the data from unauthorized access.

A consultant was appointed to follow-up with deans and chairpersons HEIs. Certain conditions stipulated to the consultant that had to be followed. Such conditions include protecting the identity and personal information of the participants, obtaining informed consent of the participants and ensuring that the participants' data is used only for the purpose intended which are similar to those followed in other research works (e.g. Bouwman et al. 2013). These conditions were strictly imposed on the consultant who was employed by the researcher to supplement the efforts of the researcher and follow-up with the respondents to collect data from 9 universities in the US. Prior to conducting the main survey a pilot survey was conducted by the researcher details about which follow.

4.6 Pilot survey

Prior to conducting the main survey it is a recommended practice that pilot survey is conducted for testing the questionnaires (Kothari & Garg, 2014). Advantages of pilot survey include identifying the weaknesses if any of the questionnaires and improve questions, format, and scales so that respondents have no problem in answering the questions (Creswell, 2014); Saunders et al. 2013).

According to Neuman (2014) pilot survey enables the researcher to improve reliability early in the research and Creswell (2014) suggests that pilot survey could improve content validity of the questionnaire. In addition Neuman (2014) says that as part of the pilot survey process one or more draft of preliminary versions of the questionnaire could be developed and tested with a sample set of the target population being investigated before applying the questionnaire for final hypotheses testing. In fact pilot survey is a smaller version of the larger survey.

The pilot survey was conducted on the pre-tested version of the research instrument. According to Cooper and Schindler (1998), sample size for pilot survey could range from 10 to 200 depending on the size of the study (Fink 2003b; Dillman, 2007). Thus in this pilot survey the questionnaires were sent to 80 academics of a chosen university, who were members of department council or college council or other committee that makes decisions within the university. 35 questionnaires were returned. The returned questionnaires were analysed for reliability and validity before finalizing the instrument for the main survey. Thus the details of reliability and validity are discussed next.

4.7 Reliability of the survey instrument

The reliability of an instrument indicates the extent to which research outcomes would be the same if the same instrument is used at a later date when the research is repeated or when the instrument is administered to a different sample of participants (Sekaran & Bougie, 2016). That is when an instrument consistently and without bias measures the construct it is support to measure then reliability is said to be achieved. In addition the reliability of an instrument provides information regarding the goodness of measure and accuracy in measurement (Sekaran & Bougie, 2016; Ticehurst and Veal, 2000). A widely used measure of reliability in research is Cronbach's Alpha although some have raised doubts about its usefulness. For instance it has been argued that reliability measures using Cronbach's alpha might still be inconsistent even if it is above the usually accepted level of 0.7 (Rossoni et al. 2016). Thus in addition to Cronbahch's alpha in this research two other measures namely inter-item correlation and item-total correlation were measured to test the reliability of the instrument. Inter-item correlation or item-to-item correlation refers to the measure of statistical relationship between two items in the questionnaire whereas the item-total correlation refers to the measure of statistical relationship between a single item and the summated scale used to measure a construct (Hama et al. 2016; Hair et al. 2006). However in this research the

analysis was made at the item level and internal consistency was measured only at the inter-item level using correlation analysis.

As far as acceptable values of Cronbach's alpha is concerned, the literature shows that there is general consensus with some arguing that minimum level of Cronbach's alpha measured should be ≥ 0.7 to be acceptable (e.g. Tavakol & Dennick, 2011) whereas some others argue that a measure of 0.6 is also acceptable (e.g. Alshamasi & Aljojo, 2016; Sridharan et al. 2010). Sekaran and Bougie (2016) classify Cronbach's alpha as poor, acceptable and good, with any value of alpha less than 0.6 considered as poor, in the range of 0.7 as acceptable and above 0.8 as good. Thus in this research values of alpha ≥ 0.6 were considered as acceptable indicating that the instrument is reliable. After setting the reliability criteria for this research next the validity criteria for this research were established.

4.8 Validity of the instrument

The degree to which an instrument measures what it is supposed to measure is defined as the validity. It is also interpreted as the degree to which differences observed with a research instrument indicates the true differences among those being measured (Kothari & Garg, 2014). Sekaran and Bougie (2016) recommends content validity, criterion-related validity, and construct validity as measures that could be used to test the validity of an instrument.

4.8.1 Content validity

It measures the correspondence between each one of the items and the concept through an evaluation of the content that described the concept measured by the scales by experts in the field and pre-test with multiple sub-populations and referred also as face validity (Hair et al. 2010). The content validity of the instrument was checked with the support of three experts in the field of strategic decision making in organisations and two academics. Based on the feedback minor modifications to the text were made. Pre-test was also conducted (see Section 4.5.1) to ensure that the content is valid which included some academics from a university. Thus, content validity of the research instrument was established.

4.8.2 Criterion validity

One way to measure criterion validity is the convergent validity which is measured using correlation analysis (Zikmund &Quinlan, 2015). This measure tests whether the items purported to measure a concept actually converge or share high percentage of variance amongst them (Hair et al. 2010). This measure assesses the extent to which any two items that measure the same construct are correlated. Low correlation indicates that the measures are not measuring the construct while high correlation indicates that the scale is measuring the concept intended (Hair et al. 2010). According to the literature, some (e.g. Pallant, 2010) argue that inter-item correlations ≥ 0.2 are acceptable to validate the measurement. These correlation values range between 0 and 1. According to Cohen (1988) (also see Scott et al. 2017; Rimarčík, 2007) correlations ranging between 0.1 and 0.29 are considered small, those ranging between 0.3 and 0.49 are considered medium and those ranging between 0.5 and 1.0 are considered large.

4.8.3 Construct validity

This measure is established by convergent and discriminant validity. While convergent validity has been discussed in the previous section, discriminant validity is defined as the degree to which the factors or variables in a model are different. Discriminant validity can be measured using correlational analysis. Discriminant validity is said to be achieved if there is low correlation between measures of dissimilar concepts (Zikmund &Quinlan, 2015) and correlation between items measuring the same concept are not large for instance greater than 0.8 or 0.9 (Holmes-Smith et al. 2006) (also see Maduku, 2016; (Bagozzi & Fornell, 1982). After setting the basis for measuring both reliability and validity criteria, the next step taken was to verify the results of the pilot survey. The results are provided in Table 4.3.

No.	Construct	Question codes	Cronbach's Alpha	Item-item correlation (range)	Remarks
1.	Decision importance	DIMPORTANCEQ1 - DIMPORTANCEQ6	0.772	0.298-0.829	Acceptable
2.	Rationality in decision making	RATIONALITYQ1 – RATIONALITYQ4	0.836	0.473-0.707	Good
3.	Intuition	INTUTIONQ1 – INTUTIONQ5	0.680 (0.779 after removing INTUTIONQ3 & INTUTIONQ4)	-0.31-0.855 (0.349-0.855 after removing INTUTIONQ3 & INTUTIONQ4)	Poor Questions INTUTIONQ3 & INTUTIONQ4 was contributing to poor correlation. Hence removed.
3.	Decentralisation	DECENTRALIZATIONQ1- DECENTRALIZATIONQ5	0.670 (0.748 after removing DECENTRALIZATIONQ3)	-0.169-0.714 (0.269-0.714 after removing DECENTRALIZATIONQ3)	Poor. Question DECENTRALIZATIONQ3 was contributing to poor correlation. Hence removed.
4.	Department Performance	PERFORMANCEQ1 – PERFORMANCEQ10	0.881 (0.895 after removing PERFORMANCEQ1, PERFORMANCEQ2 & PERFORMANCEQ24)	0.271-0.798 (0.356-0.798 after removing PERFORMANCEQ1, PERFORMANCEQ2 & PERFORMANCEQ24)	Poor. Questions PERFORMANCEQ1, PERFORMANCEQ2 & PERFORMANCEQ24) were contributing to poor correlation. Hence removed
5.	Environmental uncertainty – Programme	ENVIROMENT.PRQ1 - ENVIROMENT.PRQ5	0.825	0.143-0.838	Acceptable
6.	Environmental uncertainty – Economy	ENVIROMENT.ECONQ6 - ENVIROMENT.ECONQ9	0.897	0.562-0.795	Acceptable
7.	Environmental uncertainty – Competition	ENVIROMENT.COMPQ10 - ENVIROMENT.COMPQ13	0.841	0.364-0.779	Acceptable
8.	Environmental uncertainty – Government Policies	ENVIROMENT.GOVQ14 - ENVIROMENT.GOVQ18	0.868	0.314-0.848	Acceptable
9.	Decision effectiveness (G1)	DEC.EFFECQ1 - DEC.EFFECQ5	0.98	0.882 – 0.974	Acceptable
10.	Decision effectiveness (G2 rating)	RATEQ6 – RATEQ10	0.885	0.479-0.822	Acceptable

Table 4.3, Results of data analysis of the pilot survey

From Table 4.3 it can be seen that Cronbach alpha for all the items is greater than 0.6. But inter-item correlation was found to be below the reference value in some cases (INTUTIONQ1 – INTUTIONQ5, DECENTRALIZATIONQ1- DECENTRALIZATIONQ5 and PERFORMANCEQ1 – PERFORMANCEQ10). Therefore some items were deleted namely INTUTIONQ3, INTUTIONQ4, DECENTRALIZATIONQ3, PERFORMANCEQ1,

PERFORMANCEQ2 & PERFORMANCEQ24. These items were deleted and the results obtained are reported in Table 4.4.

No.	Construct	Question codes	Cronbach's Alpha	Item-item correlation (range)	Remarks
1.	Decision importance	DIMPORTANCEQ1 - DIMPORTANCEQ6	0.772	0.298-0.829	Acceptable
2.	Rationality in decision making	RATIONALITYQ1 – RATIONALITYQ4	0.836	0.473-0.707	Good
3.	Intuition	INTUTIONQ1, INTUTIONQ2 and INTUTIONQ5	0.779	0.349-0.855	Acceptable
3.	Decentralisation	DECENTRALIZATIONQ1-DECENTRALIZATIONQ2 and DECENTRALIZATIONQ4 - DECENTRALIZATIONQ5	0.748	0.269-0.714	Acceptable
4.	Department Performance	PERFORMANCEQ3 and PERFORMANCEQ5 - PERFORMANCEQ10	0.895	0.356-0.798	Good
5.	Environmental uncertainty – Programme	ENVIROMENT.PRQ1 - ENVIROMENT.PRQ5	0.825	0.143-0.838	Acceptable
6.	Environmental uncertainty – Economy	ENVIROMENT.ECONQ6 - ENVIROMENT.ECONQ9	0.897	0.562-0.795	Acceptable
7.	Environmental uncertainty – Competition	ENVIROMENT.COMPQ10 - ENVIROMENT.COMPQ13	0.841	0.364-0.779	Acceptable
8.	Environmental uncertainty – Government Policies	ENVIROMENT.GOVQ14 - ENVIROMENT.GOVQ18	0.868	0.314-0.848	Acceptable
9.	Decision effectiveness (G1)	DEC.EFFECQ1 - DEC.EFFECQ5	0.98	0.882 – 0.974	Acceptable
10.	Decision effectiveness (G2 rating)	RATEQ6 – RATEQ10	0.885	0.479-0.822	Acceptable

Table 4.4, Result of the data analysis for testing reliability and validity after deleting items contributing to poor correlation

An analysis of Table 4.4 which provides the readings of Cronbach's alpha and item to item correlation, shows that still in the case of Decentralisation and Environmental uncertainty – Programme there is some concern with respect to inter item correlation although the Cronbach's alpha values are above 0.7. This could be due to problems in the sample size and hence no further items were deleted. It can be seen that acceptable values of Cronbach's alpha alongside the inter item correlation enabled the researcher to establish the reliability of the instrument. The inter item correlation also provides the estimation of the criterion validity which was considered to have been established although two cases had some concern. The results of the pilot study pointed towards two aspects namely whether the items deleted could have been retained and whether any changes are needed in some of the items retained but should have been deleted based on the pilot survey

results so that better results could be obtained in the main survey. As far as the items that have been deleted were concerned it was not easy to improve the Cronbach's alpha with those items being part of the other items measuring construct because the values of alpha recorded were every low. For instance for the construct Department Performance the items PERFORMANCEQ1, PERFORMANCEQ2 & PERFORMANCEQ24 contributed to alpha of as low as 0.271. Hence there was no alternative but to remove these items from the questionnaire. But in the case of those retained items also some wordings had to be changed based on the suggestions given by some participants to ensure that the final instrument used in the main survey is good enough to be distributed to respondents and those respondents do not have any difficulty in providing their response. In addition reducing the number of questions could not impact the reliability of the instrument as the analysis was proposed to be conducted at the item level and not the construct level. Thus after deleting those items that caused concern (see Table 4.3) and using the results provided in Table 4.4 the final survey instrument was developed in which some of the wordings were modified. At this stage it was decided that the instrument will be used with this deviation so that a more appropriate decision could be seen after verifying the results at the main survey stage where the sample size is expected to be larger. After establishing the initial reliability and validity of the research instrument, the researcher was ready to launch the main survey.

4.9 Main survey

The main survey as explained in Section 4.5 was conducted in nine universities in the USA where it was estimated to be in the range of 8000 - 10,000 faculty members are working. In order to collect data using the research instrument, it was necessary to determine the sample size as it would not be possible to collect data from all the faculty members.

4.9.1 Sample size design

Sampling process has many advantages including that it is comparatively more accurate than census method, faster, less invasive of the population under study and cost effective. A limitation of sampling is the introduction of an element of error during research (Sapsford & Jupp, 2006). Probabilistic and non-probabilistic sampling categories are the two broad categories of sampling used in research (Brüggen et al. 2016). Where probability sampling is used it can be said that each respondent in the target population has a known and non-zero chance of being part of the sample. That is to say every sample in the population has an equal chance of being included. Similarly

where non-probability sampling is used subjective methods are used to decide which respondent should be included in the sample. That is to say that the respondents in the population do not have equal chance of being included (Etikan et al. 2016). Probability sampling types include random sampling, stratified random sampling and cluster sampling. Example of non-probability sampling includes quota sampling (Pazzaglia et al. 2016; Sapsford & Jupp, 2006). In this research simple random sampling method (probabilistic sampling) was used. This method was used because it provides an opportunity to the researcher to choose any element of a population randomly as every element has an equal and independent chance to be selected (Wilson, 2016). Thus for this research simple random sampling was chosen and used to identify volunteers as sample units.

As far as the sample size was concerned in this research the formula suggested by Cochran (1977) was used (see equation 4.2 below).

$n_0 = [t^2 \times k^2] \div d^2 \rightarrow$ (4.1)

where n_0 = sample size; t = the t-value for a particular confidence level (confidence level usually used by researchers is 95%) estimated as 1.96 using the z-table; k = estimate of standard deviation (calculated as σ = number of points on the scale ÷ number of standard deviations) [e.g. if a researcher used a five-point scale the there are 4 standard deviations (two to each side of the mean); therefore k = 5/4 because the scale in the research instrument uses five points]; and d = acceptable margin of error = (number of points on primary scale x acceptable margin of error) = (5x0.03)] (usually assumed acceptable margin of error is 3%).

That is

$n_0 = [(1.96)^2 \times (5/4)^2] \div (5 \times 0.03)^2 = 266.22$

The next step suggested by Cochran (1977) is to use a correction formula taking into account the acutal population size. Using the correction formula should take into account on important aspect. That is the result of the correction formula should be used if only the sample size of 266.22 is greater than 5% of the total population. In this research 5% of the total population (assumed to be a maximum of 10,000; see Section 4.5) is 500 and hence it can be seen that sample size does not exceed this value leading to the conclusion that correction formula need not be used. The correction formula is

$\underline{n} = (n_0) \div [1 + (n_0 / \text{Population})] \rightarrow$ (4.2)

where '$\underline{n}$' is the new sample size calculated after correction; population is the actual population size = 10,000; and n_0 = 266. Thus $\underline{n} \approx 259$. However 5% of 10,000 is 500 and hence the correction

formula will not be useful. Thus the minimum sample required for this research is 266. Following the computation of the sample size and the target population the data was collected.

4.10 Data collection

Once the research instrument was finalized a consultant was approached to assist in data collection. The finalized research instrument with a copy of the contract signed with the consultant was sent to Brunel ethical committee to get the approval. Upon receipt of the ethical approval the consultant was briefed about the characteristics of the target population and the conditions governing the follow-up action related to the conduct of the survey (see Section 4.5). Dean, Chairperson and Associates in nine institutions in the USA were contacted numbering 1057. USA was chosen as the territory for conducting the survey because of the stability factor as in other territories conditions were found to be more dynamic for instance, UK (Universities UK, 2016) The consultant requested to send the URL through e-mail identified by the researcher and the responses were collected through Survey Monkey (see Section 4.5 earlier). The actual number of responses received was 600. This is equal to a response rate of approximately 57%. In general a response rate of 30% is considered as acceptable (Sekaran & Bougie, 2016). The number of valid responses was 485. Following the collection of data the stage was set to conduct the data analysis.

4.11 Data analysis

SPSS version 21.0 was used to analyse data statistically. SPSS is a widely used software in research. In addition SPSS AMOS version 18.0 was used to conduct path analysis. AMOS is another software widely used in modelling. The data gathered through Survey Monkey was exported to SPSS leaving no opportunity to cause any error due to data entry as no data entry activity was involved at the researcher's end. Data editing and coding was completed by using a unique name for each item in the questionnaire and was alphanumeric in nature. The coding sheet is provided in Appendix 4.4.

4.12 Data management

Prior to analyzing the data using statistical methods it was necessary to prepare the data and manage the process of data analysis. There are certain assumptions that have been made while data was analysed. The data analysis involves correlation analysis, regression analysis and path analysis.

Those analyses require that the assumptions made about the data are satisfied. The assumptions that were made include that there is no missing data, collected data are normal, outliers are not present and data is not multicollinear. In addition to these assumptions further assumptions were made with regard to the regression analysis which are detailed in Section 4.12.2. Some of these assumptions were considered under the heading descriptives.

4.12.1 Descriptives

Initially the mean and median were computed using SPSS. These figures provided the trends along which the respondents answered the questionnaire. There was no missing data that was found in the dataset. Normality of data was checked using standard deviation, skeness, kurtosis and outliers. A standard deviation measure of ±2.0 is considered to indicate normality of data (Gogtay et al. 2016). The next test of normality used was skewness and kurtosis. Skewness, according to Taleski and Bogdanovski (2015), indicates the degree of asymmetry of distribution of data around the mean with positive skewness indicating that the asymmetric tail oriented towards to the more positive values and negative skewness pointing towards a distribution that is oriented with an asymmetric tail towards the negative values. Kurtosis on the other hand is a measure of the extent to which a distribution is more or less peaked than a normal distribution. Positive kurtosis indicates a peaked distribution relative to the normal distribution whereas the negative kurtosis points towards a flat distribution relative to the normal distribution (Taleski & Bogdanovski (2015). Although acceptable values of skewness and kurtosis found in the literature are ±3.0 (Fairclough & Thelwall, 2015) in this research skewness limits were set as ±1.5 and kurtosis limits were set as ±2.5.

Outliers are readings that are seen to be too different from others in a set of readings (Ayinde et al. 2016). One way to measure outlier is using Mahalanobis distance denoted by (D^2/df) where where D^2 is the Mahalanobis distance while df is the number of degrees of freedom. Mahalanobis distance measurement is considered to be a robust way to detect the presence of outliers (Plevka et al. 2017). D^2 was calculated using SPSS version 21 whereas df was calculated using the formula (d-1). ‘d’ is equal to the number of items used to measure the constructs which was 53 in this research (total number of items were 58 initially but after deleting 5 items through the pilot survey the remaining items were 53). Therefore df = (d-1) was equal to 52. According to standards found in the literature (see Section 4.12.1) acceptable value of D^2/df should be ≤ 4 (for larger samples (Hair et al. 2010).

As far as limits of ignoring outliers present in the data are concerned, Burke (2001) argues that as a rule of thumb up to 20% could be ignored.

With regard to multicollinearity which indicates the presence of very high correlation between predictor variables, a figure of 0.8 was set as the limit beyond which it was decided that one of the items causing multicollinearity will be deleted. Although literature shows that correlations between predictor variables could be allowed up to 0.9 (e.g. Pallant, 2013), in this research multicollinearity limit was set at 0.8. Correlational analysis was conducted using SPSS. Correlational analysis provided the report on the statistical significance of the acceptable relationship amongst items. As mentioned in Section 4.8.2 correlations ≥0.2 where checked for statistical significance. It is common to accept correlation values ≥0.2 at a p-value less than 0.05. p-value of significance indicates the probability value of a test result or one or more extreme occurring by chance. That is if the p-value is less than 0.05 then the probability of occurrence of a result or one or more extreme is less than 0.05 then it is said that the null hypothesis can be rejected. On the other hand if the probability of occurrence of a result or one or more extreme is greater than 0.05 then it is said that the null hypothesis can be accepted indicating that the relationship being tested is not statistically significant (Saunders et al. 2013). After testing for correlation, if relationships were to found to be statistically not significant (that is p-value ≥ 0.5) then those items causing concern were deleted. Once the set of items that was found to have statistically significant correlation was decided upon, the data was considered ready for further analysis. The next step in the analysis was regression analysis.

4.12.2 Regression analysis

The research questions led to the definition of the model that was used to answer the research question. The model (see Figure 3.1) shows that there are variables namely independent (decision importance), dependent variable (decision effectiveness prior to implementing the decisions), mediating variables (rationality in decision making, intuition and decentralization in decision making) and moderating variables (environmental uncertainty and department performance). In order to test the relationship between the independent and dependent variable correlation or regression analysis is used in statistics (Saunders et al. 2013). In this research primarily the researcher is inquiring into the relationship between the strategic decision specific variable and SDMP outcome mediated by SDMP characteristic. Regression analysis provided the basis to test

the relationship amongst these variables depicted in the conceptual model (see Figure 3.1). Any basic regression equation could be written as (Kline, 2011; Janssens et al. 2008):

$y = i + xb + e \rightarrow (4.3)$

where:

y = the predicted variable

i = the y-intercept

x = predictor variable

b = unstandardized regression coefficient, and

e = residual or error unexplained by the model

Thus for the model in Figure 3.1 the following regression equations could be written:

Rationality in decision making = i + b (Decision importance) + e → (4.4)

Intuition = i1 + b1 (Decision importance) + e1 → (4.5)

Decentralisation in decision making = i2 + b2 (Decision importance) + e2 → (4.6)

Decision effectiveness = i3 + b3 (Rationality in decision making) + b4 (Intuition) + b5 (decentralization in decision making) + e3 → (4.7)

It must be borne in mind that rationality in decision making is represented by 4 variables, intuition is represented by 5 variables, decentralization in decision making is represented by 5 variables, decision effectiveness is represented by 5 variables and decision importance is represented by 6 variables. Appendix 4.5 provides the list of regression equations that were tested in this research.

Any regression analysis involves making certain assumptions and checking them, ascertaining the meaningfulness of the model derived through regression and interpreting the results obtained through regression for the independent variable. According to Janssens et al. (2008) the following assumptions must be checked before conducting regression analysis.

a. Causality is present whereby independent variables explain any variation that takes place in the dependent variables.
b. All the relevant independent variables have been taken into consideration.
c. The dependent and independent variables are measured using interval scales.

d. The relationship between the dependent and independent variables is linear.

e. There exists an additive relationship between the dependent and independent variables.

f. The residual characteristics including that the residuals show that the observations (responses obtained from participants in the survey) made are independent of each other, the residuals are normally distributed, the variance is the same for each value of the independent variable and if subsequent variables occur there is no relationship that exists between them.

g. There are sufficient number of observations that enables a good fit.

h. There is no multicollinearity and

i. Outliers are addressed.

Without satisfying the above conditions if regression is conducted it may not reflect the true outcome of the regression. Detailed analysis related to the above are provided in Chapter 5. After checking the above conditions two more steps need to be added to the regression analysis namely ascertaining the meaningfulness of the model and interpreting the results obtained through regression for the independent variables. Meaningfulness of the model was checked as per the guidelines given in Janssens et al. (2008). This involves analysing the output from SPSS. The outputs are titled 'model summary', 'ANOVA' and 'coefficients'. Model summary provides the coefficient of determinations (usually referred to R Square in the SPSS report). This value indicates the percentage of variation in the dependent that could be explained due to a variation in the independent variable. That is to say if R Square value is 30% with regard to the relationship between decision importance and rationality in decision making, then 30% of variation in rationality in decision making could be explained for one unit variation in decision importance. The same argument could be extended to all the relationships. Usually there is no agreement on the minimum value of R Square that is considered as acceptable. While Janssens et al. (2008) argue that lower bound value of R Square should be ≥ 0.5 Wooldridge (2006) argues that values lower than 0.5 does not indicate that the regression equation is useless as it merely indicates how well the model fits the data. An important criterion to accept an R Square value is the p-value of significance (reported under coloumn 'Sig. F Change' by SPSS). This value should be lower than 0.05 if the readings have to be accepted (Fujo & Ali, 2016). For a detailed analysis refer Section 5.5.2.

The next measure to be checked was the ANOVA which provides information to know whether the relationship between the predictor and predicted variables is statistically valid. The coloumn

with heading ‘Sig.’ indicates the p-value of significance. This should be less than 0.05 to accept the hypotheses. If it is greater than 0.05 it means the null hypotheses is accepted (Janssens et al. 2008). In addition the coloumn with heading ‘F’ reported by SPSS should be higher than ±1.96 to accept the model (for the detailed analysis refer to Section 5.5.2).

The last item to be checked was the table titled ‘Coefficient’ reported by SPSS. This table provides information that could be interpreted in terms of the variables. The first coloumn with heading ‘Model’ reports how many models can be derived and which model fits the data. The coloumn with heading ‘Unstandardised coefficients’ provides the strength of the relationship between the predictor and predicted variables denoted by ‘B’. However in order to accept the ‘B’ values one must refer the corresponding p-value of the term under the coloumn with heading ‘Sig.’ which should be less than 0.05 to accept the hypothesis (for the detailed analysis refer to Section 5.5.2). This step will indicate that the relationship between the independent and dependent variables is meaningful. Regression beta weights with absolute values of .10, .30 or .50 can be regarded as having a “small”, “moderate” or “large” effect respectively (Kline, 1998).

Once the meaningfulness of the model has been ascertained the next step to be taken was to interpret the results. To interpret the results the regression equations that have been written earlier should be populated with the actual values of the terms ‘b’ in equation 4.3. The meaning of the numerical value ‘b’ provides an estimate of the influence of the independent variable on the dependent variable. The detailed interpretation of the regression equations defined in this research are provided in Section 5.5.3.

After determining the regression equations for testing the relationship between the independent and dependent variable the next step taken was to determine the regression equations that involved the moderating variables namely organizational performance and environmental uncertainty. A general form of regression equation that could depict moderation by a variable is explained below.

Suppose the equation ($y = i + xb + e$) is moderated by another variable x1 then the moderation effect could be depicted in an equation form as

$y = i + xb1 + x1b2 + (x)(x1)(b3)\ e \rightarrow$ (4.8)

Equation 4.8 shows that the relationship x → y is moderated by x1.

Thus if organisational performance representing internal context is moderating the relationship between rationality in decision making and decision effectiveness, then the moderating equation will be written as

Decision effectiveness = m + φ1 Rationality in decision making + φ2 internal context + φ3 [(Rationality in decision making) (internal context)] → (4.9).

A similar equation can be written with regard to the moderation by environmental uncertainty representing external environment

Decision effectiveness = m1 + φ4 Rationality in decision making + φ5 External environment + φ6 [(Rationality in decision making) (External environment)] → (4.10)

Equations 4.9 and 4.10 are general equations and the actual items need to be used in place of the variables found in those general equations and this includes the moderation of the relationships (intuition → decision effectiveness) and (decentralisation in decision making → decision effectiveness) moderated by internal context and external environment. Sample equations are provided in Appendix 4.5. The actual analysis is provided in Chapter 5. After describing the regression analysis the next step that needs to be addressed was the path analysis which provides knowledge about the effect of the independent variable on the dependent variable using AMOS.

4.13 Path analysis

While the regression equations provide a model that indicates statistically significant paths, the actual effect of the independent variable on the dependent variable could be found out using structural equation modelling (SEM). SEM has two steps namely confirmatory factor analysis and path analysis (Janssens et al. 2008). Confirmatory factor analysis was not needed in this research as the analysis dealt with the individual items and found out which individual item measuring the independent variable or the mediating variable or the dependent variable or moderating variables are really statistically significant. Once the regression analysis provided the optimum set of items that need to be used in the model to measure the model, it was possible to revise the original model and an opportunity was available to test the model using path analysis. According to Abramson et al. (2005) SEM facilitates an understanding of how independent variables contribute to the explanation of the dependent variables. It further enables modeling the direction of relationship within multiple regression equations. Detailed steps involved in path analysis are described in Chapter 5.

4.14 Ethical considerations

One of the important aspects of conducting empirical research is the necessity to follow certain ethics. Ethical behaviour requires the researcher to have certain code of conduct or expected norms of the society while conducting the research. Such codes of conduct should govern the collection of data, behaviour of the researcher towards the participants, behaviour of the participants who provide responses, conduct of the researcher during data analysis and generation of results, exhibition of results based on findings and interpretations and dissemination of results. In addition to this, it is important the code defines towards informing the participants about the confidentiality and anonymity aspects. Informed consent is another aspect that the researcher must apply so that participants were allowed to participate in the research voluntarily. The researcher must explain about the research to the participant prior to their involvement and their exact role in the project. All these aspects were strictly applied by the researcher while collecting data from the respondents. The participants were introduced to the project through a note provided at the beginning of the questionnaire and informed them of the purpose of the project and what is expected of them. The note further informs them that participation in the survey is purely voluntary and that participants could withdraw at any stage they want. It was also mentioned that the choice of the most appropriate response is entirely left them. The respondents were appraised that their identity will be kept anonymous and the responses given by them will be kept in strict confidence and will not be used for any other purpose other than this research.

As far as the participants' ethical behaviour is concerned, it was expected that they are as truthful and honest as possible in providing responses. To ensure this the self-administered questionnaire was developed in a simple using multiple-choice questions. Respondents were given a URL in which the questionnaire was posted in electronic format to respond. No manual interference of author interference could be possible ensuring that there is no bias. Throughout the research process the researcher ensured that the integrity of data was maintained and the reports were faithfully reproduced from the software that generated repots and not distorted.

4.15 Summary

This chapter has dealt with the methodology required to address the research questions. The research framework developed indicated that positivist philosophical stance supported by an objective ontological position, deductive approach and quantitative research method could be used

to test the SDMP model developed. The research design shows that the research was conducted in the HEI sector in the USA. The survey strategy provided the approach to conduct the research and collect primary data using a Likert scale questionnaire. The survey was conducted online and the required response was obtained for analysis. Primary data was analysed using correlational analysis and regression analysis. Path analysis provided the basis to understand the effect of the independent variable on the dependent variable using mediating and moderating variable. The research instrument developed provided the opportunity to collect data and study SDMP prior to decision implementation, as well as to collect data about implemented decisions that were used later on to corroborate the results. Thus the discussion in this chapter has set the basis for conducting the data analysis described in Chapter 5.

Chapter 5
Data Analysis

5 Introduction

The previous chapter explained the data collection and analysis methodology. This chapter provides the analysis of the data and the findings. Analysis was conducted in stages. The first stage involved descriptive statistics (mean, median, standard deviation, skewness, kurtosis and Pearson correlation). The second stage involved testing the data's reliability and validity. The third stage involved determining causality between the dependent variable and one or more independent variables, using linear regression. SPSS software version 21 was used in the first three stages. The final stage involved path analysis of all the model's paths (see Figure 5.1), using AMOS software version 18. A section was also added to test the relationship between the outcome of the SDMP prior to decision implementation and the outcome of implemented decisions in the implementation phase.

5.1 Demographics

As mentioned in Section 4.9, the sample comprised HEI faculty. There were 485 valid responses. Of the 485 respondents 296 (61%) were males and 189 (39%) were females. There was a fair distribution across age groups. Most respondents belonged to the age group 36-50 years (42.06%), 30% belonged to the age group 20-35 years and 28% belonged to the age group 50 or above. It was important to understand the experience of the participants which provides support to the validity of the data collected, as otherwise there was a risk of collecting data from inexperienced respondents may not know the SDMP in as much depth. Such data may suffer from reliability and validity issues. Most respondents (81.4%) had over five years of experience, so it was reasonable to assume that the respondents would have had experience with regard to SDMP in HEIs. The respondents were members in committees that contributed to decision making. It can be seen that 98.3% respondents were members of a decision making committee. This is a strong indicator of the ability of the respondents to answer the survey questionnaire. The data has been tabulated in Table 5.1.

Frequency	Gender		Age			Years of experience					Members of Committee	
	Male	Female	20-35	36-50	> 50	5 or less	6-10	11-15	16-20	>20	Yes	No
Number	296	189	146	204	135	90	118	119	80	78	477	8
Percentage	61	39	30.10	42.06	27.80	18.56	24.3	24.5	16.49	16.08	98.3	1.7

Table 5.1, Demographic descriptive statistics

Further to describing the demographic data, the next section analysed the descriptive variables used in this research.

5.2 Descriptive statistics

Pallant (2013) argues that descriptive analysis has advantages including describing the characteristics of a sample and examining whether the variables violate any assumption underlying the statistical technique. Descriptive statistics include the mean, median, standard deviation, skewness and kurtosis. The data was initially checked for missing values, data entry errors and outliers. Appendix 5.1 shows that there are no missing values. Table 5.2 provides the descriptive statistics and shows that the median lies between 3 and 4 for all responses except for Q56 which was found to be 2. Almost all the data items satisfy the normality condition set for this research except for item Q6, for which the standard deviation is 2.75484, is beyond the generally accepted figure of 2 (see Section 4.12.1). All skewness and kurtosis values were within the acceptable limits i.e. ±1.5 (see Section 4.12.1) and ±2.5 (see Section 4.12.1) respectively. Thus the condition that the data collected meets the normality criteria was satisfied.

Questions	No. of responses	Missing values	Mean	Median	Standard deviation (<±2)	Skewness (<1.5)	Kurtosis (<2.5)
DIMPORTANCEQ1	485	0	2.8866	3	1.64063	-0.009	-1.633
DIMPORTANCEQ2	485	0	3.8082	4	1.00943	-0.504	-0.468
DIMPORTANCEQ3	485	0	3.8041	4	1.02891	-0.469	-0.638
DIMPORTANCEQ4	485	0	3.7711	4	1.00986	-0.448	-0.382
DIMPORTANCEQ5	485	0	3.8722	4	0.96217	-0.427	-0.514
DIMPORTANCEQ6	485	0	4.4845	4	2.75484	0.668	-0.235
RATIONALITYQ1	485	0	4.2536	4	1.33284	0.831	2.281
RATIONALITYQ2	485	0	3.3773	4	1.23646	-0.556	-0.542
RATIONALITYQ3	485	0	3.4474	4	1.33756	-0.613	-0.726
RATIONALITYQ4	485	0	3.4165	4	1.26448	-0.599	-0.64
INTUTIONQ1	485	0	3.4412	4	1.3618	-0.696	-0.65
INTUTIONQ2	485	0	3.6948	4	1.05513	-0.351	-0.872
INTUTIONQ3	485	0	3.701	4	1.12416	-0.478	-0.593
INTUTIONQ4	485	0	3.7052	4	1.05904	-0.448	-0.611
INTUTIONQ5	485	0	3.7897	4	1.06847	-0.563	-0.643
DECENTRALIZATIONQ1	485	0	3.7505	4	1.08217	-0.454	-0.769
DECENTRALIZATIONQ2	485	0	3.7629	4	1.12056	-0.628	-0.391
DECENTRALIZATIONQ3	485	0	3.6948	4	1.02534	-0.413	-0.49
DECENTRALIZATIONQ4	485	0	3.7093	4	1.16599	-0.392	-0.83
DECENTRALIZATIONQ5	485	0	3.7031	4	1.14744	-0.464	-0.849
PERFORMANCEQ3	485	0	3.8144	4	1.21228	-0.681	-0.611
PERFORMANCEQ5	485	0	3.7155	4	1.03725	-0.413	-0.628
PERFORMANCEQ6	485	0	3.7443	4	1.04674	-0.462	-0.455
PERFORMANCEQ7	485	0	3.6495	4	1.05862	-0.438	-0.482
PERFORMANCEQ8	485	0	3.7278	4	1.02053	-0.384	-0.582
PERFORMANCEQ9	485	0	3.6062	4	0.98939	-0.239	-0.598
PERFORMANCEQ10	485	0	3.668	4	1.11299	-0.473	-0.53
ENVIROMENT.PRQ1	485	0	3.7155	4	1.14518	-0.513	-0.712
ENVIROMENT.PRQ2	485	0	3.7505	4	1.11601	-0.454	-0.826
ENVIROMENT.PRQ3	485	0	3.6784	4	1.14074	-0.453	-0.782
ENVIROMENT.PRQ4	485	0	3.6227	4	1.10404	-0.322	-0.724
ENVIROMENT.PRQ5	485	0	3.666	4	1.02034	-0.314	-0.588
ENVIROMENT.ECONQ6	485	0	3.732	4	1.03168	-0.556	-0.253
ENVIROMENT.ECONQ7	485	0	3.5773	4	1.22673	-0.689	-0.389
ENVIROMENT.ECONQ8	485	0	3.4928	3	1.09585	-0.369	-0.377
ENVIROMENT.ECONQ9	485	0	3.466	4	1.19112	-0.438	-0.599
ENVIROMENT.COMPQ10	485	0	3.5072	4	1.22409	-0.519	-0.632
ENVIROMENT.COMPQ11	485	0	3.8103	4	1.04303	-0.635	-0.243
ENVIROMENT.COMPQ12	485	0	3.732	4	1.08821	-0.467	-0.495
ENVIROMENT.COMPQ13	485	0	3.7299	4	1.06563	-0.463	-0.543
ENVIROMENT.GOVQ14	485	0	3.6557	4	1.10362	-0.371	-0.686
ENVIROMENT.GOVQ15	485	0	3.7423	4	1.07832	-0.436	-0.771
ENVIROMENT.GOVQ16	485	0	3.7237	4	1.09372	-0.425	-0.697
ENVIROMENT.GOVQ17	485	0	3.6082	4	1.02808	-0.247	-0.666
ENVIROMENT.GOVQ18	485	0	3.5608	4	1.1017	-0.351	-0.607
DEC.EFFECQ1	485	0	3.7423	4	1.08405	-0.598	-0.429
DEC.EFFECQ2	485	0	3.1031	3	1.02535	0.347	-1.112
DEC.EFFECQ3	485	0	3.1485	3	0.944	0.173	-0.977
DEC.EFFECQ4	485	0	3.266	3	0.96068	0.036	-1.053
DEC.EFFECQ5	485	0	3.2928	3	0.98588	-0.016	-1.081
RATEQ6	485	0	3.3113	3	1.00411	-0.028	-1.168
RATEQ7	485	0	2.7691	3	1.40405	0.182	-1.295
RATEQ8	485	0	2.6268	2	1.26414	0.286	-1.013
RATEQ9	485	0	2.5979	3	1.25688	0.329	-0.911
RATEQ10	485	0	2.7979	3	1.24499	0.059	-1.018

Table 5.2 Descriptive statistics for items used to measure the constructs (From Appendix 5.1)

Outliers were checked using Mahalanobis distance. As mentioned in Section 4.12.1 Mahalanobis distance was calculated using the formula D^2/df where D^2 is the Mahalanobis distance while df is the number of degrees of freedom. D^2 was calculated using SPSS version 21 and df was calculated using the formula (d-1). 'd' is equal to the number of items used to measure the constructs, which was 54 in this research. Therefore df = (d-1) was equal to 53. According to standards found in the literature (see Section 4.12.1), the acceptable value of D^2/df should be ≤ 4 (for larger samples) (Hair et al. 2006)). It was found that outliers were detected for none of the responses as the ratio D^2/df was found to be less than 4. Multicollinearity was checked using correlation matrix (see Section 4.12.1). As explained in Section 4.12.1 high correlation values (> 0.8) between variables could indicate the presence of multicollinearity. From Appendix 5.2 it can be seen that none of the correlation values exceeded 0.8, indicating that multicollinearity does not exist. A reliability test was conducted using Cronbach's Alpha (see Appendix 5.2) and the alpha value reported was 0.888, indicating that the data collected are reliable. Where validity was concerned, a correlation test was conducted. Inter-item correlation values were verified amongst the items of each construct. Table 5.3 gives details of the SPSS report on inter-item correlation for each construct.

No.	Construct	Items	Number of items	Inter-item correlation (should be ≥0.2)		Items that were identified as causing concern with regard to achieving the required correlation value of ≥ 0.2
				Min	Max	
1.	Decision Importance	DIMPORTANCEQ1-DIMPORTANCEQ6	6	0.049	0.366	DIMPORTANCEQ2, DIMPORTANCEQ3, and DIMPORTANCEQ4
2.	Rationality	RATIONALITYQ1-RATIONALITYQ4	4	-0.120	0.414	RATIONALITYQ1
3.	Intuition	INTUTIONQ1-INTUTIONQ5	5	0.011	0.290	INTUTIONQ2 -INTUTIONQ4
4.	Decentralisation	DECENTRALIZATIONQ1-DECENTRALIZATIONQ5	5	-0.036	0.195	DECENTRALIZATIONQ2 - DECENTRALIZATIONQ4
5.	Internal Context	PERFORMANCEQ3, PERFORMANCEQ5-PERFORMANCEQ10	7	-.018	0.279	PERFORMANCEQ3, PERFORMANCEQ5, PERFORMANCEQ9
6.	Environmental uncertainty	ENVIROMENT.PRQ1 - ENVIROMENT.PRQ5; ENVIROMENT.ECONQ6 - ENVIROMENT.ECONQ9; ENVIROMENT.COMPQ10 - ENVIROMENT.COMPQ13; ENVIROMENT.GOVQ14 - ENVIROMENT.GOVQ18;	18	0.045	0.445	ENVIROMENT.PRQ1 - ENVIROMENT.PRQ5; ENVIROMENT.COMPQ11, ENVIROMENT.COMPQ13; ENVIROMENT.GOVQ14, ENVIROMENT.GOVQ15, ENVIROMENT.GOVQ17; ENVIROMENT.GOVQ18
7.	Decision Effect-iveness of SDMP	DEC.EFFECQ1 - DEC.EFFECQ5	5	-0.238	0.200	DEC.EFFECQ2 - DEC.EFFECQ4
8.	Decision Effectiveness post SDMP	RATE6 –RATE10	5	-0.224	0.092	No particular item could be singled out. As each item is correlated at least two other items.

Table 5.3, Correlation of items measuring constructs

The acceptable value of correlation was fixed at ≥0.2 based on outcomes reported in prior research (see Section 4.8.2). From Section 4.8.2 it can be seen that correlation between items provides a

measure of the internal consistency amongst the items that measure a construct. Correlation indicates the strength of the relationship between items with a correlation value that lies in the range 0.1 to 0.29 as small (see Section 4.82) (see also Scott et al. 2017; Brożek & Kogut, 2016). Correlation test showed that some items caused concern with inter item correlation values found to be lower than 0.2 or p-value of significance reported as exceeding 0.05. Thus after deleting those items that caused correlation values to be lower than 0.2 and those not having significant relationship indicated by the p-value exceeding 0.05 the final list of items measuring the constructs was derived (see Table 5.4).

No.	Construct	Items	Number of items retained	Inter-item correlation (should be ≥0.2)		Remarks
				Min	Max	
1.	Decision Importance	DIMPORTANCEQ1, DIMPORTANCEQ5, DIMPORTANCEQ6	3	0.233	0.317	Small to medium correlation
2.	Rationality	RATIONALITYQ2-RATIONALITYQ4	3	0.349	0.414	Medium correlation
3.	Intuition	INTUTIONQ1; INTUTIONQ5	2	0.290	0.290	Small correlation
4.	Decentralisation	DECENTRALIZATIONQ1, DECENTRALIZATIONQ5	2	0.195	0.195	Small correlation
5.	Internal Context1	PERFORMANCEQ6, PERFORMANCEQ7	2	0.264	0.264	Small correlation
6.	Internal Context2	PERFORMANCEQ8; PERFORMANCEQ10	2	0.215	0.215	Small correlation
7.	Environmental uncertainty	ENVIROMENT.ECONQ6 - ENVIROMENT.ECONQ9, ENVIROMENT.COMPQ10, ENVIROMENT.GOVQ12, ENVIROMENT.GOVQ16	7	0.211	0.383	Small to medium correlation
8.	Decision Effectiveness of SDMP	DEC.EFFECQ1, DEC.EFFECQ2	2	-0.238	-0.238	Small and negative correlation
9.	Decision Effectiveness post SDMP	RATE6, RATE7, RATE8, RATE9, RATE10	5	-0.224	0.092	No particular item could be singled out. As each item is correlated with at least two other items.

Table 5.4, final list of items retained based on correlation analysis

The SPSS correlation matrices are given in Appendix 5.3, showing that the items that could be retained were DIMPORTANCEQ1, DIMPORTANCEQ5, DIMPORTANCEQ6, RATIONALITYQ2, RATIONALITYQ3, RATIONALITYQ4, INTUTIONQ1, INTUTIONQ5, DECENTRALIZATIONQ5, DECENTRALIZATIONQ5, DEC.EFFECQ1, DEC.EFFECQ2, PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8, PERFORMANCEQ10,

ENVIROMENT.ECONQ6, ENVIROMENT.ECONQ7, ENVIROMENT.ECONQ8, ENVIROMENT.ECONQ9, ENVIROMENT.COMPQ10, ENVIROMENT.GOVQ12, ENVIROMENT.GOVQ16, RATE6, RATE7, RATE8, RATE9 and RATE10. However, note that items RATE6 to RATE10 have been included as additional measures developed to measure implemented decisions and not directly connected to testing the model in Figure 3.1. The scales RATE6 to RATE10 measured the extent to which the decisions (planned objectives) taken through the SDMP (measured as decision effectiveness prior to implementation) were successfully accomplished (that is objectives achieved in terms of implemented decisions). The data gathered using the scales RATE6 to RATE10 yielded additional findings that helped in corroborating the results of the analysis of SDMP outcome (decision effectiveness). Thus these items were not analysed as part of the main model in Figure 3.1 but were analysed only after rigorously testing the main model in Figure 3.1 statistically. The analysis related to these five items is provided in Section 5.9. The discriminant validity of the items other than RATE6 to RATE10 was tested by checking the sample correlation of the items. According to Holmes-Smith et al. (2006), correlation amongst latent variables could be used as a measure to test discriminant validity (see Section 4.8.3). From Appendix 5.4 it can be seen that no correlation values exceeded 0.8. The maximum correlation reported by SPSS was 0.601, between DIMPORTANCEQ1 and RATIONALITYQ4. Thus discriminant validity was tested. Finally, construct validity is said to be achieved if both convergent and discriminant validities are achieved (see Section 4.8.3) (Campbell & Fiske 1959; Peter 1981).

5.3 Regression analysis

After discussing the descriptive statistics and testing the reliability and validity measures the next step taken was testing causality using linear regression. Janssens et al. (2008) explain that regression analysis is usually used in determining the causality between dependent and independent variables (see Section 4.12.2). As explained in (see Section 4.12.2 for detailed explanation), the basic regression equation assumes the form:

$$Y = k_0 + k_1X_1 + k_2 X_2 + e$$

Thus for the items (variables) retained (see Table 5.4) that measure the constructs under investigation, the following regression equations were identified.

5.3.1 Regression 1: Relationship between items measuring decision importance and rationality in decision making (where items measuring decision importance are the

independent variables and items measuring rationality in decision making are the dependent variables).

$$RATIONALITYQ2 = k_0 + k_1\ DIMPORTANCEQ1 + k_2\ DIMPORTANCEQ5 + k_3\ DIMPORTANCEQ6 + e_1 \rightarrow (5.1)$$

$$RATIONALITYQ3 = k_4 + k_5\ DIMPORTANCEQ1 + k_6\ DIMPORTANCEQ5 + k_7\ DIMPORTANCEQ6 + e_2 \rightarrow (5.2)$$

$$RATIONALITYQ4 = k_8 + k_9\ DIMPORTANCEQ1 + k_{10}\ DIMPORTANCEQ5 + k_{11}\ DIMPORTANCEQ6 + e_3 \rightarrow (5.3)$$

5.3.2 Regression 2: Relationship between items measuring decision importance and intuition (where items measuring decision importance are the independent variables and items measuring intuition are the dependent variables).

$$INTUTIONQ1 = k_{12} + k_{13}\ DIMPORTANCEQ1 + k_{14}\ DIMPORTANCEQ5 + k_{15}\ DIMPORTANCEQ6 + e_4 \rightarrow (5.4)$$

$$INTUTIONQ5 = k_{17} + k_{18}\ DIMPORTANCEQ1 + k_{19}\ DIMPORTANCEQ5 + k_{20}\ DIMPORTANCEQ6 + e_5 \rightarrow (5.5)$$

5.3.3 Regression 3: Relationship between items measuring decision importance and decentralization of decision making (where items measuring decision importance are the independent variables and items measuring decentralization in decision making are the dependent variables).

$$DECENTRALIZATIONQ1 = k_{21} + k_{22}\ DIMPORTANCEQ1 + k_{23}\ DIMPORTANCEQ5 + k_{24}\ DIMPORTANCEQ6 + e_6 \rightarrow (5.6)$$

$$DECENTRALIZATIONQ5 = k_{25} + k_{26}\ DIMPORTANCEQ1 + k_{27}\ DIMPORTANCEQ5 + k_{28}\ DIMPORTANCEQ6 + e_7 \rightarrow (5.7)$$

5.3.4 Regression 4: Relationship between items measuring rationality in decision making and decision effectiveness (where items measuring rationality in decision making are

the independent variables and items measuring decision effectiveness are the dependent variables).

$$DEC.EFFECQ1 = k_{29} + k_{30}\ RATIONALITYQ2 + k_{31}\ RATIONALITYQ3 + k_{32}\ RATIONALITYQ4 + e_8 \rightarrow (5.8)$$

$$DEC.EFFECQ2 = k_{33} + k_{34}\ RATIONALITYQ2 + k_{35}\ RATIONALITYQ3 + k_{36}\ RATIONALITYQ4 + e_9 \rightarrow (5.9)$$

5.3.5 Regression 5: Relationship between items measuring intuition and decision effectiveness (where items measuring intuition are the independent variables and items measuring decision effectiveness are the dependent variables).

$$DEC.EFFECQ1 = k_{37} + k_{38}\ INTUTIONQ1 + k_{39}\ INTUTIONQ5 + e_{10} \rightarrow (5.10)$$

$$DEC.EFFECQ2 = k_{40} + k_{41}\ INTUTIONQ1 + k_{42}\ INTUTIONQ5 + e_{11} \rightarrow (5.11)$$

5.3.6 Regression 6: Relationship between items measuring decentralization in decision making and decision effectiveness (where items measuring decentralisation in decision making are the independent variables and items measuring decision effectiveness are the dependent variables).

$$DEC.EFFECQ1 = k_{43} + k_{44}\ DECENTRALIZATIONQ1 + k_{45}\ DECENTRALIZATIONQ5 + e_{12} \rightarrow (5.12)$$

$$DEC.EFFECQ2 = k_{46} + k_{47}\ DECENTRALIZATIONQ1 + k_{48}\ DECENTRALIZATIONQ5 + e_{13} \rightarrow (5.13)$$

5.4 Moderated regression analysis

In addition to the regression equations above, this study also explored how the internal context and external environment variables moderate the relationship between the variables of rationality in decision making, intuition and decentralization in decision making on the one hand and decision effectiveness on the other. Thus the following moderation regression equations were written.

5.4.1 Moderation of the relationship between rationality in decision making and decision effectiveness by internal context

$$\text{Decision effectiveness} = ki + ka\ \text{Rationality in decision making} \rightarrow (5.14)$$

Decision effectiveness = kj + kb internal context → (5.15)

Substituting equation (5.15) in equation (5.14) produces a new equation (5.16)

Decision effectiveness = ki + ka Rationality in decision making + kb internal context

+ ka1 [(Rationality in decision making) (internal context)] → (5.16)

From equation 5.16 it is possible to infer that if regression shows that the internal context affects decision effectiveness (as seen from equation 5.15), then from equation 5.16 it is possible to argue that the relationship between decision effectiveness and rationality in decision making will be affected. Similarly, with regard to the other two constructs namely intuition and decentralization in decision making, the following equations were identified.

5.4.2 Moderation of the relationship between intuition and decision effectiveness by internal context

Decision effectiveness = $k_l + k_c$ Intuition → (5.17)

Decision effectiveness = $k_m + k_d$ Internal context → (5.18)

Therefore, Decision effectiveness = $k_l + k_c$ Intuition + k_{d1} Internal context

+ k_{c1} [(Intuition)(Internal context)] → (5.19)

5.4.3 Moderation of the relationship between decentralization in decision making and decision effectiveness by internal context

Similarly

Decision effectiveness = $k_n + k_e$ Decentralisation in decision making → (5.20)

Decision effectiveness = $k_0 + k_f$ Internal context → (5.20.0)

Therefore,

Decision effectiveness = $k_n + k_e$ Decentralisation in decision making + k_f Internal context

+ k_{e1} [(Decentralisation in decision making) (Internal context)] → (5.21)

The same arguments can be extended to the **external environment** variables and the resulting equations follow.

5.4.4 Moderation of the relationship between rationality in decision making and decision effectiveness by external environment

Decision effectiveness = $k_i + k_a$ Rationality in decision making → (5.14)

Decision effectiveness = $k_o + k_g$ External environment → (5.22)

Therefore,

Decision effectiveness = $k_i + k_a$ Rationality in decision making + k_g External environment

$+ k_{a1}$ [(Rationality in decision making) (External environment)] → (5.23)

5.4.5 Moderation of the relationship between intuition and decision effectiveness by external environment

Similarly

Decision effectiveness = $k_l + k_c$ Intuition → (5.17)

Decision effectiveness = $k_p + k_h$ External environment → (5.24)

Therefore,

Decision effectiveness = $k_l + k_c$ Intuition + k_h External environment

$+ k_{c1}$ [(Intuition) (External environment)] → (5.25)

5.4.6 Moderation of the relationship between decentralization in decision making and decision effectiveness by external environment

Decision effectiveness = $k_n + k_e$ Decentralisation in decision making → (5.20)

Decision effectiveness = $k_q + k_{aa}$ External environment → (5.26)

Therefore,

Decision effectiveness = $k_n + k_e$ Decentralisation in decision making + k_{aa} External environment +

k_{e1} [(Decentralisation in decision making)

(External environment)] → (5.27)

Before solving the above equations using reports from SPSS it was necessary to test whether conditions required to conduct regression were satisfied. Thus the following steps were followed:

5.5 Conditions that need to be satisfied for conducting regression

5.5.1 Assumptions check

In this research the assumptions made were based on those suggested by Janssens et al. (2008) (see Section 4.12.2). Appendices 5.5 to 5.9 provide the analysis confirming that the initial assumptions made for conducting the regression analysis were satisfied for equations 5.1 to 5.13. After satisfying that the initial assumptions made are verified, the next step taken was to check the meaningfulness of the model. As mentioned in Section 4.12.2, meaningfulness of the model informs whether the variables are related and whether there is statistical significance in the relationship.

5.5.2 Checking the meaningfulness of the model

Checking the meaningfulness of the model consists of three steps namely checking the reports of SPSS with regard to model summary, ANOVA and Coefficients. One example is discussed in Section 5.5.2.1 with respect equations 5.1. Regression reports of equations 5.2 to 2.13 are provided in Appendix 5.10 while interpretation of the outcome of the regression is provided in 5.5.3.2.

5.5.2.1 Regression of equation 5.1

The model summary in Table 5.5 shows that R2 value is significant (Sig. F Change is less than 0.005) and was measured as 0.285. That is to say 28.5% of the variation in the dependent variable (RATIONALITYQ2) is explained by the dependent variables DIMPORTANCEQ1, DIMPORTANCEQ5 and DIMPORTANCEQ6.

Model Summary[b]										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.534[a]	.285	.281	1.04863	.285	63.972	3	481	.000	2.018
a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION? Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION? Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?										
b. Dependent Variable: Q8. TO ANALYSE RELEVANT INFORMATION										

Table 5.5, Model summary for equation 5.1

The next test was the ANOVA and the SPSS report is provided in Table 5.6. The report shows that the model is fitting the data with the p-value showing a significant reading at less than 0.05 and F-value indicating a value higher than ±1.96 which is acceptable (see Section 4.12.2).

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	211.033	3	70.344	63.972	.000[b]
	Residual	528.917	481	1.100		
	Total	739.951	484			
a. Dependent Variable: Q8. TO ANALYSE RELEVANT INFORMATION						
b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION? Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION? Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?						

Table 5.6, ANOVA report for equation 5.1

Next Table 5.7 generated by SPSS reported the coefficients of regression. The table shows that two out of the three relationships namely DIMPORTANCEQ5→RATIONALITYQ2 and DIMPORTANCEQ6→RATIONALITYQ2 were found to be statistically insignificant as p-value of significance reported showed that it exceeded the accepted requirement of less than 0.05 (see Sig. for the relationship DIMPORTANCEQ5→RATIONALITYQ2 reported as 0.170 and for the relationship DIMPORTANCEQ6→RATIONALITYQ2 reported as 0.155).

Coefficients[a]										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2.383	.201		11.832	.000	1.987	2.779		
	Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?	.402	.031	.534	12.925	.000	.341	.463	.872	1.147
	Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?	-.073	.053	-.057	-1.374	.170	-.177	.031	.873	1.145
	Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?	.026	.018	.057	1.423	.155	-.010	.061	.916	1.092
a. Dependent Variable: Q8. TO ANALYSE RELEVANT INFORMATION										

Table 5.7, Regression coefficients for equation 5.1

The only relationship valid was DIMPORTANCEQ1→RATIONALITYQ2 (see reported Sig. as 0.000). Thus equation 5.1 required rewriting as:

$RATIONALITYQ2 = k_0 + k_1\ DIMPORTANCEQ1 + e_1 \rightarrow (5.1A)$

Taking the values of k_0, k_1 and e_1 from Table 5.7 equation 5.1A is rewritten as:

$RATIONALITYQ2 = 2.383 + 0.402\ DIMPORTANCEQ1 + 0.031 \rightarrow (5.1A)$

Based on Tables 5.5 to 5.7 and using the p-value (see Appendix 5.10) as well as the foregoing analyses it can be inferred that that there is a good fit between the model and the data. All relationships that have statistical significance were found to have a p-value less than 0.05 which indicates the model fitness to data and hence the meaningfulness of the model.

After ascertaining the meaningfulness of the model the next section dealt with the interpretation of the regression coefficients. Interpretation of the regression equations informs whether there is a positive or negative relationship between the independent and dependent variables and the strength of such a relationship (see Section 4.12.2). The interpretation of the regression equation 5.1 is given below.

5.5.3 Interpretation of the regression coefficients

5.5.3.1 Interpretation of the regression coefficients of equation 5.1A

Equation 5.1A can be interpreted in a way that a one unit increase in the decision importance (DIMPORTANCEQ1: how far did you anticipate a decision to change things in your department?) will result in a 0.402 unit increase in rationality in decision making (RATIONALITYQ2: to analyse relevant information). That is to say if a decision is important and there is an anticipation that the decision could change things in a department in a HEI by 100% then it can be expected that the rationality involved in the decision would have been supported with the analysis of the relevant information to the extent of 40.2%. It is worthwhile to note here that the results which indicate that the relationships DIMPORTANCEQ5→RATIONALITYQ2 and DIMPORTANCEQ6→RATIONALITYQ2 are insignificant appear to be contradictory in nature. For instance, the variable DIMPORTANCEQ5 (which is the code for the question: "how important was that decision to the institution?") that refers to the importance of the decision to the institution, under normal circumstances could be expected to be related to the analysis of relevant information affecting the decision (RATIONALITYQ2: to analyse relevant information) without which it may not be possible to know whether the decision is important at all or to what extent it is important.

That the result obtained through statistical analysis is not signifying this relationship can only be explained by an argument that in the context of HEIs, it is possible some important decisions are not based on rationality but intuition. Hence this relationship DIMPORTANCEQ5→RATIONALITYQ2 was not found statistically significant. Arguing in a similar fashion one could interpret the lack of statistical significance in the relationship DIMPORTANCEQ6 (how far ahead in the future did you initially expect the decision to significantly influence the whole institution?)→RATIONALITYQ2 (to analyse relevant information) could be due to lack of an ability to predict what could happen in future even if relevant information is available as environment could change and the rationale used at a particular point of time may not be valid at future date.

5.5.3.2 Interpretation of the regression coefficients of equations 5.2 to 5.13

Similar analysis was carried out with regard to the other regression equations (5.2 to 5.13) and the results of the analysis are provided in Table 5.8.

Equation No.	Independent variable	Dependent variable	Correlation		Model summary		ANOVA		Coefficient				Remarks
			Value	Sig. (should be ≤0.05)	R^2	Sig. F Change (should be ≤0.05)	F (should be ≥ ±1.96)	Sig. (should be ≤0.05)	Constant	B	Sig. (should be ≤0.05)	Std. Error	
5.1	DIMPORTANCEQ1	RATIONALITYQ2	.529	.000	.285	.000	63.972	.000	2.383	.402	.000	.031	DIMPORTANCEQ5 and DIMPORTANCEQ6 are not statistically significant
	DIMPORTANCEQ5		.126	.003						-.073	.170	.053	
	DIMPORTANCEQ6		.171	.000						.026	.155	.018	
5.2	DIMPORTANCEQ1	RATIONALITYQ3	.587	.000	.352	.000	87.240	.000	1.737	.453	.000	.032	DIMPORTANCEQ5 and DIMPORTANCEQ6 are not statistically significant
	DIMPORTANCEQ5		.239	.000						.064	.238	.055	
	DIMPORTANCEQ6		.213	.000						.034	.067	.019	
5.3	DIMPORTANCEQ1	RATIONALITYQ4	.601	.000	.371	.000	94.482	.000[b]	2.039	.452	.000	.030	DIMPORTANCEQ5 is not statistically significant
	DIMPORTANCEQ5		.183	.000						-.034	.509	.051	
	DIMPORTANCEQ6		.232	.000						.045	.009	.017	
5.4	DIMPORTANCEQ1	INTUTIONQ1	.587	.000	.388	.000	101.787	.000[b]	.985	.428	.000	0.32	DIMPORTANCEQ6 is not statistically significant
	DIMPORTANCEQ5		.385	.000						.313	.000	.054	
	DIMPORTANCEQ6		.179	.000						.002	.895	.018	
5.5	DIMPORTANCEQ1	INTUTIONQ5	.361	.000	.144	.000	26.906	.000[b]	2.748	.208	.000	.029	DIMPORTANCEQ5 is not statistically significant
	DIMPORTANCEQ5		.189	.000						.075	.137	.050	
	DIMPORTANCEQ6		.179	.000						.034	.047	.017	
5.6	DIMPORTANCEQ1	DECENTRALIZATIONQ1	.412	.000	.173	.000	33.594	.000[b]	2.769	.258	.000	.029	DIMPORTANCEQ5 and DIMPORTANCEQ6 are not statistically significant
	DIMPORTANCEQ5		.172	.000						.044	.381	.050	
	DIMPORTANCEQ6		.140	.001						.015	.372	.017	
5.7	DIMPORTANCEQ1	DECENTRALIZATIONQ5	.349	.000	.124	.000	22.787	.000[b]	3.163	.250	.000	.032	DIMPORTANCEQ5 and DIMPORTANCEQ6 are not statistically significant
	DIMPORTANCEQ5		.068	.066						-.062	.253	.054	
	DIMPORTANCEQ6		.104	.011						.013	.476	.019	
5.8	RATIONALITYQ2	DEC.EFFECQ1	.284	.000	.173	.000	33.630	.000[b]	2.189	.122	.003	.040	
	RATIONALITYQ3		.349	.000						.182	.000	.038	
	RATIONALITYQ4		.317	.000						.150	.000	.040	
5.9	RATIONALITYQ2	DEC.EFFECQ2	-.142	.001	.090	.000	15.814	.000[b]	4.091	-.015	.717	.040	RATIONALITYQ2 is not statistically significant
	RATIONALITYQ3		-.237	.000						-.114	.003	.038	
	RATIONALITYQ4		-.264	.000						-.159	.000	.040	
5.10	INTUTIONQ1	DEC.EFFECQ1	.413	.000	.183	.000	53.978	.000[b]	2.256	.302	.000	.034	
	INTUTIONQ5		.226	.000						.118	.007	.044	
5.11	INTUTIONQ1	DEC.EFFECQ2	-.258	.000	.095	.000	25.298	.000[b]	4.281	-.155	.000	.034	
	INTUTIONQ5		-.237	.000						-.170	.000	.043	
5.12	DECENTRALIZATIONQ1	DEC.EFFECQ1	.230	.000	.053	.000	13.522	.000[b]	2.896	.232	.000	.045	DECENTRALIZATIONQ5 is not statistically significant
	DECENTRALIZATIONQ5		.038	.202						-.007	.875	.043	
5.13	DECENTRALIZATIONQ1	DEC.EFFECQ2	-.157	.000	.027	.001	6.618	.001[b]	3.780	-.141	.001	.043	DECENTRALIZATIONQ5 is not statistically significant
	DECENTRALIZATIONQ5		-.074	.052						-.040	.326	.041	

Table 5.8, Results of regression of equations 5.1 to 5.13

Using Table 5.8 it is possible to rewrite the equations 5.1 to 5.13 as follows.

RATIONALITYQ2 = 2.383 + 0.402 DIMPORTANCEQ1 + 0.031 → (5.1A)

RATIONALITYQ3 = 1.737 + 0.034 DIMPORTANCEQ6 + 0.019 → (5.2A)

RATIONALITYQ4 = 2.039 + 0.452 DIMPORTANCEQ1

+ 0.045 DIMPORTANCEQ6 + 0.030 + 0 .017 → (5.3A)

INTUTIONQ1= 0.985 + 0.428 DIMPORTANCEQ1

+ 0.313 DIMPORTANCEQ5 + 0.032 + 0.054 → (5.4A)

INTUTIONQ5= 2.748 + 0.208 DIMPORTANCEQ1

+ 0.034 DIMPORTANCEQ6 + 0.029 + 0.017 → (5.5A)

DECENTRALIZATIONQ1 = 2.769 + 0.258 DIMPORTANCEQ1 + 0.029 → (5.6A)

DECENTRALIZATIONQ5 = 3.163 + 0.250 DIMPORTANCEQ1 + 0.032 → (5.7A)

DEC.EFFECQ1 = 2.189 + 0.122 RATIONALITYQ2 + 0.182 RATIONALITYQ3

+ 0.150 RATIONALITYQ4 + 0.040 + 0.038 + 0.040 → (5.8A)

DEC.EFFECQ2 = 4.091 - 0.114 RATIONALITYQ3 - 0.159 RATIONALITYQ4

+ 0.038 + 0.040 → (5.9A)

DEC.EFFECQ1 = 2.256 + 0.302 INTUTIONQ1

+ 0.118 INTUTIONQ5 + 0.034 + 0.044 → (5.10A)

DEC.EFFECQ2 = 4.281 - 0.155 INTUTIONQ1 - 0.170 INTUTIONQ5

+ 0.034 + 0.043 → (5.11A)

DEC.EFFECQ1 = 2.896 + 0.232 DECENTRALIZATIONQ1 + 0.045 → (5.12A)

DEC.EFFECQ2 = 3.780 - 0.141 DECENTRALIZATIONQ5 + 0.043 → (5.13A)

The equations were grouped according to the constructs. Then adding the left hand side (LHS) and right hand side (RHS) of the respective equations, the equations 5.1A to 5.13A were rewritten as follows:

Adding LHS and RHS of equations 5.1A to 5.3A:

RATIONALITYQ2 + RATIONALITYQ3

+ RATIONALITYQ4 = (2.383 + 1.737 + 2.039) + (0.402 DIMPORTANCEQ1

+ 0.034 DIMPORTANCEQ6 + 0.452 DIMPORTANCEQ1

+ 0.045 DIMPORTANCEQ6) + (0.031+0.019+0.030+0 .017) → (5A1).

It is possible to identify (RATIONALITYQ2 + RATIONALITYQ3 + RATIONALITYQ4) as the construct **Rationality in decision making**.

Thus equation 5.1A can be rewritten as

Rationality in decision making = (6.159) + (0.854) DIMPORTANCEQ1

+ (0.379) DIMPORTANCEQ6 + 0.097 → (5A2)

Similar rearrangement of equations 5.4 to 5.13 resulted in the following equations:

By adding the LHS and RHS of equations 5.4A and 5.5A the equation can be written.

INTUTIONQ1 + INTUTIONQ5 = (3.733) + (0.428 + 0.208) DIMPORTANCEQ1

+ 0.313 DIMPORTANCEQ5

+ 0.034 DIMPORTANCEQ6 + (0.132) → (5B1)

It is possible to identify (INTUTIONQ1 + INTUTIONQ5) as the construct **Intuition**. Thus

Intuition = (3.733) + (0.636) DIMPORTANCEQ1 + 0.313 DIMPORTANCEQ5

+ 0.034 DIMPORTANCEQ6 + (0.132) → (5B2)

Rearranging equations 5.6A and 5.7A and naming (DECENTRALIZATIONQ1 + DECENTRALIZATIONQ5) as Decentralization in decision making, the following equation can be derived.

Decentralization in decision making = (5.932) + (0.508) DIMPORTANCEQ1

+ (0.061) → (5C2)

As far as equations 5.8A to 5.13A were concerned, equations 5.8A, 5.10A and 5.12A were related to decision effectiveness variable coded DEC.EFFECQ1 and 5.9A, 5.11A and 5.13A were related to decision effectiveness variable coded DEC.EFFECQ2. Two sets of equations were realized using this grouping which are given as follows.

Group 1 (equations 5.8A, 5.10A and 5.12A)

DEC.EFFECQ1 = 2.189 + 0.122 RATIONALITYQ2 + 0.182 RATIONALITYQ3

+ 0.150 RATIONALITYQ4 + 0.040 + 0.038 + 0.040 → (5.8A)

DEC.EFFECQ1 = 2.256 + 0.302 INTUTIONQ1 + 0.118 INTUTIONQ5 + 0.034 + 0.044 → (5.10A)

DEC.EFFECQ1 = 2.896 + 0.232 DECENTRALIZATIONQ1 + 0.045 → (5.12A)

Group 2 (equations 5.9A, 5.11A and 5.13A)

DEC.EFFECQ2 = 4.091 - 0.114 RATIONALITYQ3 - 0.159 RATIONALITYQ4

+ 0.038 + 0.040 → (5.9A)

DEC.EFFECQ2 = 4.281 - 0.155 INTUTIONQ1 - 0.170 INTUTIONQ5

+ 0.034 + 0.043 → (5.11A)

DEC.EFFECQ2 = 3.780 - 0.141 DECENTRALIZATIONQ5 + 0.043 → (5.13A)

Adding the LHS and RHS of Group 1 equations gives

(DEC.EFFECQ1 + DEC.EFFECQ1

+ DEC.EFFECQ1) = 2.189 + 0.122 RATIONALITYQ2 + 0.182 RATIONALITYQ3

+ 0.150 RATIONALITYQ4 + (0.040 + 0.038 + 0.040) + 2.256

+ 0.302 INTUTIONQ1 + 0.118 INTUTIONQ5 + (0.034

+ 0.044) + 2.896 + 0.232 DECENTRALIZATIONQ1 + (0.045)

Hence,

3 DEC.EFFECQ1 = (2.189 + 2.256 + 2.896) + 0.122 RATIONALITYQ2
+ 0.182 RATIONALITYQ3 + 0.150 RATIONALITYQ4
+ 0.302 INTUTIONQ1 + 0.118 INTUTIONQ5
+ 0.232 DECENTRALIZATIONQ1 + (0.040 + 0.038
+ 0.040 + 0.034 + 0.044 + 0.045)

Hence,

DEC.EFFECQ1 = 1/3 [7.341 + 0.122 RATIONALITYQ2 + 0.182 RATIONALITYQ3
+ 0.150 RATIONALITYQ4 + 0.302 INTUTIONQ1
+ 0.118 INTUTIONQ5 + 0.232 DECENTRALIZATIONQ1
+ 0.241) → (5D2)

Adding the LHS and RHS of Group 2 equations gives

(DEC.EFFECQ2 + DEC.EFFECQ2
+ DEC.EFFECQ2) = 4.091 - 0.114 RATIONALITYQ3 - 0.159 RATIONALITYQ4
+ 0.038 + 0.040
+ 4.281 - 0.155 INTUTIONQ1 - 0.170 INTUTIONQ5 + 0.034
+ 0.043 + 3.780 - 0.141 DECENTRALIZATIONQ5 + 0.043.

Hence,

3 DEC.EFFECQ2 = (4.091 + 4.281 + 3.780) – (114 RATIONALITYQ3
+ 0.159 RATIONALITYQ4 + 0.155 INTUTIONQ1 + 0.170 INTUTIONQ5
+ 0.141 DECENTRALIZATIONQ5)
+ (0.038 + 0.040 + 0.034 + 0.043 + 0.043).

DEC.EFFECQ2 = 1/3 [12.152 - (114 RATIONALITYQ3 + 0.159 RATIONALITYQ4
+ 0.155 INTUTIONQ1 + 0.170 INTUTIONQ5
+ 0.141 DECENTRALIZATIONQ5) + (0.198)] → (5E2)

The equations 5A2 to 5E2 could be interpreted as follows:

From equation 5A2 it can be inferred that Decision importance as an independent variable directly and positively influences Rationality in decision making. It can be seen that a one unit change in DIMPORTANCEQ1 can introduce a 0.854 unit change in Rationality in decision making and a one unit change in DIMPORTANCEQ6 will introduce a 0.379 change in Rationality in decision making. However, the variable DIMPORTANCEQ5 has no influence on Rationality in decision making. The variable DIMPORTANCEQ5 relates to the question "How important was that decision to the institution?". As far as this question is concerned, it may be reasonable to assume that the respondents of HEIs could not relate Rationality in decision making with decision importance as the perception of importance could be very difficult to imagine especially if time is considered to be a factor.

From equation 5B2 it can be inferred that Decision importance as an independent variable directly and positively influences Intuition. It can be seen that a one unit change in DIMPORTANCEQ1 can introduce a 0.636 unit change in Intuition, a one unit change in DIMPORTANCEQ5 can introduce a 0.313 unit change in Intuition and a one unit change in DIMPORTANCEQ6 will introduce a 0.034 change in Intuition. Here again it can be seen that the influence of DIMPORTANCEQ6 on Intuition is very low and could be neglected leading to the conclusion that DIMPORTANCEQ1 and DIMPORTANCEQ5 are the variables that dominate as far as the influence of decision importance as a construct on Intuition is concerned. Further, the low level of influence of DIMPORTANCEQ6 on Intuition could be because the question relates to a 'future' happening (How far ahead in the future did you initially expect the decision to significantly influence the whole institution?) about which the respondents of HEIs might not have had adequate knowledge.

From equation 5C2 it can be inferred that Decision importance as an independent variable directly and positively influences Decentralization of decision making. It can be seen that a one unit change in DIMPORTANCEQ1 can introduce a 0.508 unit change in Decentralization in decision making. It can also be seen that both the variables DIMPORTANCEQ5 and DIMPORTANCEQ6 do not influence Decentralization in decision making. This finding appears to be contradictory as the questions "How important was that decision to the institution?" (DIMPORTANCEQ5) and "How far ahead in the future did you initially expect the decision to significantly influence the whole institution?" (DIMPORTANCEQ6) could be expected to have an influence on the Decentralization

of decision making if one takes into account the question DIMPORTANCEQ1 which has been found to influence Decentralization of decision making. This aspect needs to be examined further taking into account the current knowledge in the literature and the result of such an examination is provided in Section 6.2.4.

From equation 5D2 it can be inferred that Rationality in decision making, Intuition and Decentralization in decision making as independent variables directly and positively influence Decision Effectiveness (DEC.EFFECQ1) in varying measures. For instance a one unit of change in RATIONALITYQ2 introduces a 0.0307 unit change in DEC.EFFECQ1, a one unit of change in RATIONALITYQ3 introduces a 0.0607 unit change in DEC.EFFECQ1, a one unit of change in RATIONALITYQ3 introduces a 0.05 unit change in DEC.EFFECQ1, a one unit change in INTUTIONQ1 introduces a 0.107 unit change in DEC.EFFECQ1, a one unit change in INTUTIONQ5 introduces a 0.039 unit change in DEC.EFFECQ1 and a one unit change in DECENTRALIZATIONQ1 introduces a 0.077 unit change in DEC.EFFECQ1. If one inspects these findings, it can be seen that decision effectiveness is predominantly influenced by INTUTIONQ1 when compared to the other variables as the extent of influence of those variables on decision effectiveness is much small (less than 0.1). However, to identify their combined effect, the researcher conducted structural equation modelling. This is discussed later in Section 5.7. Again, it can be seen that DECENTRALIZATIONQ2 (Human resources (e.g. hiring/firing; compensation and setting career paths for the personnel employed within your unit; reorganizing your unit; creation of new jobs)) does not have any influence on DEC.EFFECQ1. The reason for this could be that although decentralization is a concept that could be implemented in HEIs, actions such as hiring/firing; compensation and setting career paths for the personnel employed within a respondent's unit; reorganizing the unit; or creation of new jobs may be beyond the capability of an academic unit that is decentralized. In the higher education sector, such actions will have serious implications for the teaching and learning process of students and any challenge that could create problems to the teaching and learning experience of students is likely to affect HEIs in many ways e.g. a fall in student enrolment or satisfaction.

From equation 5E2 it can be inferred that Rationality in decision making, Intuition and Decentralization in decision making as independent variables directly but negatively influence Decision Effectiveness (DEC.EFFECQ2) in varying measures. Two aspects emerge from an inspection of the equation 5E2. The first one is that the negative relationship is contradicting the

results of the analysis of the equation 5D2. While it is unlikely that effectiveness in decision making falls when the extent of rationality, intuition and decentralization in decision making rises, such a result is perhaps possible only if the rationality in decision making is adversely affected by a very poor analysis of information or intuition of the decision making persons is not appropriate to the situation or decentralization leads to very poor outcomes of decision making. This can be explained taking into account the objective set to be accomplished by the department concerned which is "To enhance quality management within the department" (item DEC.EFFECQ2). The results show that this statement denoted by DEC.EFFECQ2 is not found to have statistically significant relationship with SDMP characteristics. One interpretation could be that enhancing quality management as an objective may require centralised operation in HEIs. Perhaps this is the reason that decentralisation is not found significant with regard to this objective. Further, enhancing quality management without involving rationality in decision making and intuition appears to be practically unlikely. This argument is supported by the literature. Secondly the coefficients of regression are all below 0.1 making the relationship between the independent and dependent variables very weak. These two reasons led the researcher to drop this equation from analysing the equation further. Thus it can be concluded that the relationship between the independent and dependent variables mediated by the decision process variables has been tested and verified. After analysing the equations 5A1 to 5E2 the next step taken was to check the moderating effect of the environment variables on the relationship between the SDMP characteristics and the SDMP outcomes.

5.6 Moderated regression analysis

After analyzing the regression equations 5A2 to 5E2, the next step taken was to analyse the influence of the moderating factors namely PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8, PERFORMANCEQ10, ENVIROMENT.ECONQ6, ENVIROMENT.ECONQ7, ENVIROMENT.ECONQ8, ENVIROMENT.ECONQ9, ENVIROMENT.COMPQ10, ENVIROMENT.GOVQ12, and ENVIROMENT.GOVQ16 on the relationships (Rationality in decision making) → (Decision effectiveness), (Intuition) → (Decision effectiveness) and (Decentralisation in decision making) → (Decision effectiveness). Regression was used to check the influence of moderating factors on these three relationships. The regression equations 5.15, 5.18 and 5.20 were used to test the moderating effect of internal context variables. Similarly, equations 5.22, 5.24 and 5.26 were used to test the moderating effect of external environment variables. Before regressing the equations, the same steps mentioned in Section 5.5 were conducted. Out of the nine steps, the first three steps and last three steps were already completed for the internal context and external environment variables (see Sections 5.3 and 5.4).

The next steps that were taken were checking the linear nature of the equations, additive nature of the equations and residual characteristics. Appendix 5.12 shows that the equations 5.M1 to 5.M10 were tested for linearity assumption and found to satisfy the condition. Additive nature of the equations was tested as mentioned in Appendix 5.5 and found to satisfy the conditions. Finally, residuals were tested as mentioned in Appendix 5.5 and found to satisfy the conditions. After satisfying these conditions, regression was conducted and the full results are provided in Appendix 5.13. A summary of the results of the moderation by these variables is provided in Table 5.9.

No.	Relationship under moderation	Moderating variables	Results
1	RATIONALITYQ2 → DEC.EFFECQ1	PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8, PERFORMANCEQ10	Not moderated by any moderating variable
2	RATIONALITYQ3 → DEC.EFFECQ1	PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8, PERFORMANCEQ10	Moderated only by PERFORMANCEQ6
3	RATIONALITYQ4 → DEC.EFFECQ1	PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8, PERFORMANCEQ10	Moderated only by PERFORMANCEQ10
4	RATIONALITYQ2 → DEC.EFFECQ2	PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8, PERFORMANCEQ10	Not moderated by any moderating variable
5	RATIONALITYQ3 → DEC.EFFECQ2	PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8, PERFORMANCEQ10	Not moderated by any moderating variable
6	RATIONALITYQ4 → DEC.EFFECQ2	PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8, PERFORMANCEQ10	Moderated only by PERFORMANCEQ7
7	INTUTIONQ1 → DEC.EFFECQ1	PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8, PERFORMANCEQ10	Not moderated by any moderating variable
8	INTUTIONQ5 → DEC.EFFECQ1	PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8, PERFORMANCEQ10	Moderated by PERFORMANCEQ8
9	INTUTIONQ1 → DEC.EFFECQ2	PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8, PERFORMANCEQ10	Not moderated by any moderating variable
10	INTUTIONQ5 → DEC.EFFECQ2	PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8, PERFORMANCEQ10	Moderated only by PERFORMANCEQ8
11	DECENTRALIZATIONQ1 → DEC.EFFECQ1	PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8, PERFORMANCEQ10	Not moderated by any moderating variable
12	DECENTRALIZATIONQ5 → DEC.EFFECQ1	PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8, PERFORMANCEQ10	Moderated only by PERFORMANCEQ8
13	DECENTRALIZATIONQ1 → DEC.EFFECQ2	PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8, PERFORMANCEQ10	Moderated only by PERFORMANCEQ8
14	DECENTRALIZATIONQ5 → DEC.EFFECQ2	PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8, PERFORMANCEQ10	Not moderated by any moderating variable
15	RATIONALITYQ2 → DEC.EFFECQ1	ENVIROMENTQ6, ENVIROMENTQ7, ENVIROMENTQ8, ENVIROMENTQ9, ENVIROMENTQ10, ENVIROMENTQ12	Moderated only by ENVIROMENTQ10
16	RATIONALITYQ4 → DEC.EFFECQ1	ENVIROMENTQ6, ENVIROMENTQ7, ENVIROMENTQ8, ENVIROMENTQ9, ENVIROMENTQ10, ENVIROMENTQ12	Moderated only by ENVIROMENTQ10
17	RATIONALITYQ2 → DEC.EFFECQ2	ENVIROMENTQ6, ENVIROMENTQ7, ENVIROMENTQ8, ENVIROMENTQ9, ENVIROMENTQ10, ENVIROMENTQ12	Not moderated by any moderating variable
18	RATIONALITYQ4 → DEC.EFFECQ2	ENVIROMENTQ6, ENVIROMENTQ7, ENVIROMENTQ8, ENVIROMENTQ9, ENVIROMENTQ10, ENVIROMENTQ12	Not moderated by any moderating variable
19	INTUTIONQ1 → DEC.EFFECQ1	ENVIROMENTQ6, ENVIROMENTQ7, ENVIROMENTQ8, ENVIROMENTQ9, ENVIROMENTQ10, ENVIROMENTQ12	Not moderated by any moderating variable
20	INTUTIONQ5 → DEC.EFFECQ1	ENVIROMENTQ6, ENVIROMENTQ7, ENVIROMENTQ8, ENVIROMENTQ9, ENVIROMENTQ10, ENVIROMENTQ12	Not moderated by any moderating variable
21	INTUTIONQ1 → DEC.EFFECQ2	ENVIROMENTQ6, ENVIROMENTQ7, ENVIROMENTQ8, ENVIROMENTQ9, ENVIROMENTQ10, ENVIROMENTQ12	Moderated only by ENVIROMENTQ12

22	INTUTIONQ5 → DEC.EFFECQ2	ENVIROMENTQ6, ENVIROMENTQ7, ENVIROMENTQ8, ENVIROMENTQ9, ENVIROMENTQ10, ENVIROMENTQ12	Not moderated by any moderating variable
23	DECENTRALIZATIONQ1 → DEC.EFFECQ1	ENVIROMENTQ6, ENVIROMENTQ7, ENVIROMENTQ8, ENVIROMENTQ9, ENVIROMENTQ10, ENVIROMENTQ12	Not moderated by any moderating variable
24	DECENTRALIZATIONQ5 → DEC.EFFECQ1	ENVIROMENTQ6, ENVIROMENTQ7, ENVIROMENTQ8, ENVIROMENTQ9, ENVIROMENTQ10, ENVIROMENTQ12	Moderated only by ENVIROMENTQ9
25	DECENTRALIZATIONQ1 → DEC.EFFECQ2	ENVIROMENTQ6, ENVIROMENTQ7, ENVIROMENTQ8, ENVIROMENTQ9, ENVIROMENTQ10, ENVIROMENTQ12	Not moderated by any moderating variable
26	DECENTRALIZATIONQ5 → DEC.EFFECQ2	ENVIROMENTQ6, ENVIROMENTQ7, ENVIROMENTQ8, ENVIROMENTQ9, ENVIROMENTQ10, ENVIROMENTQ12	Moderated only by ENVIROMENTQ9

Table 5.9, Regression results of the moderation of relationships between strategic decision process variables and outcome

The results reported by SPSS (see Table 5.9) show that only those relationships extracted and shown in Table 5. 10 between independent and dependent variables were moderated by moderating variables. The table shows that the items representing the decision process variables, namely, rationality in decision making, intuition and decentralization in decision making and their relationship to decision effectiveness are moderated either partially or completely. These results are in line with the findings already established in the literature where it has been pointed out that the relationship between decision process variables and decision process outcome are moderated by internal context and external environment (e.g. Elbanna and Child, 2007). Taking into account the results given in Tables 5.8, 5.9 and 5.10 it is possible to determine the final set of variables and their relationships. These are provided in Table 5.11.

No.	Relationship under moderation	Independent variable	Regression coefficient (Standardised beta)		Environment variables	Regression coefficient (Standardised beta)		Moderating variable	Regression coefficient (Standardised beta)		Remarks
			Beta	p-value		Beta	p-value		Beta	p-value	
Internal context											
1	RATIONALITYQ3 → DEC.EFFECQ1	RATIONALITYQ3	0.663	0.020	PERFORMANCEQ6	0.289	0.152	RAT3PERF6	-0.652	0.004	Partial moderation
2	RATIONALITYQ4 → DEC.EFFECQ1	RATIONALITYQ4	-0.483	0.096	PERFORMANCEQ10	-0.104	0.476	RAT4PERF10	0.536	0.024	Complete moderation
3	RATIONALITYQ4 → DEC.EFFECQ2	RATIONALITYQ4	0.588	0.054	PERFORMANCEQ7	0.205	0.201	RAT4PERF7	-0.522	0.049	Complete moderation
4	INTUTIONQ5 → DEC.EFFECQ1	INTUTIONQ5	-0.642	0.006	PERFORMANCEQ8	-0.253	0.088	INT5PERF8	0.866	0.000	Partial moderation
5	INTUTIONQ5 → DEC.EFFECQ2	INTUTIONQ5	0.119	0.637	PERFORMANCEQ8	0.242	0.128	INT5PERF8	-0.536	0.032	Complete moderation
6	DECENTRALIZATIONQ5 → DEC.EFFECQ1	DECENTRALIZATIONQ5	-1.239	0.000	PERFORMANCEQ8	-0.245	.151	DECENT5PERF8	0.424	0.047	Partial moderation
7	DECENTRALIZATIONQ1 → DEC.EFFECQ2	DECENTRALIZATIONQ1	-0.059	0.831	PERFORMANCEQ8	0.286	0.125	DECENT1PERF8	-0.679	0.005	Complete moderation
External environment											
8	RATIONALITYQ2 → DEC.EFFECQ1	RATIONALITYQ2	-0.610	0.008	ENVIROMENTQ10	0.215	0.125	RAT2EC10	-0.629	0.001	Partial moderation
9	RATIONALITYQ4 → DEC.EFFECQ1	RATIONALITYQ4	0.119	0.017	ENVIROMENTQ10	0.215	0.125	RAT4EC10	0.490	0.008	Partial moderation
10	INTUTIONQ1 → DEC.EFFECQ2	INTUTIONQ1	0.239	0.318	ENVIROMENTQ12	0.042	0.820	INT1EC12	-0.595	0.009	Complete moderation
11	DECENTRALIZATIONQ5 → DEC.EFFECQ1	DECENTRALIZATIONQ5	-0.582	0.003	ENVIROMENTQ9	-0.199	0.306	DECENT5EE9	0.654	.001	Partial moderation
12	DECENTRALIZATIONQ5 → DEC.EFFECQ2	DECENTRALIZATIONQ5	0.304	0.161	ENVIROMENTQ9	0.257	0.234	DECENT5EE9	-0.655	0.002	Complete moderation

Table 5.10, Moderation results

Independent-mediator-dependent variables relationship verification				
Statistically significant relationship between Items measuring the constructs	Statistically significant relationship between constructs derived from coloumn 1	Type of variables involved in the relationship	Hypothesis corresponding to the relationships	Acceptance or rejection of hypothesis
DIMPORTANCEQ1 → RATIONALITYQ2	Decision Importance → Rationality in decision making	Independent variable to mediating variable	H1	Accepted
DIMPORTANCEQ1 → RATIONALITYQ3				
DIMPORTANCEQ1 → RATIONALITYQ4				
DIMPORTANCEQ6 → RATIONALITYQ4				
DIMPORTANCEQ1 → INTUTIONQ1	Decision Importance → Intuition	Independent variable to mediating variable	H2	Accepted
DIMPORTANCEQ6 → INTUTIONQ1				
DIMPORTANCEQ1 → INTUTIONQ5				
DIMPORTANCEQ5 → INTUTIONQ5				
DIMPORTANCEQ6 → INTUTIONQ5				
DIMPORTANCEQ1 → DECENTRALIZATIONQ1	Decision Importance → Decision decentralization	Independent variable to mediating variable	H3	Accepted
DIMPORTANCEQ1 → DECENTRALIZATIONQ5				
RATIONALITYQ2 → DEC.EFFECQ1	Rationality in decision making → Decision Effectiveness	Mediating variable to dependent variable	H4	Accepted
RATIONALITYQ3 → DEC.EFFECQ1				
RATIONALITYQ4 → DEC.EFFECQ1				
RATIONALITYQ3 → DEC.EFFECQ2				
RATIONALITYQ4 → DEC.EFFECQ2				
INTUTIONQ1 → DEC.EFFECQ1	Intuition → Decision Effectiveness	Mediating variable to dependent variable	H5	Accepted
INTUTIONQ5 → DEC.EFFECQ1				
INTUTIONQ1 → DEC.EFFECQ2				
INTUTIONQ5 → DEC.EFFECQ2				
DECENTRALIZATIONQ1 → DEC.EFFECQ1	Decision decentralisation → Decision Effectiveness	Mediating variable to dependent variable	H6	Accepted
DECENTRALIZATIONQ1 → DEC.EFFECQ2				
Verification of moderation				
Statistically significant relationship between Items measuring the constructs	Statistically significant relationship between constructs derived from coloumn 1	Moderating variable	Hypothesis corresponding to the relationships	Acceptance or rejection of hypothesis
RATIONALITYQ2 → DEC.EFFECQ1	Rationality in decision making → Decision Effectiveness	Environmental uncertainty	H7	Accepted
RATIONALITYQ4 → DEC.EFFECQ1				
INTUTIONQ1 → DEC.EFFECQ2	Intuition → Decision Effectiveness		H8	Accepted
DECENTRALIZATIONQ5 → DEC.EFFECQ1	Decision decentralisation → Decision Effectiveness		H9	Accepted
DECENTRALIZATIONQ5 → DEC.EFFECQ2				
RATIONALITYQ3 → DEC.EFFECQ1	Rationality in decision making → Decision Effectiveness	Organisational performance	H10	Accepted
RATIONALITYQ4 → DEC.EFFECQ1				
RATIONALITYQ4 → DEC.EFFECQ2				
INTUTIONQ5 → DEC.EFFECQ1	Intuition → Decision Effectiveness		H11	Accepted
INTUTIONQ5 → DEC.EFFECQ2				
DECENTRALIZATIONQ5 → DEC.EFFECQ1	Decision decentralisation → Decision Effectiveness		H12	Accepted
DECENTRALIZATIONQ1 → DEC.EFFECQ2				

Table 5.11, Verification of independent-mediating-dependent and moderating variable relationships

It can be concluded that the moderator influence on the relationships has been tested as per the procedure mentioned in Sections 5.3 and 5.4. The results derived thus are provided in Table 5.11. The various paths in the model in Figure 3.1 were then analysed using AMOS in order to check the effect of the independent variable on the dependent variable using path analysis (a full discussion about which is given in Appendix 5.16). Section 4.13 shows that SEM provides a way to test the actual effect of the independent variable on the dependent variable using path analysis. Thus the following sections discuss the paths that are significant in Figure 3.1.

5.7 Results of path analysis

Path analysis was conducted using AMOS version 18.0. The steps involved in path analysis include testing the regression model called the initial model (Figure 5.1), generate a model that comprises statistically significant paths, determine the strengths of the association between the independent variables, estimate the model, evaluate the model and re-specify the model. While the complete analysis involved in those steps have been dealt with in Appendices 5.16 and 5.17 and is not reported here due to the volume of the analysis involved, the results obtained through the analysis provided in those appendices are reported in the following sections and discussed.

5.7.1 Analysis of the results related to path analysis of Figure 5.1

The discussions in Appendix 5.16 led to the re-specification of the model as given in Figure 5.1. The initial model was tested for causal relationship between the independent dependent variable namely decision importance and decision effectiveness. Decision importance involved three independent variables (DIMPORTANCEQ1, DIMPORTANCEQ5 and DIMPORTANCEQ6) while decision effectiveness involved two dependent variables (DEC.EFFECQ1 AND DEC.EFFECQ2).

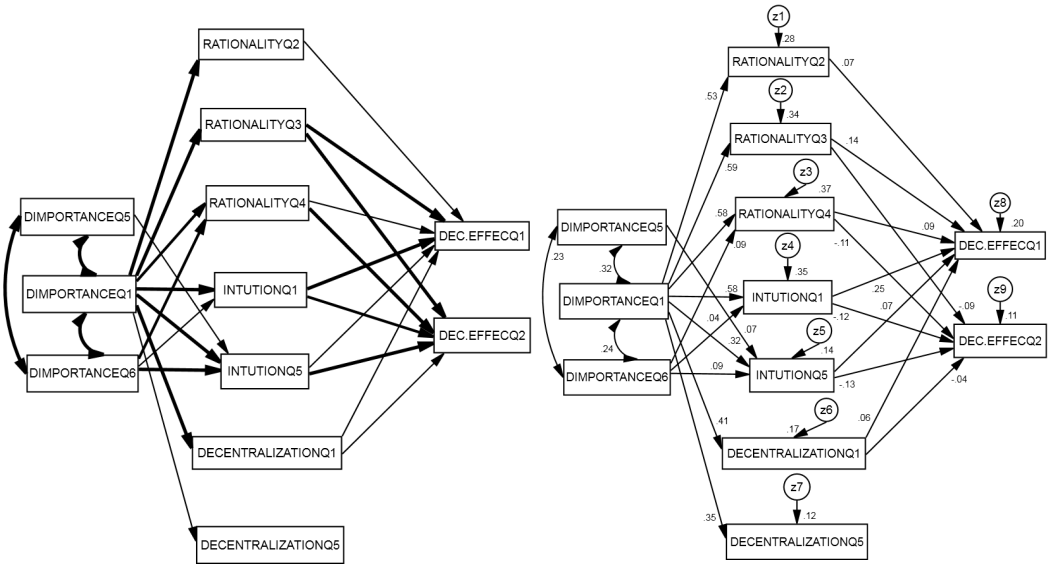

Figure 5.1, Initial model

The solid lines in Figure 5.1 indicate statistically significant paths while the thin lines indicate non-significant paths, leading to the following interpretations.

- Decision importance (DIMPORTANCEQ1) is correlated to a second decision importance variable DIMPORTANCEQ5).
- Decision importance (DIMPORTANCEQ1) is correlated to a third decision importance variable DIMPORTANCEQ6).
- The second and third decision importance variables (DIMPORTANCEQ5 and DIMPORTANCEQ6 respectively) are correlated.
- The relationship between DIMPORTANCEQ1 and rationality in decision making (RATIONALITYQ2, RATIONALITYQ3 and RATIONALITYQ4) is significant.
- The relationship between DIMPORTANCEQ6 and rationality in decision making (RATIONALITYQ4) is significant.
- The relationship between DIMPORTANCEQ1 and intuition (INTUTIONQ1 and INTUTIONQ5) is significant.
- The relationship between DIMPORTANCEQ6 and intuition (INTUTIONQ5) is significant
- The relationship between RATIONALITYQ3 and decision effectiveness (DEC.EFFECQ1 and DEC.EFFECQ2) is significant.
- The relationship between RATIONALITYQ4 and decision effectiveness (DEC.EFFECQ2) is significant.

- The relationship between INTUTIONQ1 and decision effectiveness (DEC.EFFECQ1 and DEC.EFFECQ2) is significant.
- The relationship between INTUTIONQ5 and decision effectiveness (DEC.EFFECQ2) is significant.

While the above results could provide the basis for concluding the analysis and discuss the findings, the researcher extended the analysis to estimate and evaluate the model so that model could be refined further and more appropriately specified in terms of the causation and goodness of fit. Thus the next sections deal with the model estimation and evaluation of the model provided in Figure 5.1.

5.7.2 Analysis of the results related to path analysis provided in Figure 5.1

While the results of the analysis in Appendix 5.17 led to the re-specification of the model where statistically significant paths were identified, the resulting model was tested in two parts namely model estimation (also called model analysis) and model fitness (also called model evaluation). The complete analysis pertaining to model estimation and model evaluation is provided in Appendix 5.17 and not reproduced here due to paucity of space as the volume of analysis involved is high. The results are reported and discussed below.

5.8 Results of Model estimation and evaluation

According to Abramson et al. (2005) (also see Kline, 1998) five steps are involved in order to estimate and evaluate the model, namely:

- **Specification:** Has been achieved using the relationships provided in Figure 5.1.
- **Identifiability:** Has been identified by checking the recursive nature of the model.
- **Measure selection, data collection, cleaning and preparation:** See Section 5.2.
- **Analysis:** Checked the correlation, covariance and regression readings. This resulted in deleting certain items namely DIMPORTANCEQ5, DIMPORTANCEQ6, INTUTIONQ5, DECENTRALIZATIONQ1, DECENTRALIZATIONQ5 and DEC.EFFECQ2. The resulting model is provided in Figure 5.2. Estimated the variances and retested the hypotheses (H1 to H6).
- **Evaluation:** Checked the model for fitness
- **Re-specification:** Final model derived was re-specified and explained.

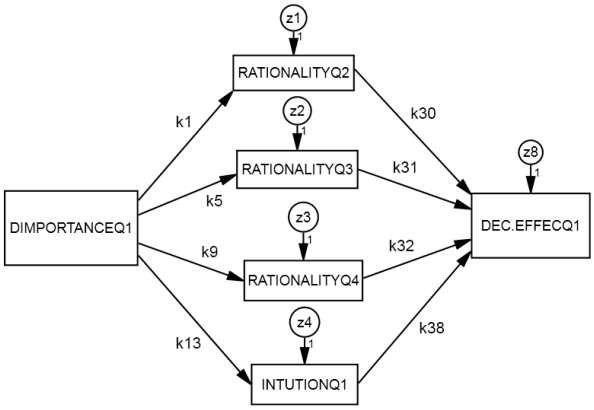

Figure 5.2, Resulting model after checking standardized residual covariance

Once the model has been finally arrived at the effect of moderators on the statistically significant paths were analysed. to retest the hypotheses (H7 to H8). With regard to the moderators affecting the relationship between rationality in decision making, intuition and decentralization on the one hand and decision effectiveness on the other, except for decentralization which has been deleted from the model, the other relationships namely rationality in decision making → decision effectiveness and intuition → decision effectiveness stand moderated. This was already established earlier (refer Table 5.11). Thus the hypotheses H7, H8, H10 and H11 were accepted. Further to testing the hypotheses, the next section focuses on the linkage between the SDMP phase and the decision implementation phase, so that the model can be tested for its practical relevance.

5.9 Correlation analysis between decision effectiveness (strategic decisions to achieve planned objectives) and decision effectiveness (actually attained objectives)

While the questions DEC.EFFECQ1 to DEC.EFFECQ5 measured the decision effectiveness of the SDMP prior to implementation of the decision, which is the focus of this research, the researcher also measured the extent to which those strategic objectives developed and planned to be achieved during the SDMP phase were actually achieved through implementation of the decisions, using questions RATEQ6 to RATEQ10. This was additional information collected by the researcher, giving the researcher the basis to understand whether the model can link the decision making process phase to the implementation process phase meaningfully. This was tested statistically using correlational analysis. Initially the correlation between DEC.EFFECQ1 to DEC.EFFECQ5 and

RATEQ6 to RATEQ10 was tested. Table 5.12 provides the output from the report generated by SPSS.

No.	Relationship between variables under test	Correlation	p-value of significance	Remarks
1.	DEC.EFFECQ1-RATEQ6	-0.220**	0.000	DEC.EFFECQ1and RATEQ6 are significantly but negatively correlated.
2.	DEC.EFFECQ2-RATEQ7	0.477**	0.000	DEC.EFFECQ2and RATEQ7 are significantly but positively correlated.
3.	DEC.EFFECQ3-RATEQ8	0.505**	0.000	DEC.EFFECQ3and RATEQ8 are significantly but positively correlated.
4.	DEC.EFFECQ4-RATEQ9	0.529**	0.000	DEC.EFFECQ4and RATEQ5 are significantly but positively correlated.
5.	DEC.EFFECQ5-RATEQ10	0.503**	0.000	DEC.EFFECQ4and RATEQ5 are significantly but positively correlated.
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 5.12, Correlation between decision effectiveness variables

From the results reported by SPSS (Table 5.12) it can be seen that all the variables used as decision output variables are correlated significantly to the implemented decision variables with p-value significant at the 0.01 level. This indicates that the decision output variables which are part of the SDMP can be related to implementation variables post-decision-making. While the scope of this research was to investigate the strategic decision-making process prior to implementation of the decisions, this latter experiment provided the basis for confirming the relationship between the decision-making process phase and decision implementation phase in which it was assessed whether strategic objectives were achieved. This was further confirmed by the correlation analysis between the independent, mediating and dependent variables found in Figure 5.2 (Table 5.13).

No.	Relationship between variables under test	Correlation	p-value of significance	Remarks
1.	RATIONALITYQ2-RATEQ6	-0.233**	0.000	RATIONALITYQ2 and RATEQ6 are significantly but negatively correlated.
	RATIONALITYQ3-RATEQ6	-0.225**	0.000	RATIONALITYQ3 and RATEQ6 are significantly but negatively correlated.
	RATIONALITYQ4-RATEQ6	-0.153**	0.000	RATIONALITYQ4 and RATEQ6 are significantly but negatively correlated.
	RATIONALITYQ2-DEC.EFFECQ1	0.284**	0.000	RATIONALITYQ2 and DEC.EFFECQ1 are significantly but positively correlated.
	RATIONALITYQ3-DEC.EFFECQ1	0.349**	0.000	RATIONALITYQ3 and DEC.EFFECQ1 are significantly but positively correlated.
	RATIONALITYQ4-DEC.EFFECQ1	0.317**	0.000	RATIONALITYQ4 and DEC.EFFECQ1 are significantly but positively correlated.
	DEC.EFFECQ1- RATEQ6	-0.220**	0.000	DEC.EFFECQ1and RATEQ6 are significantly but negatively correlated.
2.	INTUTIONQ1- RATEQ6	-0.166**	0.000	INTUTIONQ1 and RATEQ6 are significantly but negatively correlated.
	INTUTIONQ1 - DEC.EFFECQ1	0.413	0.000	INTUTIONQ1 and DEC.EFFECQ1 are significantly but positively correlated.
3.	DIMPORTANCEQ1 - RATEQ6	-0.283**	0.000	DIMPORTANCEQ1 and RATEQ6 are significantly but positively correlated.
	DIMPORTANCEQ1- RATIONALITYQ2	0.529**	0.000	DIMPORTANCEQ1 and RATIONALITYQ2 are significantly but positively correlated.
	DIMPORTANCEQ1- RATIONALITYQ3	0.587**	0.000	DIMPORTANCEQ1 and RATIONALITYQ3 are significantly but positively correlated.
	DIMPORTANCEQ1- RATIONALITYQ4	0.601**	0.000	DIMPORTANCEQ1 and RATIONALITYQ4 are significantly but positively correlated.
	DIMPORTANCEQ1 - DEC.EFFECQ1	0.438**	0.000	DIMPORTANCEQ1 and DEC.EFFECQ1 are significantly but positively correlated.
4.	DEC.EFFECQ1- RATEQ6	-0.220**		DEC.EFFECQ1and RATEQ6 are significantly but negatively correlated.
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 5.13, Correlation between the independent, mediating and dependent variables of Figure 5.2

From Table 5.13, it can be seen that the correlation between the independent, mediating and dependent variables on the one hand and the decision implementation variable RATE6 are all significantly correlated with p-value of significance found to be significant at the 0.01 level. However, with regard to the correlation between DIMPORTANCEQ1, RATIONALITYQ2, RATIONALITYQ3, RATIONALITYQ4, INTUTIONQ1, DEC.EFFECQ1 and RATEQ6, it is seen that the correlation is negative. RATE6 refers to the implementation of the decision related to the item “To increase the enrolment rate in the programme offered by the department”. So the negative correlation could indicate that the greater the importance given by the department to increasing the enrolment rate, the more the results show that it has reduced. This exception could be due to a

variety of reasons including external environmental factors such as competition, shrinking market, globalization and economic conditions where possible effects could be tested in future. The moderation effect of the internal contextual factors and external environment could also have caused this effect.

Overall, it can be inferred that, using the statistically significant relationship found to exist between the decision making process phase and the decision implementation phase, it can be argued that the model developed for this research is statistically valid as it can lead to the realization of the decisions practically.

5.10 Summary

The analysis in this chapter provides insights into how decision importance influences the decision effectiveness in HEIs mediated by rationality in decision making and intuition and moderated by external environment and internal context. While the chapter has provided statistical evidence on the relationships amongst the variables in the context of HEIs, a detailed discussion provided in the next chapter gives an accurate account of the extent and direction of the influence the independent variable exerts on the dependent variable. Finally, the analysis also shows that there is a relationship between the SDMP phase and the decision implementation phase which shows that the model developed in this research has the potential to be applied practically with positive results. This knowledge is expected to improve the decision making process in HEIs and address those variables that have been investigated in this research to enhance the process in a simpler manner.

Chapter 6
Discussion

6 Introduction

The previous chapter enabled the researcher to analyze the data thoroughly and evaluate the model developed for answering the research questions. The data analysis led the researcher to derive findings, a discussion about which is provided in this chapter. As part of the discussion the chapter analyses how the research questions have been addressed using the results obtained by testing the model. Section 6.1 deals with research question RQ1. Section 6.2 addresses research question RQ2. Section 6.3 summarises the discussion.

6.1 Research Question RQ1

RQ1: What are the decision specific characteristics, SDMP characteristics and SDMP outcomes that contribute to SDMP in a HEI?

The literature review provided in Chapter 2 has critically reviewed the different strategic decision specific characteristics, SDMP characteristics and SDMP outcomes (see Section 2.3). According to the literature strategic decision specific characteristics, SDMP characteristics and SDMP outcomes are interrelated and are influenced by external environment and internal context in an organization (see Section 2.10) (Soetanto & Dainty, 2009; Elbanna & Child, 2007; Rajagopalan et al.1993). Particularly in the context of HEIs it has been argued in the literature that these three components have serious implications to the performance of HEIs, although few investigations have been conducted in the HEI sector (See Section 2.5). While it is acknowledged that strategic decision specific characteristics, SDMP characteristics and SDMP outcomes are having high significance in the industrial sector, it is not common to find research publications that have focused on SDMP in HEIs in general (Magd & Bindah, 2016). One reason found in the literature that explains the situation is that strategic decision making process in HEI is still in the developing process (Hinton 2013) and it is argued that many HEIs still do not still have completely developed strategic planning and management processes, due to difficulties encountered by them in applying the concepts of strategic decision planning, management and decision making widely used in the industrial sector. In a sector where strategic planning and its component namely strategic decision making are not well understood, it is difficult to apply them practically and relate those aspects to the performance of the organization. However it is a common practice that research outcomes produced in the context of HEI sector and the industrial sector are applied in a complementary

manner that enables sharing of experiences which in turn contribute to the enhancement of performance of either sector. For instance many universities have adopted industrial standards to improve quality of performance whereas industries are able to get the benefit of the research conducted in the academic domain. ISO standards which are widely used in the industry sector have been successfully integrated in the academic domain and many universities have achieved ISO certifications in line with the certification achieved by industries. Similarly processes developed by HEIs have been successfully adopted by industries for instance training activities relevant to skill development in industry are derived from the knowledge and experience of academicians in teaching and training students. Thus strategic planning and decision making processes in HEIs although considered as new in the HEI context and largely applicable in the industry sector, have been implemented in many HEIs in last decade in a way similar to the one used in the industries. In doing so, however HEIs have faced challenges resulting in lack of successful development and implementation of strategic planning and SDMP (see Section 2.2.1). In fact one of the main challenges has been the lack of a robust SDMP. Lack of a proper understanding of the SDMP and the factors involved appears to have reduced the ability of the HEIs to successfully face the challenge of developing and implementing SDMP. In order to remedy the situation some researchers have recommended deeper study into the concept of SDMP in HEIs (Immordino et al. 2016; Najib & Baroto, 2016). A deeper study of SDMP was expected to address this gap to some extent.

In pursuing such a study one area that was identified as very important in the industry that could also be employed in HEIs and this was the relationship between strategic decision specific characteristics, SDMP characteristics and SDMP outcomes (see Section 2.3). These three components of the SDMP and the relationship amongst them were investigated by many authors including Noorie (2014), Papadakis and Lyriotaki (2013), Elbanna and Child (2006), Papadakis et al. (1998) and Rajagopalan et al. (1993). Each one of these components was studied in this research. The outcome of the study and the literature review led to the development of RQ1. As part of addressing this question, each one of the components is discussed, in turn (Sections 6.1.1 to 6.1.3).

6.1.1 Strategic decision specific characteristics

From the literature review it was found that a number of decision specific characteristics contribute to SDMP and SDMP outcomes (see Section 2.3)**.** For instance Papadakis et.al (1998) identified magnitude of impact, threat/crisis and frequency as decision specific characteristics affecting

SDMP. Elbanna (2011) identified three decision specific characteristics namely decision importance, decision uncertainty and decision motive. Papadakis and Lyriotaki (2013) identified decision uncertainty, familiarity and magnitude of impact as decision specific characteristics affecting SDMP. Noorie (2012) identified familiarity, frequency, magnitude of impact, urgency, threat/crisis/opportunity, riskiness, complexity, motive, information source/problem classification and type of decision as decision specific characteristics that affect SDMP. Again Noorie (2014) identified contextual factors namely familiarity, slack, dynamism and need for achievement as decision specific characteristic and affecting SDMP. Although the literature shows that some investigations have been conducted into the strategic decision specific characteristics, such investigations had not covered all the decision specific characteristics identified in the literature, knowledge about which is expected to change the way SDMP is understood in HEIs. Again, such investigations have been focusing mostly on decision process characteristics and outcomes and not on decision specific characteristics. For instance, ElBanna et.al (2007) studied the relationship between decision process characteristics (rationality, intuition and political behavior) and strategic decision effectiveness moderated by strategic decision specific characteristics (decision importance, decision uncertainty, decision motive). The investigation conducted by ElBanna et.al (2007) has treated strategic decision specific characteristics as moderators and not as independent variables or mediating factors. Similarly Papadakis et.al (1998) investigated the relationship between strategic decision specific characteristics and top management team, although their investigation did not address individual factors of strategic decision characteristics and top management. Noorie (2008) investigated the relationship between a decision specific characteristic namely decision magnitude of impact and the strategic decision making process output.

More recently Noorie (2014) studied the influence of four decision specific characteristics namely familiarity, slack, dynamism and need for achievement on decision process output. An important aspect that needs to be noticed here is that decision specific characteristics, while having been identified as influencing SDMP, hardly any study has been conducted to understand their function as a determinant of strategic decision process outcome in the context of HEIs. Lack of understanding of the influence of particular strategic decision characteristic on SDMP or SDMP outcomes, has likely resulted in decisions made and implemented in HEIs that suffer due to incomplete knowledge about decision specific characteristics. Such decisions could lead to impaired strategies due to negligence of the effect of certain decision specific characteristics. For instance decision importance is considered to be a significant decision specific characteristic in the

literature (Elbanna, 2007) although importance of a decision could be understood by different decision makers differently. Especially in the context of HEIs, decisions that are taken and implemented could be based on ad-hoc assumptions of the importance of the decisions on the part of the decision makers. An excellent example of this could be seen in the operation of the HEIs where purchase decisions like equipment purchase decisions are based a number of times on cheapest initial purchase price rather on a range of issues, not just the cheapest initial price. This argument is supported by Pritchard et al. (2016, p. 7) who say: "the world in which higher education leaders take strategic decisions is messy and fairly unpredictable". This statement confirms that decisions taken in HEIs are not well understood for their importance. It is often seen in HEIs that decisions that are strategic in nature related to governance, resources and students are not determined after carefully considering the goals of the organisation and after rigorous analysis of strategy options that come to the fore when the available resources and opportunities and their probable consequences are weighed.

Here it can be seen that the importance of the decision as a decision specific characteristic has relevance as part of the SDMP in HEIs and it appears that hardly any attention is being paid in the HEIs to distinguish certain decisions as important and certain other decisions as routine. Such a decision making process is unlikely to produce better results if the correct nature of the decision characteristic with regard to importance is not understood. These situations are common in HEIs. This example has clearly indicated the need to understand the decision specific characteristics and their influence on SDMP, without which it is unlikely to advance understanding in order to achieve better results in HEIs.

From the forgoing discussions related to strategic decision specific characteristics it can be seen that many strategic decision specific characteristics can be identified including decision importance, decision uncertainty, decision motive, decision familiarity, decision magnitude of impact, threat/crisis and frequency (Elbanna, 2007; Papadakis, 1998). While these are the decision specific characteristics identified by some of the authors in the SDMP literature, investigating the entire set of decision specific characteristics in a single research project was beyond the scope of this research project. Thus considering the knowledge currently available in the literature with regard to addressing the influence of some decision specific characteristics on SDMP, this research has focused on decision importance as the decision specific characteristic that was hypothesized to influence SDMP. This decision of the researcher is supported by the recommendation of Elbanna

(2011) who argued that an investigation into decision importance as a decision specific characteristic that determines SDMP will reveal knowledge that will be useful to improving SDMP. In doing so, the researcher argued that as a strategic decision specific characteristic, decision importance needs to be linked to SDMP characteristics in order to provide a meaningful understanding on how decision importance influences SDMP. This linkage is supported by decision theory (See Section 2.4.1) and the justification for such a linkage was provided in Section 2.4.2. This decision of the researcher to link strategic decision specific characteristic (decision importance in the current instance) was justified by the results achieved in this research. For instance the statistical results obtained in this research provided in Section 5.7.2, Appendix 5.17, Section 5.9 and Table 5.12 clearly point out that decision importance influences rationality in decision making and rationality in decision making is influencing decision effectiveness. Similar results have been obtained with regard to the relationship between decision importance and intuition on the one hand and intuition and decision effectiveness on the other. Thus both theoretically and experimentally it has been shown that strategic decision specific characteristic, decision importance need to be linked to SDMP characteristics, particularly in the context of HEIs.

6.1.2 SDMP Characteristics

Much of the investigations conducted on SDMP process characteristics have been in the context of the industry sector (Gordon & Fischer, 2016). Literature review shows that many researchers have investigated SDMP process characteristics that include rationality/comprehensiveness, financial reporting, formalization, hierarchical decentralization, lateral communication, politicization, problem solving dissension, intuition, participation/involvement, duration/length and extent/type of conflict (Nooraie, 2014; Elbanna and Child, 2007; Papadakis et al. 1998; Rajagopalan et al. 1993). While some of these characteristics have been researched upon as determinants of SDMP (e.g. Elbanna and Child, 2007) some others have been examined as mediating variables (e.g. Nooraie, 2014; Papadakis et al. 1998). Such investigations are also very few in number and specific to context. For instance, the investigation conducted by Papadakis et al. (1998) used SDMP characteristics as mediators between decision specific characteristics and top teams in the industry (food, chemicals and textiles) in Greece whereas Elbanna and Child (2007) investigated SDMP characteristics as determinants of SDMP outcomes in the context of industries (most representing textiles and clothing, chemicals, and food and beverage) in Egypt. While the outcomes of the research conducted by those authors revealed the usefulness of SDMP characteristics in the decision making process, those outcomes could not be generalized and taken as conclusive as they

could be criticized for being highly contextual and research that is not focused on a single industry sector.

Considering that the nature of each industry differs it was essential to know how the SDMP characteristics operate in the SDMP of various industries. Again the current knowledge available in the literature shows that combination of SDMP characteristics, the interaction between them and their interaction with decision specific characteristics that produce different SDMP outcomes is very limited. For instance Elbanna and Child (2007) examined the influence of rationality in decision making, intuition and political behaviour on the SDMP outcome moderated by decision specific characteristics namely decision importance, decision uncertainty and decision motive. This research does not provide adequate guidance on how decision importance, decision uncertainty and decision motive will operate as determinants of SDMP outcomes mediated by SDMP characteristics. Similarly Papadakis et al. (1998) investigated a number of SDMP characteristics as mediators between decision specific characteristics and SDMP outcomes but examined only one type of SDMP outcome namely top management team and did not address the mediating effect of rationality in decision making. Thus it is clear that much of the work done in examining the SDMP characteristics is highly contextual, has not addressed all the variables and it is still not clear how SDMP characteristics operate in different contexts and environment. Taking into account the above discussion, it was possible to infer that prior research had not examined how SDMP characteristics affect the SDMP in HEIs and there was a need to investigate how the SDMP characteristics identified in the literature including rationality/comprehensiveness, financial reporting, formalization, hierarchical decentralization, lateral communication, politicization, problem solving dissension, intuition, participation/involvement, duration/length and extent/type of conflict operate in the context of HEIs.

While a number of SDMP characteristics have been identified in the literature, to address all those characteristics in a single research project is not feasible due to time and resource constraints that normally affect the research project. Hence taking into account the recommendations in the literature for conducting future research (e.g. Elbanna and Child, 2007) and the lack of research efforts addressing specific SDMP characteristics by researchers three important SDMP characteristics were chosen for this research namely rationality in decision making, intuition and decentralization to gain knowledge on how they affect the SDMP in HEIs. Amongst those, decentralization as an SDMP has hardly been addressed at all in the SDMP literature with the

exception of Nooraie (2014) and hence was chosen for investigation. Further, decentralization is a common feature in HEIs, however the influence of decentralization on SDMP in HEIs is not known although decentralization has been argued to be useful in the SDMP in industries. Similarly rationality in decision making has not been addressed in the HEI context although researchers agree that rationality in decision making is a vital component of any SDMP (see Section 2.7). Hence rationality in decision making was chosen for investigation. Finally, as was explained in Section 2.8, many decisions in HEIs tend to be taken by managers using intuition which is generally considered to be the opposite of rationality in decision making. Thus, this research aimed at unearthing how the SDMP will be affected when two conflicting concepts namely rationality in decision making and intuition coexist in HEIs. In addition, literature review shows that intuitive processes are useful under certain conditions although in the context of HEIs it is not known how intuition as an SDMP characteristic will operate. After identifying and choosing decision importance as the decision specific characteristic and rationality, intuition and decentralization as SDMP characteristics for investigation in this research, the next section discusses how the SDMP outcome was identified.

The arguments provided in the discussions above have practical significance in the HEIs. For instance in HEIs examples of decisions taken include those related to student assessment, quality assurance, student recruitment and assessment of teaching quality. Decisions related to student assessment are often common and there is no clarity on whether such assessments produce the intended learning outcomes. Rhodes (2012, p. 19) argued that: "When decisions are made based on standardised test results of a very few learning outcomes, as we have done in the schools in this country, virtually every other critical learning outcome disappears from practice. [...] Our graduates need more than the limited range of competencies easily measured by standardised tests." In another instance related to quality assurance when comparisons are made between diverse institutions, complexities arise in developing a comparative assessment tool and there is no consensus on what should be the appropriate practices and outcomes of HEIs (Tremblay et al. 2012). Such situations could be dealt with to some extent if the importance of those decisions is understood and how decision importance as decision specific characteristics can be related to the SDMP process components such as rationality in decision making and the SDMP outcomes. For instance as suggested in this research, when decision importance related to student assessment is measured using an appropriate tool and linked to rationality in decision making that is based on

sound data, then it is possible to derive a finite conclusion on whether learning outcomes are achieved or not.

Before implementing that decision, if the effectiveness of those decisions are verified as explained in this research, then it is possible to understand to what extent the decisions are important, to what degree rationality is built into those decisions and whether such decisions could be effective if implemented. These practical examples provide strong support to this research which has found that there is a need to understand the importance of decisions, their nature as components of SDMP and relationship to SDMP outcomes. The findings of the research provide a way forward to determine the importance of the decision and its relationship to SDMP outcomes and the important role played by SDMP characteristics.

The outcome of the analysis of the research provided in Chapter 5 clearly indicate the importance of SDMP characteristics to the SDMP process in HEIs and their relationship to SD specific characteristic (decision importance) and SDMP outcomes. While theoretically it has been explained above that SDMP characteristics namely rationality in decision making, intuition and decentralization in decision making are determined by SD specific characteristics as antecedents this aspect has been firmed up by the results given in Appendix 5.17 with the exception of decentralization in decision making. Despite this result which confirmed that decentralization in decision making is not significant to the SDMP model developed in Figure 3.1, the results still affirmed that SDMP characteristics are determined by SD specific characteristics. Again similar arguments could be posited with respect to the relationship between SDMP characteristics and SDMP outcome (decision effectiveness). Thus the theoretical explanations given in the previous paragraphs are supported by the statistical analysis provided in Chapter 5.

6.1.3 SDMP Outcome

Investigations on the SDMP show that the end result of the process is an outcome that determines the next course of action namely the implementation of the decision. In order to know whether the decision process has produced the most appropriate decisions as outcomes, many have argued that the SDMP outcomes need to be understood and what factors determine those outcomes. Discussions in Sections 2.9 clearly show that SDMP outcomes are those that are determined by decision specific characteristic (e.g. decision importance) and SDMP characteristics (e.g.

rationality in decision making, intuition and decentralization in decision making). While there are contrasting arguments found in the literature regarding the nature of the relationship between SDMP outcomes, decision specific characteristics and SDMP characteristics, such discussions have produced results which indicate that the different combinations of those relationships could exist. For instance Elbanna and Child (2007) have argued that SDMP characteristics determine SDMP outcomes while Papadakis et al. (1998) have argued that decision specific characteristics indirectly influence SDMP outcomes and such influence is through SDMP characteristic variables (e.g. rationality in decision making and intuition). While these arguments show how versatile the SDMP is and the different ways it could be constructed using the decision specific characteristics and SDMP characteristics, this research has taken the line of arguments of Papadakis et al. (1998), supported by Rajagopalan et al. (1993). By that argument, the decision specific characteristics have been indirectly linked to SDMP outcomes and such a link is mediated by SDMP characteristics and linked decision importance, rationality in decision making, intuition and decentralisation on the one side, and linked rationality in decision making, intuition, decentralisation and SDMP outcome on the other. Results achieved in this research (see Section 5.7) show that such a linkage can be established, an argument supported by the statistical analysis of the model that has verified this linkage in Chapter 5.

The practical use of SDMP outcomes could be verified by taking actual examples of the SDMP in HEIs. Taking the case of student assessment described in the previous section, it can be seen that there is a lack of understanding of the importance of student assessment decisions taken in HEIs as such decisions are not linked to the student learning outcomes clearly (Rhodes, 2012). If those assessment decisions are analysed by measuring the importance of the decisions, applying rationality in decision making and using intuition, then using the findings of this research it can be argued that the SDMP outcomes could clearly specify what is expected of the student assessment including linking the outcome of assessment decisions to student learning outcomes. For instance if one takes the example cited by Rhodes (2012), it can be argued that standardized assessments do not bring out necessary learning outcomes such as critical learning. At the same time if one looks at different methods that are used worldwide to inculcate critical thinking in the learning process of students as suggested by Liu (2009) then it is possible assessment decisions, though standardized may still need to be supplemented with additional assessment criteria. Introducing additional assessment criteria could be a major decision and the rationality involved in that decision could be explained by taking the support of the outcomes this research. For instance, practices that are

considered useful in making assessment decisions and could be linked to critical student learning outcomes can be thought to be rational if one applies the definition of rationality in decision making (see Section 2.7.1). Again, assessment decisions cannot be taken by using rationality alone as implementing a decision to introduce additional assessment criteria requires careful consideration due to the impact they can have on students. Such a situation requires experience and knowledge without which introduction of additional assessment criteria could be risky. Intuition will have a role in this situation. Finally if introduction of additional assessment criteria are not viewed as a major and important decision by academics then it is possible that those decisions are implemented as routine decisions leading to possible complexities in assessing students. These aspects show that the managers and academics in HEIs need to make an assessment decision that is rational, intuitive and important.

Again, it is seen that decentralization of decision making with regard to assessment in terms of individual colleges or departments is an area that is practiced in HEIs (Tremblay et al. 2012) but it is not clear whether centralized or decentralized decision making will lead to better performance. For instance, Tremblay et al. (2012) argue alternatives to decentralized model of taking assessment decisions is needed whereas Yazdi (2013) argues for introduction of decentralization and Ballarino (2011) argues that there is a need to introduce decentralisation in assessment decision making although cautiously. It must be borne in mind that assessment decision has been discussed here only as an example of a decision making process in HEIs and many more such examples could be cited.

The above arguments provide a strong basis to understand SDMP outcomes and their importance in the decision making process. In this context this research examined the decision effectiveness as an SDMP outcome. Decision effectiveness as an SDMP outcome has been understood to represent firm performance (Elbanna & Child, 2007; Dean & Sharfman, 1996). One of the sparingly investigated components of SDMP, decision effectiveness is considered to be an important aspect of an organisation's performance and SDMP (Elbanna & Child, 2007). However controversy surrounds the linking of decision effectiveness to SDMP characteristics, for instance Janis (1982) who argued rationalization can derail decision making processes and the success of the decisions. While literature provides support for the use of decision effectiveness as and SDMP outcome and taking into account the discussions provided above, it can concluded that decision effectiveness could be used as a measure of the success of the SDMP in HEIs. Amongst the different SDMP

outcomes that have been identified in the literature (e.g. decision effectiveness and decision quality), research outcomes produced on effectiveness of a decision of an SDMP are contradictory (Nooraie, 2011). Particularly in the context of HEIs hardly any evidence could be found in the literature that provides knowledge about decision effectiveness. Effective decisions when identified as effective based on an understanding of the decision importance, rationality in decision making, intuition and decentralization in decision making are expected to provide a strong support for the implementation of the decisions in HEIs (Aldhaen, 2016). Thus, in this research decision effectiveness was chosen for investigation. To support this choice, example of debates that have centred around the definition of institutional effectiveness or performance effectiveness of an institution could be given which argue that still there is a divergence of opinions that point out that it is not easy to determine the effectiveness of an institution (Benjamin et al. 2012). Here the arguments of Elbanna and Child (2007) have been used to symbolize institutional effectiveness (akin to firm performance) as SDMP effectiveness. Taking into account the above this research has investigated the decision effectiveness of SDMP in HEIs influenced by decision importance as a decision specific characteristic and mediators rationality in decision making, intuition and decentralisation which represent SDMP characteristics.

The foregoing discussions when read with the findings from the data analysis provided in the previous chapter, lead to the following inference.

- Decision effectiveness is an SDMP outcome that could be used by HEIs to measure the effectiveness of their SDMP prior to implementing those decisions.
- Decision importance is a major decision specific characteristic that influences decision effectiveness in HEIs and can be related to SDMP process outcomes.
- Rationality in decision making, intuition and decentralization in decision making are potential SDMP characteristics that could be used to improve the SDMP in HEIs when those characteristics operate as mediators in the relationship between decision importance and decision effectiveness.
- A model relating the above components of SDMP could serve a useful purpose in providing guidance on how those components operate in the context of HEIs.

Each one of the above inferences can be supported using the results of the statistical analysis provided in Chapter 5. Thus the theoretical explanations provided to answer research questions have been supported by the results of obtained through the statistical analysis of this research.

These inferences enabled the researcher to conclude that the research question RQ1 has been answered. But one important point needs to be brought in here and has a major relevance to the SDMP process in HEIs is the environment components that change continuously and because of which a strategic decision making process needs to be put in place in HEIs. Two components namely environmental uncertainty and organisational performance were chosen for study and the SDMP model in Figure 3.1 shows that these two factors first one representing the external environment and the second one representing the internal context of HEIs respectively moderate the relationship between the SDMP characteristics and SDMP outcome. These factors have been chosen to explain how environmental factors affect the decision making process. The analysis in Chapter 5 shows that both the factors affect the SDMP as moderators of the relationship between SDMP characteristics and SDMP outcomes. Although there are other environmental factors that could have been examined in this research (e.g. heterogeneity and hostility as external environment factors and size, return on asset and growth as internal contextual factors (Papadakis et al. 1998)), these two factors were chosen to indicate the dynamic nature of the environment and results obtained by examining their influence on SDMP could be used to test the influence of other environmental factors. These explanations have been justified by using the statistical analysis provided in Chapter 5 by which it can be concluded that RQ1 has been answered comprehensively. After answering the research question RQ1, research question RQ2 was answered next.

6.2 Research question RQ2

RQ2: What is the model that could explain the extent to which (a) strategic decision specific characteristics influence the SDMP characteristics; (b) strategic decision specific characteristics influence the SDMP outcomes; and (c) SDMP characteristics mediate in the relationship between strategic decision specific characteristics and the SDMP outcomes in the context of HEIs in a changing environment?

The proposed relationship between decision specific characteristics, SDMP characteristics and SDMP outcome identified in this research is outlined in Chapter 3 using the theoretical framework and a model that was developed developed (see Figure 3.1). Theoretical and practical support to identify the relationship has been outlined in Chapters 2 and 3. Using the model hypotheses were developed to verify and explain the extent to which decision specific characteristics and SDMP characteristics influence the SDMP outcomes and those hypotheses were outlined in Sections 3.6 and 3.8. Each one of those relationships portrayed in Figure 3.1 were tested using statistical tools and the findings derived from the data analysis have been provided in Chapter 5. To answer this

research question, each one of those relationships found in the model are discussed based on the findings of the data analysis and the literature review.

6.2.1 Relationship between decision specific characteristics and SDMP outcome

Decision importance was the decision specific characteristic chosen for examining its influence on SDMP outcome which is represented by decision effectiveness. The relationship between decision importance and decision effectiveness has been explained Elbanna and Child (2007). While Elbanna and Child (2007) have introduced three decision specific characteristics namely decision importance, decision uncertainty and decision motive as influencing the relationship between SDMP characteristics and outcome in the form of moderators, this research builds upon the research outcome of Elbanna and Child (2007) and argues that decision specific characteristics should be determinants of SDMP outcome and not moderators. This argument has two angles. One angle is that decision specific characteristics are argued to be the cause of many decision outcomes by authors like Papadakis et al. (1998). Theoretical support for the choice of the two dimensions decision importance and decision effectiveness is provided in the theoretical framework (see Chapter 3). For instance the model developed by Elbanna and Child (2007) provided the basis for establishing a relationship between decision importance and decision effectiveness while the model developed by Papadakis et al. (1998) provided the basis for using decision importance as the determinant of decision effectiveness although with the intervention of other dimensions namely SDMP characteristics. Taking into account these arguments analysis of the relationship between decision importance and decision effectiveness was broken down into relationship between decision specific characteristics and SDMP characteristics on the one hand and SDMP characteristics and SDMP outcome on the other and discussed next.

6.2.2 Relationship between decision importance and rationality in decision making

In the context of HEIs it has been found in the literature that in many instances rationality in decision making does not appear to be driven by the importance of the decision (see Figure 5.2; Section 2.7) but probably by intuition or situations that dictate those decisions. This aspect was checked statistically to know the extent to which decision importance plays a role in determining the rationality in decision making.

From Section 5.7) it can be seen that the relationships DIMPORTANCEQ1→ RATIONALITYQ2, DIMPORTANCEQ1→ RATIONALITYQ3 and DIMPORTANCEQ1→ RATIONALITYQ4 are seen to be significant and strong which is indicated by the strength of the regression coefficients (0.399), (0.479) and (0.464) respectively. This implies that one standard deviation variation in decision importance (DIMPORTANCEQ1) is able to produce a change in rationality in decision making (RATIONALITYQ2, RATIONALITYQ3 and RATIONALITYQ4) to the extent of 0.4, 0.48 and 0.46 standard deviations respectively and in the positive direction. This shows that when decision importance is rated high, then rationality in decision making should be high and vice versa. This result is supported by literature which shows that when classical theory of decision making is applied, then a rational decision must be supported by such characteristics as single and well-defined goal can be achieved (Li, 2008). In addition the most important decision must also demonstrate that it is the most rational (e.g. cost/benefit analysis). Higher the importance shown by the managers in assessment decision making, higher should be the rationality in the decision made and vice versa an aspect that should be demonstrated in the decision taken, an argument supported by Elbanna (2011).

6.2.3 Relationship between decision importance and intuition

In the context of HEIs it has been found in the literature that in many instances intuition appears to be driven by importance of the decision (see Figure 5.2; Section 5.7) although situations or environment surrounding the HEIs may also dictate those decisions. This aspect was checked statistically to know the extent to which decision importance determines the intuition involved decision making. From Section 5.7) it can be seen that the relationship DIMPORTANCEQ1 → INTUTIONQ1 is significant and strong with a regression coefficient of 0.487. This implies that one standard deviation variation in decision importance (DIMPORTANCEQ1) is able to produce a change in intuition in decision making to the extent of 0.49 standard deviation and in the positive direction. This shows that when decision importance is rated high, then intuition in decision making should be high and vice-versa. This result resonates in decision making literature. For instance when strategic alternatives are there, then when an alternative has to be chosen and when many decision makers are there, the choice varies depending on the situation in which each one of the individuals is placed (Beresford & Sloper, 2008; Beach & Mitchell, 1978; Payne, 1976). Such situations can be witnessed frequently in the context of decision making in HEIs. For instance in a project called AHELO (Assessment of Higher Education Learning Outcomes) (Tremblay et al.

2012) it was pointed out that validating measures of learning outcomes across cultures, languages and differing variety of HEIs is a major challenge across the world.

Assessing multiple kinds of student learning outcomes based on different evaluation standards and making decisions uniformly across all types students using a single standard was found to be a difficult challenge (Tremblay et al. 2012). The AHELO project sought to develop a framework to assess student learning outcomes that could be applied uniformly across the world. But the framework involved evaluating student learning outcomes using different types of constructed-response items which included short and extended responses and performance tasks as well as multiple choice questions. This type of assessment framework was designed to be computer delivered but still had limitations. It was not possible to assess communication with non-experts orally (Tremblay et al. 2012). Interpretation of the results of the assessment could not clearly reflect what learning outcomes have been tested and what have not been. Decision making becomes important on how to interpret the results. Intuition could clearly help. Subjective judgments need to be used to take an important decision in the assessment of learning outcomes. Thus higher the importance of decision, higher the intuition level that needs to be used in decision making in HEIs and vice versa.

There is an element of contradiction here. While the previous section shows that rationality in decision making is determined by decision importance, at the same time arguments in this section show that intuition must also be used in decision making, a result that appears to contradict established results in the literature. According to Sinclair and Ashkanasy (2005) rationality in decision making and intuition are opposite concepts and it is rare to find supporting theories that posit rationality and intuition can go together. The results of this research show that contradictory concepts are not only needed in SDMP but also should complement each other. Thus the result showing that both rationality in decision making and intuition are determined by decision importance in the context of HEIs is a major finding and is a finding that was not explained until recently in many contexts (CGMA, 2016; Dayan & Elbanna, 2011). This research has been successful in achieving and demonstrating this concept.

6.2.4 Relationship between decision importance and decentralisation in decision making

Literature shows that decentralisation in decision-making with its advantages and shortcomings is practiced in the HEIs in a limited manner (see Section 2.6). While decentralization has been considered in the extant literature as an SDMP characteristic, not many research outcomes were found either in the context of HEIs or the industry with the exception of the research conducted by Nooraie (2012) who conducted the study on 342, small, medium and large size private manufacturing firms in the food manufacturing sector. Decentralisation was used as one of the SDMP characteristics mediating between risk propensity (a decision specific characteristic) and decision process output (decision quality and decision satisfaction). Nooraie (2012) argued for decentralization of decision-making is a useful concept and could lead to better choices of alternatives. However, the results of this research did not confirm decentralization as a significant SDMP characteristic in the context of HEIs that influences decision effectiveness but was found to be influenced by decision importance (see Section 5.2). The reason for this could be the nature of the education sector where decisions related to delegating the planning process to lower levels of management, although could be found in practice may not be successful. For instance, Yazdi (2013) argues that decentralization in the education system has not been successful as the concept is not well understood and gives the example of curriculum development in the education sector that is not successfully delivered as a decentralized concept. Although there are calls for decentralization in decision making in the education sector, the examples cited by Yazdi (2013) and Ballarino (2011) confirm the results of this research. Hence it was concluded that decentralization is not a significant SDMP characteristic in the HEIs.

6.2.5 Relationship between rationality in decision making and decision effectiveness

Literature, and practice, show that rationality in decision making can be related to decision effectiveness, a construct identified as representing organisational performance (see Section 2.9). This relationship has been well discussed in the context of the industrial sector. For instance Campos et al. (2014), Elbanna and Child (2007), and Dean and Sharfman (1996) and Priem et al. (1995) found a positive relationship between rationality in decision making and decision effectiveness in the context of a number of different industrial sectors. It is also important to mention here that rationality in decision making has previously been also found to be negatively related to decision effectiveness, for instance the findings of Fredrickson and Mitchell (1985). The same is not the case in the context of HEIs. It is seen that in the context of HEIs, the relationship between rationality in decision making and decision effectiveness is not well discussed in the

literature although some arguments have been found in the literature that rationality in decision making should be linked to decision effectiveness (e.g. Lunenburg, 2010). Taking into account these aspects this research analysed the relationship between rationality in decision making and decision effectiveness. As far as statistical analysis and findings were concerned the results showed that rationality in decision making is directly and positively related to decision effectiveness. The relationships RATIONALITYQ3 → DEC.EFFECQ1 and RATIONALITYQ4 → DEC.EFFECQ1 were found to be statistically significant (regression coefficients 0.117 and 0.1 respectively). Rationality in decision making was seen to have a small effect on decision effectiveness. That is to say, a one standard deviation change in rationality in decision making could produce 0.117 and 0.1 standard deviations change in strategic decision effectiveness. In other words, when rationality in decision making increases then the decision making effectiveness increases and vice versa. This finding can be interpreted to the effect that in HEIs, it appears that in SDMP processes rationality is usually involved in decision making, although the extent of its influence on decision effectiveness is relatively small. This is corroborated by the literature. For instance Ewell (2012) argued that in the organisational structures of colleges and universities, faculty committees are found to be heavily delegated with decision making. However in those decision-making processes, the use of information depends on the extent to which the members in the committee favour or oppose an action, which makes the use of rationality in decision making less important. This finding is important as it indicates the presence of specific interest on the part of decision makers which relies less on rationality but more on what the members of the decision making process think the decision should be. To this extent the findings show that rationality in decision making in HEIs has influence, on decision effectiveness but such decisions are not necessarily effective because of rationality but because of the combined effect of other factors, for instance intuition.

6.2.6 Relationship between intuition and decision effectiveness

The literature and practical examples, provided a reasonable basis to propose the relationship between intuition and decision effectiveness (see Section 2.9). Intuition is found to be an important concept that affects the SDMP and its outcome (see Section 2.8). While at the conceptual level intuition has been discussed and included in the model as influencing the decision effectiveness, in this section the results of the statistical analysis are discussed. The results from Section 5.7 shows that the relationship INTUTIONQ1 → DEC.EFFECQ1 is statistically significant (regression coefficient 0.207). This can be interpreted as a one standard deviation change in intuition introduces a 0.207 standard deviation variation in decision effectiveness which indicates a small effect of

intuition on decision effectiveness (Kline, 1998). Intuition is seen to influence decision effectiveness directly and in the positive direction. That is, if intuition increases, then decision effectiveness will increase and vice versa. This result, while confirmed by some researchers, is also contradicted by others. For instance, Lunenburg (2010) argued that intuition plays a leading role in education administration. Citing examples of disciplining a staff member or buying an item for the inventory, Lunenburg (2010) says that education administrators will rely upon years of experience and intuition while making decisions. However, Jabeen and Akhtar (2013) while studying the decision making styles of university leadership, found that the majority of the decision makers mixed both rationality and intuition while taking decisions which implies that intuition alone is not enough to make decisions. The results of this research are similar. It is therefore reasonable to conclude that while intuition influences the decision effectiveness, the results of this research show that the influence is not isolated, but coexists with rationality as another influencing factor of SDMP effectiveness.

6.2.7 Relationship between decision importance and decision effectiveness

The discussions in the previous sections have provided the extent to which decision importance influences rationality in decision making and intuition. The discussions dealt with the influence of rationality in decision making on decision effectiveness and the influence of intuition on decision effectiveness. The discussion while dealing with the relationship between decision importance and decentralization in decision making did not dwell on the relationship between decentralization in decision making and decision effectiveness as this path was found to be statistically insignificant. With the above as background it was possible to identify the following paths, which lead to a discussion on the relationship between decision importance and decision effectiveness.

DIMPORTANCEQ1 → RATIONALITYQ3 → DEC.EFFECQ1

DIMPORTANCEQ1 → RATIONALITYQ4 → DEC.EFFECQ1

DIMPORTANCEQ1 → INTUTIONQ1 → DEC.EFFECQ1

From Amos report Tables 6.1, 6.2 and 6.3 have been derived. Table 6.1 provides the direct effect of the determinant variable on the determined variable with regard to the relationships namely DIMPORTANCEQ1 → RATIONALITYQ3, DIMPORTANCEQ1 → RATIONALITYQ4, DIMPORTANCEQ1 → INTUTIONQ1, RATIONALITYQ3 → DEC.EFFECQ1, RATIONALITYQ4 → DEC.EFFECQ1 and INTUTIONQ1 → DEC.EFFECQ1.

	DIMPORTANCEQ1	INTUTIONQ1	RATIONALITYQ4	RATIONALITYQ3
INTUTIONQ1	.487	.000	.000	.000
RATIONALITYQ4	.464	.000	.000	.000
RATIONALITYQ3	.479	.000	.000	.000
DEC.EFFECQ1	.000	.223	.112	.130
RATIONALITYQ2	.399	.000	.000	.000

Table 6.1, Direct Effects of determinant variables on the determined variables

Table 6.2 provides the indirect effects of the independent variable on the dependent variable with regard to the relationships namely DIMPORTANCEQ1 → RATIONALITYQ3 → DEC.EFFECQ1, DIMPORTANCEQ1 → RATIONALITYQ4 → DEC.EFFECQ1 and DIMPORTANCEQ1 → INTUTIONQ1 → DEC.EFFECQ1.

	DIMPORTANCEQ1	INTUTIONQ1	RATIONALITYQ4	RATIONALITYQ3
INTUTIONQ1	.000	.000	.000	.000
RATIONALITYQ4	.000	.000	.000	.000
RATIONALITYQ3	.000	.000	.000	.000
DEC.EFFECQ1	.223	.000	.000	.000
RATIONALITYQ2	.000	.000	.000	.000

Table 6.2, Indirect Effect of Decision importance on decision effectiveness

Table 6.3 provides the total effect of the independent variable on the dependent variable with regard to the relationships namely DIMPORTANCEQ1 → RATIONALITYQ3 → DEC.EFFECQ1, DIMPORTANCEQ1 → RATIONALITYQ4 → DEC.EFFECQ1 and DIMPORTANCEQ1 → INTUTIONQ1 → DEC.EFFECQ1.

	DIMPORTANCEQ1	INTUTIONQ1	RATIONALITYQ4	RATIONALITYQ3
INTUTIONQ1	.487	.000	.000	.000
RATIONALITYQ4	.464	.000	.000	.000
RATIONALITYQ3	.479	.000	.000	.000
DEC.EFFECQ1	.223	.223	.112	.130
RATIONALITYQ2	.399	.000	.000	.000

Table 6.3, Total Effect of Decision importance on decision effectiveness

From Table 6.3 it can be seen that the total effect of the independent variable namely decision importance (DIMPORTANCEQ1) on the dependent variable namely decision effectiveness (DEC.EFFECQ1) is seen to be 0.223. That is to say a one standard deviation variation in decision importance produces a 0.223 standard deviation in decision effectiveness. Thus, when decision importance increases, decision effectiveness increases and vice versa. It is seen that the independent

variable exerts an indirect but positive influence on the dependent variable. This result finds support in the literature where it is argued that decision importance impacts decision effectiveness (e.g. Judge & Miller, 1991). However there are other research findings that do not support this result for instance Elbanna and Child (2007) who did not find any significance in the moderating role of decision importance on the relationship between rationality in decision making and intuition on the one hand and decision effectiveness on the other, although in a different context. Similarly Dean and Sharfman (1993) did not find any relationship between decision importance and SDMP. In the face of lack of support to the results of this research in the literature, the findings of this research provides evidence of the influence of decision importance as a decision specific characteristic on the SDMP outcome namely decision effectiveness in the context of HEIs. This is an important finding in regards to decision importance which is a decision specific characteristic. Hitherto it was not easy to identify which decision was important and which decision was not in the context HEIs because one would not know how to distinguish the importance of the decision. Now, using the findings of this research it is possible to argue that a decision can be considered important if it is found to be effective when processed through the SDMP.

Further from Table 6.3 it is possible to derive which of the three paths is statistically more significant than the other two. For instance the indirect effect of decision importance on decision effectiveness through the path DIMPORTANCEQ1 → RATIONALITYQ3 → DEC.EFFECQ1 can be calculated as:

DIMPORTANCEQ1 → RATIONALITYQ3 = 0.479

RATIONALITYQ3 → DEC.EFFECQ1 = 0.13

Indirect effect of DIMPORTANCEQ1 on DEC.EFFECQ1 through RATIONALITYQ3 = (0.479 x 0.13) = 0.06227

That is to say, that a one standard deviation change in decision importance (DIMPORTANCEQ1) produces a 0.062 standard deviation change in the decision effectiveness DEC.EFFECQ1 when mediated by rationality in decision making RATIONALITYQ3.

Similar calculations related to the relationships DIMPORTANCEQ1 → RATIONALITYQ4 → DEC.EFFECQ1 and DIMPORTANCEQ1 → INTUTIONQ1 → DEC.EFFECQ1 using Table 6.3 produced the following results:

A one standard deviation change in decision importance (DIMPORTANCEQ1) produces a 0.052 standard deviation change in the decision effectiveness DEC.EFFECQ1 when mediated by rationality in decision making RATIONALITYQ4.

A one standard deviation change in decision importance (DIMPORTANCEQ1) produces a 0.109 standard deviation change in the decision effectiveness DEC.EFFECQ1 when mediated by rationality in decision making INTUTIONQ1.

It can be seen that the path DIMPORTANCEQ1 → INTUTIONQ1 → DEC.EFFECQ1 produced the highest influence of decision importance on decision effectiveness in comparison to the relationships DIMPORTANCEQ1 → RATIONALITYQ3 → DEC.EFFECQ1 and DIMPORTANCEQ1 → RATIONALITYQ4 → DEC.EFFECQ1. This finding indicates that in the context of HEIs it is intuition that is mostly used when important decisions' are being made and rather than rationality. This is an important finding as similar findings in the context of HEIs with regard to the SDMP have not been reported in the extant literature. However, what arguably is even more significant, is that important decisions that employ both rationality and intuition have greater effectiveness than the use of either rationality in decision making or intuition singly. Thus it can be concluded that RQ2 has been answered.

After answering the research questions, at this point it is possible to infer as follows (Table 6.4):

Table 6.4, Hypothesis verification

Statistically significant independent-mediator-dependent variables relationship verification				
Statistically significant relationship between Items measuring the constructs	**Statistically significant relationship between constructs derived from coloumn 1**	**Type of variables involved in the relationship**	**Hypothesis corresponding to the relationships**	**Remarks**
DIMPORTANCEQ1 → RATIONALITYQ3	Decision Importance → Rationality in decision making	Independent variable to mediating variable	H1	Accepted
DIMPORTANCEQ1 → RATIONALITYQ4				
DIMPORTANCEQ1 → INTUTIONQ1	Decision Importance → Intuition	Independent variable to mediating variable	H2	Accepted
RATIONALITYQ3 → DEC.EFFECQ1	Rationality in decision making → Decision Effectiveness	Mediating variable to dependent variable	H4	Accepted
RATIONALITYQ4 → DEC.EFFECQ1				
INTUTIONQ1 → DEC.EFFECQ1	Intuition → Decision Effectiveness	Mediating variable to dependent variable	H5	Accepted
Statistically insignificant independent-mediator-dependent variables relationship verification				
Statistically insignificant relationship between Items measuring the constructs	**Statistically insignificant relationship between constructs derived from coloumn 1**	**Type of variables involved in the relationship**	**Hypothesis corresponding to the relationships**	**Remarks**
DIMPORTANCEQ1 → DECENTRALIZATIONQ1	Decision Importance → Decision decentralisation	Independent variable to mediating variable	H3	Rejected
DECENTRALIZATIONQ1 → DEC.EFFECQ1	Decision decentralisation → Decision Effectiveness	Mediating variable to dependent variable	H6	Rejected

Thus the final model can be depicted as given in Figure 6.1

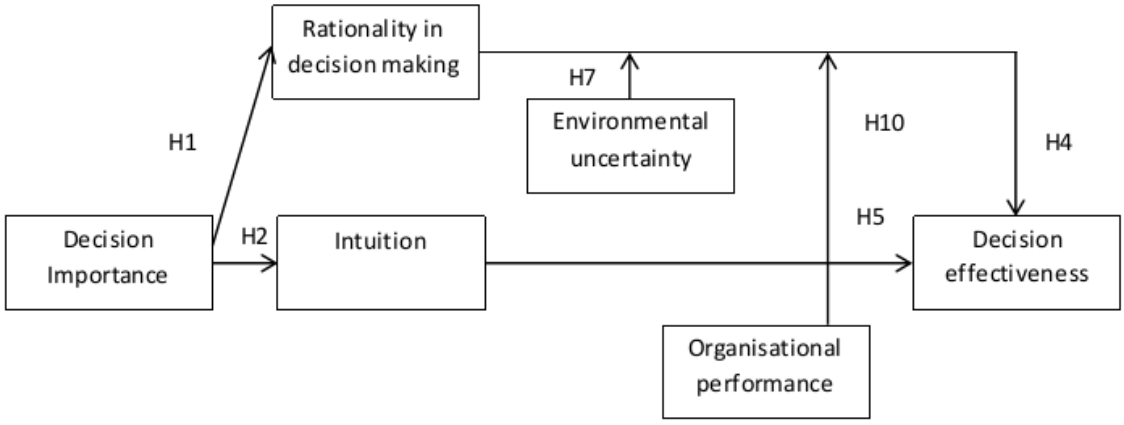

Figure 6.1, Re-specified model

With reference to the original model given in Figure 3.1, the finally re-specified model given in Figure 6.1 differs significantly. The path between the decision specific characteristic (decision importance) and SDMP outcome (decision effectiveness) mediated by the SDMP characteristic decentralisaton in decision making represented by hypotheses H3 and H6 was found to be insignificant. That is to say the construct decentralization is not having any influence on the SDMP in the context of HEIs. Secondly the external and internal environmental factors (environmental uncertainty and organisational performance respectively) have influence as moderators only on the relationship (Rationality in decision making → Decision Effectiveness) and not on any other relationship. Thus it can be seen that in HEIs decentralization is considered by the respondents to be not an important aspect in the SDMP while rationality in decision making and intuition are considered to be. Similarly environmental factors affect the SDMP only with regard to rationality in decision making while intuition does seem to be affected by any environmental factors.

It must be noted that hypotheses H1 to H6 have been tested and verified. Regarding the remaining hypotheses H7 to H12, the findings were presented in Section 5.8. Using those findings (Table 5.9) and the statistically significant paths identified in Table 6.4 it can be seen that RATIONALITYQ4 → DEC.EFFECQ1 is the only relationship that is common in both the tables that could be considered for moderation by external environment and internal context. Thus hypotheses H7 and H10 can be considered to be accepted while the remaining hypotheses namely H8, H9, H11 and H12 are rejected.

It must be noted here that there are differences that have emerged between Table 6.4, the explanation about the acceptance and rejection of the hypotheses H7 to H12 (see above) and Table 5.11 which indicates regression results. But it can be seen that while the outcome of the regression provides information only on the significance of the relationships, path analysis provides information on the significance of the relationships under investigation and the direction of influence of the determinant on the determined.

6.3 Summary

The discussions provided in this chapter have provided a wider view of how HEIs function with regard to SDMP based on the statistical analysis given in Chapter 5. The most important findings are that decision importance is an important decision specific characteristic that affects the SDMP in HEIs; decision importance as an independent variable influences decision effectiveness of SDMP mediated by rationality in decision making and intuition; decentralization is not found to be statistically significant as a mediator in the relationship between decision importance and decision effectiveness and intuition is stronger than rationality in decision making as a mediator in the relationship between decision importance as an independent variable and decision effectiveness as the dependent variable. External environment factors and internal contextual factors were found to be statistically significant in moderating the relationship between SDMP characteristics (rationality in decision making) and decision effectiveness.

Chapter 7
Conclusions

7 Introduction

The previous chapter discussed the findings of the data analysis provided in Chapter 5. The research questions have been answered and findings that potentially contribute to the body of knowledge and practice have emerged. As a next step it is necessary to analyse what contribution this research makes to knowledge, theory, methodology and practice, an aspect addressed in this chapter. Prior to this the chapter discusses on how the aim and objectives have been achieved. The chapter begins by verifying whether the aim has been achieved, followed by checking whether the objectives have been attained. In the following discussions the chapter compares existing literature to highlight the extent of contributions made to the body of knowledge, theory, methodology and practice. Finally the chapter identifies the limitations of this research and suggests directions for future research, that could address the limitations and further extend the knowledge in this area.

7.1 Aim

To examine the different decision specific characteristic, SDMP characteristic and SDMP process outcome variables and develop a relationship amongst them in the context of HEIs in a changing environment.

In Sections 2.5 and 6.1 it was shown that hardly any investigation has been conducted by researchers to understand the SDMP in HEIs. The importance of SDMP in HEIs was explained in that section, with practical examples, and it was also highlighted how SDMP needs to be understood in terms of SD specific characteristics, SDMP characteristics and SDMP outcome. It was seen in that section to what extent decision specific characteristics can influence SDMP and SDMP outcomes in the context of HEIs. Several decision specific characteristics including decision uncertainty, familiarity, magnitude of impact, familiarity, frequency, urgency, threat/crisis/opportunity, riskiness, complexity, motive, information source/problem classification, type of decision, slack, dynamism, need for achievement and decision importance were identified as potentially affecting SDMP (Noorie, 2014; Papadakis & Lyriotaki, 2013; Noorie, 2012; Elbanna, 2011). However no investigation seems to have been conducted in the context of HEIs regarding those SD specific characteristics and to what extent they affect SDMP. In order to demonstrate the influence of SD specific characteristics one example of an SD specific characteristic namely decision importance was chosen for this investigation. Contemporary literature shows that hardly

any evidence has been produced to show that decision importance as a decision characteristic affects SDMP either in the industrial sector or in the academic domain. According to Elbanna (2011) decision importance has an important influence on SDMP and in particular SDMP characteristics and outcomes although this aspect was not examined through empirical research. Thus this research aimed at understanding what influence decision importance exerts on SDMP and to what extent it influences SDMP outcomes taking into account its role in real life situation in HEIs (see Section 3.6). In order to understand this concept, a study of the two important SDMP components namely SDMP characteristics and SDMP outcomes were studied as these components have been considered to be influenced by SD specific characteristics in the literature (Noorie, 2014; Papadakis & Lyriotaki, 2013; Noorie, 2012; Elbanna, 2011; Rajagopalan et al. 1993).

While investigating about SDMP characteristics, it was seen from the literature that rationality/comprehensiveness, financial reporting, formalization, hierarchical decentralization, lateral communication, politicization, problem solving dissension, intuition, participation/involvement, duration/length and extent/type of conflict have been considered as important and some of them have also been investigated too (Nooraie, 2014; Elbanna and Child, 2007; Papadakis et al. 1998; Rajagopalan et al. 1993). However in the context of HEIs hardly any research has been conducted to understand how the SDMP characteristics affect the SDMP. Discussions in Sections 3.3, 3.4 and 3.5 noted that SDMP characteristics have been found to play a significant role in influencing SDMP although in different capacities. For instance Elbanna and Child (2007) used rationality in decision making, intuition and political behaviour as independent variables that determined the SDMP outcome (strategic decision effectiveness) while Papadakis et al. (1998) used SDMP characteristics as mediating variables in the relationship between SD specific characteristic and decision outcome. Nooraie (2014) followed the arguments of Papadakis et al. (1998) in operationalizing the SDMP characteristics. Thus, controversy was found to surround the operationalization of SDMP characteristics. In addition, none of the SDMP characteristics mentioned above have been operationalized in the context of HEIs. Thus, the researcher had the option to operationalize SDMP characteristics either as independent variables or mediating variables and also choose those SDMP characteristics that could be useful for this research. Accordingly, in this research three SDMP characteristics namely rationality in decision making, intuition and decentralization in decision making were chosen for investigation and operationalisation. The choice followed the reasoning that rationality in decision making is a widely recommended variable that has a major role to play in SDMP, intuition is a widely used practical

phenomenon in the HEIs that potentially conflicts with rationality in decision making and decentralization in decision making has not been studied either in the industrial sector or HEIs. After choosing the three SDMP characteristic variables for study and prior to investigating how they affect the SDMP, the SDMP outcomes had to be chosen and operationalized.

From Sections 2.3 and 6.1.3 it can be seen that SDMP outcomes are SDMP decisions and are represented by decision quality and effectiveness. It is also shown in these sections that SDMP characteristics influence SDMP outcomes although hardly any research has been conducted in the context of HEIs. In addition, controversy exists with regard to the understanding of how SDMP characteristics affect the SDMP outcomes. Examples of practical situations in the HEIs that call for an investigation of SDMP in HEIs to assess the influence of SDMP characteristics on SDMP outcomes have been explained. Thus SDMP outcomes were found to be important in the SDMP process and were chosen to be dependent variables. Further, decision effectiveness was chosen to represent the SDMP outcome as it has not been addressed in the context of HEIs.

Finally, it was important to consider the impact of environmental factors on SDMP as every SDMP is shown in the literature to be affected by both external environment factors and internal contextual factors (see Section 6.1). Accordingly external environment factors and internal contextual factors were operationlised in this research as moderators taking the support of the arguments of Elbanna and Child (2007).

In order to relate the three concepts of SD specific characteristics, SDMP characteristics and SDMP outcomes, the researcher took direction from the theoretical framework of Papadakis et al. (1998) and their recommendations which suggested that there is a need to understand how decision importance could influence the SDMP outcomes as otherwise the knowledge about the way SDMP works may not be fully understood. The resulting relationship was posited in Figure 3.1. This relationship was examined using the methodological aspects given in Chapter 4 and the data analysis procedure set out in Chapter 5. From the examination of the findings of the data analysis the following inferences could be made:

7.1.1 Decision importance influences rationality in decision making directly and in the positive direction. This result is consistent with the practical situation observed in HEIs and is a

contribution to the body of knowledge of SDMP in the context of HEIs as this variable has not been investigated as part of an SDMP in HEIs.

7.1.2 Decision importance influences intuition directly and in the positive direction. As explained above in the case of the relationship between decision importance and rationality in decision making, This result is consistent with the practical situation in HEIs and is a contribution to the body of knowledge of SDMP in the context of HEIs as this variable has not been investigated as part of an SDMP in HEIs.

7.1.3 Rationality in decision making influences decision effectiveness directly and in the positive direction. This is consistent with the results obtained by Papadakis et al. (1998) and Elbanna and Child (2007) but contradicting the findings of Dean and Sharfman (1993).

7.1.4 Intuition influences decision effectiveness directly and in the positive direction. This finding is contradicting the findings of Elbanna and Child (2007) and practical aspects of decision making in HEIs suggest that the findings of the current research are valid.

7.1.5 Decision importance indirectly but positively influences decision effectiveness, an argument supported by the recommendations of Elbanna (2011) although there is no research outcome that is similar in nature that could be found in the literature. This is a new contribution to the body of knowledge.

7.1.6 External environment moderates the relationship between rationality in decision making and decision effectiveness. This finding is supported by the findings of Elbanna and Child (2007).

7.1.7 Internal context moderates the relationship between rationality in decision making and decision effectiveness. This finding is supports the findings of Elbanna and Child (2007) who found partial support for their hypothesis.

7.1.8 External environment does not moderate the relationship between intuition and decision effectiveness. This finding is not supported by the findings of Elbanna and Child (2007).

This is perhaps due to the nature of the concept of intuition that is essentially based on an individual's past experience and understanding of the situation.

7.1.9 Internal context does not moderate the relationship between intuition and decision effectiveness. This finding is not supported by the findings of Elbanna and Child (2007). This is perhaps due to the nature of the concept of intuition that is essentially based on an individual's past experience and understanding of the situation.

7.1.10 The relationship between decision importance and decentralization in decision making is significant, but the relationship between decentralization in decision making and decision effectiveness is not.

While research on decentralization in decision making as an SDMP characteristic is sparse, the one finding by Nooraie (2012) supports the findings of this research to the limited extent of an SD specific characteristics (risk propensity) influencing decentralization in decision making directly and positively. But the findings of Nooraie (2012) cannot be extended exactly to this research as the SD specific characteristic used in this research is decision importance. However it can be seen that the results of this research do not find support from the findings of Nooraie (2012) with regard to the relationship between decentralisation and decision process outcomes. While the findings of Nooraie (2012) show that the relationship between decentralisation and decision process outcomes was direct and positive, the results of this research contradict this finding. Here again it must be mentioned that the SDMP outcomes used by Nooraie (2012) are decision quality and decision satisfaction and not decision effectiveness. Hence while there is a contradiction at the conceptual level, whether the same results will be valid when the exact variables are used in the research is a question that remains unanswered. However, in the context of HEIs it can be seen that contradictory arguments have been posited, for instance, Yazdi (2013) who argues that decentralization may not be the best decision making process characteristic in the education sector, while Ballarino (2011) quotes the example of a successful model of decentralization in the education sector in Germany. Hence a deeper investigation in this area is a necessity.

From the above arguments it can be concluded that the aim set for this research has been achieved.

7.2 Objectives

7.2.1 ***Objective 1:*** *To study the decision specific characteristics, SDMP characteristics and SDMP outcomes as concepts and their theoretical underpinnings and specify those that need to be addressed in the context of HEIs through literature review.*

This objective was addressed using the literature review in Chapter 2, theoretical framework in Chapter 3 and the findings of this research provided in Chapters 5 and 6. As mentioned in Section 6.1.2 after studying the SDMP literature many SD specific characteristics were identified. Amongst them decision importance was chosen for study in the context of HEIs. Reasons for choosing this SD specific characteristic include the influence decision importance can exert on SDMP, SDMP characteristic, SDMP outcome and decision making behaviour of managers. For instance, Papadakis et al. (1998) argued that decision importance (an associate of decision magnitude of impact) is one of the strongest explanatory variable of decision making behaviour. In the context of HEIs, decision making is a major activity and much less is known on how it affects the SDMP in the HEIs. Theoretically, decision importance could be linked to the model developed and tested by Elbanna and Child (2007) who argued that decision importance influences SDMP although as a moderator of the relationship between the SDMP characteristics and SDMP outcomes. The choice of decision importance as the SD specific characteristic provided new insights on how it affects SDMP characteristics and through those SDMP characteristics the SDMP outcome (Chapters 5 and 6). Hence the choice of decision importance for study as an SD specific characteristic was justified.

Again with regard to SDMP characteristics, the research identified rationality in decision making, intuition and decentralization as important in the context of HEIs because literature identifies them as playing a major role in SDMP. Much of SDMP literature points out that rationality in decision making serves as an important factor in determining the best alternative from amongst the available choices. This was supported by the lack of clarity that is highlighted as existing in HEIs. Nutt and Wilson (2010; p. 34) argue that: “When decision making is clear and concise, the institution is anarchical and acts as a background for decisions that may not be linear in process and may not be logical in a consistent sense”. Here the contradictory behavior of institutions could be witnessed. Hence, there is a need to understand in such situations how SDMP can be made effective using rationality. Particularly when rationality in decision making is dependent on SD specific characteristic, the results of its influence on SDMP outcome could be difficult to understand. This was investigated in this research. Theoretically, rationality in decision making in HEIs could be linked to organisational, politicization and behavioural theories (see Section 2.7.3). Choice of

rationality in decision making as an SDMP characteristic has been supported by the results of the data analysis provided in Chapter 5.

Intuition is a concept that is seen to be widely used in the concept of HEIs (see Section 2.8). As mentioned in Sections 2.8 and 3.4, intuition was widely used because many decisions could not wait for the results of applying rationality in choosing the right strategic alternative. Application of rationality can consume time, to analyse data and information, before taking decisions. In those circumstances when urgent decisions need to be taken intuition is used by managers. Whether intuition is useful in SDMP is a major question not well answered in the literature, including in the context of HEIs. Using rationality in decision making alongside intuition amounts to using two conflicting concepts in an SDMP model, but in reality this has been observed to happen in practical situations. Thus taking into account its theoretical underpinning that is linked to the model developed by Elbanna and Child (2008) it was decided to examine the operation of two conflicting concepts in an SDMP model. Further the complication that surrounds the influence of intuition on SDMP outcome when SD specific characteristics determine intuition is not simple and easy to understand. Hence, the choice of intuition for investigation as an SDMP characteristic could be justified. The results of the data analysis confirm the usefulness of the choice.

Decentralization in decision making was chosen as an SDMP characteristic because this concept is not practiced consistently across the HEIs. From Section 2.6 it can be seen that decentralization in decision making is a concept that is practiced in HEIs although it is not known whether decentralization in decision making influences SDMP outcomes. Keeping in view the question whether decentralization in decision making as an SDMP characteristic leads to successful decision making or not, in this investigation choice of decentralization in decision making was justified. This concept was grounded in decision theory and contingency theory (see Section 3.5). In combination with rationality in decision making and intuition, decentralization provides a complex scenario that can be witnessed in the context of HEIs. To what extent these three concepts affect SDMP outcomes when driven by the independent variable decision importance is a major contribution this research has made to the body of knowledge. From Chapters 5 and 6 (see Sections 5.7, 6.2.5 and 6.2.6) it can be seen that only rationality in decision making and intuition have been found to be influencing SDMP outcome. Decentralization as an SDMP characteristic did not show that it plays any role in influencing the SDMP outcome.

As an SDMP outcome, decision effectiveness is grounded in decision theory, problem solving behavior and contingency theory (see Section 3.2). Its choice for investigation in this research was directed by the lack of understanding of how SDMP operates in the HEIs and lack of a way that could help in determining whether a decision could be implemented after it is scrutinised through an SDMP prior to implementation. For instance, in this research a model of SDMP was developed (Figure 3.1). This model tested the decision effectiveness of the SDMP outcome in terms of setting the strategic objectives for a department in HEIs. Using this process it was possible to check if those strategic objectives set were important decisions for the HEIs before implementing those objectives. To confirm this, the research was expanded a little to test the extent to which the objectives were attained. There was a close relationship between the results obtained by testing decisions taken using the SDMP model prior to implementation and results obtained by testing those decisions after implementation. The results of this research showed that the SDMP model developed could be used to test decisions prior to implementation, for instance to test to what extent a decision taken is important in HEIs. A concept investigated by Elbanna and Child (2007), decision effectiveness had not been studied in the context of HEIs. However, examples of the importance of decision effectiveness found in practice in the context of HEIs support the need to understand how and to what extent SD specific characteristics and SDMP characteristics determine decision effectiveness. In addition there are calls from the research community to investigate the concept of decision effectiveness in multiple contexts. Effective decisions provide the basis for successful implementation of those decisions. Knowledge about this factor provides an important opportunity to managers in HEIs to test a decision using decision specific characteristics (e.g. decision importance) prior to the actual implementation of the decision by applying the concepts of rationality in decision making and intuition. Thus the choice of decision effectiveness for investigation is justified.

Further to explaining the SD specific characteristics, SDMP characteristics and SDMP outcomes, it can be seen that an important part of the SDMP is the external environment and internal contextual factors. Choice of environmental uncertainty and organisational performance as external environmental factor and internal contextual factor has been explained in Sections 3.7 and 3.8. Results of the data analysis show that the two factors affect the relationships between rationality in decision making and intuition on the one hand and decision effectiveness on the other. From the foregoing discussions it can be concluded that this objective has been achieved.

7.2.2 ***Objective 2:*** *To develop a theoretical framework to relate the decision specific characteristic, SDMP characteristic and SDMP outcome variables and develop a conceptual model using base models and theories reviewed through the literature.*

The theoretical framework was presented in Chapter 3 using the outcome of the review of the SDMP literature. The theoretical framework enabled the researcher to develop the conceptual model (see Figure 3.1). This model has been derived from the models developed by Papadakis et al. (1998), Elbanna and Child (2007) and Nooraie (2012) which have been used as the base model in this research. Twelve hypotheses were formulated. This model was used to answer the research questions RQ1 and RQ2. The results of data analysis (Chapter 5) and discussions on those results (Chapter 6) show that the model was useful in answering the research questions. Thus it can be said that this objective has been achieved.

7.2.3 ***Objective 3:*** *To formulate hypotheses that could enable the researcher to test the conceptual model.*

Twelve hypotheses were formulated for testing the relationships developed and established in the conceptual model (see Figure 3.1). The hypotheses are:

- *H1: Decision importance influence rationality in decision making positively*
- *H2: Decision importance influence intuition positively*
- *H3: Decision importance influence decision decentralisation positively*
- *H4: Rationality in decision making influences decision process effectiveness positively*
- *H5: Intuition influences decision process effectiveness positively*
- *H6: Decision decentralisation influences decision process effectiveness positively*
- *H7: Environmental uncertainty moderates the relationship between rationality in decision making and decision process effectiveness.*
- *H8: Environmental uncertainty moderates the relationship between intuition and decision process effectiveness.*
- *H9: Environmental uncertainty moderates the relationship between decision decentralisation and decision process effectiveness.*
- *H10: Organisational performance moderates the relationship between rationality in decision making and decision process effectiveness.*
- *H11: Organisational performance moderates the relationship between intuition and decision process effectiveness.*

- *H12: Organisational performance moderates the relationship between decision decentralisation and decision process effectiveness.*

These hypotheses were tested and results of the test have been provided in Section 6.2. Thus it can be concluded that this objective has been achieved.

7.2.4 ***Objective 4:*** *To test the conceptual model/hypotheses and provide guidance on implementing the model in HEIs.*

The hypotheses were verified using the findings of the data analysis (Chapter 5) and the discussions on those findings (Chapter 6). The results show that H1, H2, H4, H5, H7 and H10 have been accepted and H3, H6, H8, H9, H11 and H12 were rejected (see Section 6.2). It can be concluded that this objective has been achieved.

Further to concluding that the aim and objectives have been achieved, the next section discusses the contribution to knowledge this research makes.

7.3 Contribution to knowledge

Decision making is one of the most important activities of a manager (Nooraie, 2014; Waas et al. 2012). For instance Waas et al. (2012) argue that sustainability and decision making strategy are related in HEIs which indicates the importance of decision making in HEIs. However strategic decision making is not an easy task (Nooraie, 2014). Quoting Dean and Sharfman (1996), Papadakis and Lyriotaki (2013) described strategic decisions as complex and multidimensional in conceptualization, again highlighting the importance of decision making and the challenges surrounding conceptualizing SDMP. A number of reasons have been attributed to the consideration that decision making is an important aspect to organisations including the lack of understanding of the nature of SDM in terms of the magnitude of impact of those decisions, the non-routine nature of those decisions and the need for commitment of substantial resources to those decisions. But substantiating those reasons conceptually has been a challenge. Despite the challenge, literature shows that some authors have conceptualised strategic decision making and SDMP, but those outcomes appear to be only tentative attempts that have produced incomplete knowledge and more was needed to be done to overcome the limitations affecting SDMP. Further, in order to overcome limitations that surround strategic decision making and to gain a deeper understanding of SDs

researchers have conducted some work focusing on the impact of broader context on strategic process. While contextual factors have been identified as an area in the literature in which researchers have some work and attempted to develop models to assess the impact of broader context on strategic processes such efforts have not fully addressed all the factors that are considered as linked to broader context (Papadakis & Lyriotaki, 2013; Nikolopoulos, 2002; Reklitis & Trivellas, 2002). To that extent, much of the focus of researchers in the past has been on SDMP dimensions and attention paid to the role of contextual factors in the SDM is minimal. Such contextual factors include strategic decision specific characteristics for instance decision importance, magnitude of impact and decision uncertainty (Elbanna, 2011). According to Elbanna (2011) the influence of SD specific characteristics on SDMP is yet to be fully understood, an argument that was found to be consistent in the area of HEIs (see Section 2.3). This research has addressed this issue to some extent.

While focusing on HEIs and reviewing the literature (as well as observing the actual practice in HEIs), it was found that SDMP as a concept is a major area of concern (see Section 2.5) in HEIs. Many decisions in the HEIs that are strategic in nature are not taken and implemented through a tested process of SDMP especially prior to implementation. For instance, decisions related to such things as whether a country requires more graduates, whether the graduates produced by HEIs can play a key role in the economic development of a country, whether the skills that graduates need are built in by HEIs in students and in what way the HEIs will ensure wider economic, social and civic benefits that come with increased participation of students in higher education, are not easily answered because those decisions are not subjected to the process of decision making (Strategy Group, 2011). This is a major area that was not addressed in the literature.

Further, in order to understand this aspect, this research studied the literature and found that SDMP models that have been developed until recently are thus far applicable only to the industrial sector and the context of HEIs have not been addressed. Investigations revealed that key determinants of the SDMP are the broader contextual factors namely strategic decision specific characteristics, SDMP characteristics, SDMP outcomes and internal and external environment factors (see Sections 3.2 to 3.8). The research showed that a major activity in HEIs is the decision making and identifying how those decisions affect many strategic aspects of education provision which is still a challenge (Tremblay et al 2012). For instance Tremblay et al. (2012) cite strategies including student engagement, enhancement of student participation and implementing IT facilities require robust

decision making processes in HEIs, a major challenge. Such challenges could be mitigated to some extent using the outcomes of this research. This is a contribution to the body of knowledge.

Building upon the SDMP model developed by Elbanna and Child (2007), this research addressed the above concerns and developed a theoretical framework that identified key determinants of the SDMP taking into account broader contextual aspects of SDMP discussed above. Amongst them one determinant namely decision importance (decision specific characteristic) was chosen as a contextual factor affecting the SDMP outcomes. The SDMP outcome chosen for study was decision effectiveness. Decision importance was posited as an independent variable affecting decision effectiveness as the dependent variable in the context of HEIs. The rationale for the choice of these factors was given in Section 3.2. Simply stated the importance of a decision affects every aspect of decision making, as not understanding how important a decision is can result in managers considering less important decisions that have lower impact on the organization as important and vice versa . Prior to this research not much was known on how the concept of decision importance affects SDMP. Except for the work of Elbanna and Child (2007), hardly any other research outcome could be found in the literature that has investigated decision importance as a strategic decision specific characteristic. Even the work of Elbanna and Child (2007) treated decision importance as a moderating variable in the SDMP moderating the relationship between SDMP characteristics and SDMP outcomes (see Section 3.6). However, considering the arguments of Papadakis et al. (1998) and Elbanna (2011), this research posited that it is necessary to treat decision importance as an independent variable that influences SDMP outcome. Consequently decision importance was related to decision effectiveness. This is a major deviation from the model developed by Elbanna and Child (2007) and the results of the statistical analysis confirm that decision importance influences decision effectiveness. This has significance to HEIs as no such guidance could be found in the literature that points to the relationship between decision importance and decision effectiveness as part of SDMP. This is an important contribution to knowledge as it was not known before that these two contextual factors could be related. The possible effect of this finding on HEIs is that every decision taken by HEIs can now be subjected to an examination of whether it is important and to what extent it affects the effectiveness, as every decision cannot be classified as important impacting the SDMP outcome and the HEIs. Such an option is expected to provide support to HEIs in SDMP.

Next, the relationship between decision importance and decision effectiveness was affected by the intervention of SDMP characteristics as mediators. This is another deviation identified by this research from the model developed by Elbanna and Child (2007). While Elbanna and Child (2007) treated SDMP characteristics as independent variables, this research positioned them as mediating variables based on the arguments of Papadakis et al. (1998) and Noorie (2014). Thus three SDMP characteristics namely rationality in decision making, intuition and decentralization in decision making were chosen, and their influence as mediators in the relationship between decision importance and decision effectiveness was investigated. The choice of the SDMP characteristics was guided by the research findings of other researchers and the rationale for the choice is given in Chapter 3. This way of treating SDMP characteristics, to ascertain the influence of decision importance on decision effectiveness provided an opportunity to determine the factors that contributed to SDMP in HEIs, a lack of knowledge of which arguably impairs more accurate decision making. This type of relationship had not been conceptualized before in the literature. This way of linking the independent and dependent variables would provide knowledge on the nature and type of influence the independent variable exerted on the dependent variable in the presence of mediating factors. For instance, in the HEIs, to determine whether a decision is important or not, intuition has been shown to be used by managers (Sadler-Smith and Shefy, 2004) (Sections 2.8 and 6.1.2) to some extent while evidence of using rationality is limited. A good example of where this could be seen in the HEIs is the enrollment process of students. In many universities the enrollment process involves committees and the committee members have very little time to decide on the students to be enrolled leading to the use of intuition. In cases where some dispute arises, perhaps rationality is used, such as the case of determining equivalency of grades scored by applicants who have studied in different systems. In either case, whether the decision to enroll the student is effective or not, meaning whether the enrolled student will perform well or not, will not be known instantaneously. This research helps to eliminate this dilemma to some extent by involving both rationality and intuition in the model to determine the effectiveness of the decision. Using both intuition and rationality in decision making to understand the influence of an important decision on the effective decision in one model is a major contribution to knowledge.

In addition, as was mentioned in Section 3.3 HEIs are characterized by contradictory behavior in decision making. This contradictory behaviour could be explained with the help of the involvement of intuition and the model developed for this research could be useful to gain knowledge on why such a behaviour occurs and how to reduce the contradiction.

Again, investigation of the use of decentralization as a mediator alongside rationality in decision making and intuition was an innovative approach. Decentralisation in decision making is a major question posing a challenge to managers in the education sector, including the HEI sector, as there are contrary results that have been reported where it has been employed. For instance, in Germany decentralization in decision making has been reported successful in the higher education sector while in Italy the centralisation of decision making has been successful (Ballarino, 2011). However, the introduction of this concept in this research did not show that decentralization in decision making mediates between decision importance and decision effectiveness in the context of HEIs, confirming that the results of this research appear to correspond with the findings from Italy.

Apart from the above contributions to knowledge, the findings of this research have also showed that external environment and internal contextual factors affect the relationship between rationality in decision making and decision effectiveness as moderators, but do not affect the relationship between intuition and decision effectiveness. Findings reported in the literature e.g. Goll and Rasheed (1997) confirm that the relationship between strategic decision process characteristic (rationality in decision making) and firm performance is moderated by external environment while Elbanna and Child (2007) confirm that the relationship between strategic decision process characteristic (intuition) and decision effectiveness is not moderated by external environment. However Elbanna and Child (2007) confirm that the relationship between strategic decision process characteristic (intuition) and decision effectiveness is moderated by internal context which is contradicted by the findings of this research. The reason for this contradiction could be that in industry, intuition could play an important role due to the rapid changes that occur in the business environment and hence internal context could be found to have a moderating effect on the relationship between intuition and decision effectiveness, whereas in the case of HEIs the internal contextual aspects such as HEI performance may not change so rapidly. It must be emphasised here that the context in which the research was conducted by Goll and Rasheed (1997) and Elbanna and Child (2007) is in the industrial sectors and the comparison of the results obtained by those researchers, with those of this research, can be considered meaningful as prior research in the case of HEIs in SDMP is sparse. This finding is a contribution to the body of SDMP knowledge applied to the context of HEIs, as research findings reported in the literature in the context of HEIs is very limited.

Furthermore, the model produced by this research provides ample opportunities to treat the strategic decision specific characteristics differently. For instance while decision importance has been operationalized as the determinant of strategic decision effectiveness mediated by rationality and intuition, it may be possible to operationalize decision importance to be a moderator of the relationships (rationality in decision making → decision effectiveness) and (intuition → decision effectiveness) in the context of HEIs. This model does not restrict the conceptualisaton of decision specific characteristics a moderators. In addition results produced in Section 5.5.3.2 show that decentralization while not found to be significant in mediating between decision importance and decision effectiveness, was found to have a significant relationship only to decision importance. This could imply that the presence of decentralization as a variable in the model could be substantiated as a covariant of decision importance, implying that decentralization may impact the relationship between decision importance and decision effectiveness as a moderator. This aspect although not tested in this research adds to the contribution of knowledge to visualize decentralization in decision making as an SDMP characteristic that could act as moderator in the same model where two other SDMP variables namely rationality in decision making and intuition are operating as mediators. Thus this knowledge could provide a new way of depicting the SDMP characteristics and deploying them in conceptual models.

This research has also contributed to knowledge in a different paradigm altogether. For instance the results of this research have been compared to those reported in research outcomes that have investigated the industrial sector (e.g. Elbanna & Child, 2007). Applying the results obtained in research outcomes pertaining to the industrial sector to the education sector is a paradigm shift. There are significant differences between the two sectors. While it is usual to compare results within the same sector, that the results of the research outcomes in the industrial sector found use in the education sector is a major contribution to knowledge. For instance in the education sector it is difficult to explain or measure intuitive decision making. Intuitive decisions taken in the HEIs are grounded on such factors as experience as a faculty or researcher or administrator or altogether and in each instance it is difficult to objectively measure or explain what intuition means. In such a fluid situation using the research outcomes obtained in the industrial sector to the education sector which has produced useful outcomes in the context of HEIs contributes to knowledge in a way that a basis has been created in this research to understand intuition and its operation. This demonstrates the multi paradigmatic contribution of this research to knowledge.

Overall the model developed and tested in this research could serve the HEIs to scientifically test the strategic decisions taken in those institutions prior to their implementation, thereby avoiding implementation of unimportant decisions, and to identify those decisions that are important and need to be implemented through an effective SDMP. After reporting the contribution to the body of knowledge, the discussion next focuses on the implications to theory.

7.4 Theoretical implications

One of the main theoretical implications of this research are that it enhances the model developed by Elbanna and Child (2007) by redefining the constructs' functions with the support of appropriate theories. A new conceptual model has been developed to explain how SDMP could operate in a HEI (Chapter 3). In the model tested by Elbanna and Child (2007) decision importance, a decision specific characteristic was treated as a moderator, rationality in decision making and intuition were used as independent variables and decentralization in decision making was not tested. These variables have been redefined in the model tested in this research. Decision importance has been treated as independent variable an argument supported by Papadikis et al. (1998). Similarly rationality in decision making, intuition and decentralization in decision making have been used as mediators, an argument supported by Papadikis et al. (1998) and Nooraie (2014). Environmental factors have been used as moderators in the same way as Elbanna and Child (2016) operationalized. This perspective applied to HEIs serves as a major theoretical support to explain the operation of SDMP and its components investigated in this research in HEIs.

Multiple theories have been applied in the theoretical framework developed for this research. For instance decision theory, problem solving behavior and contingency theory have been applied to explain the operationalization of strategic decision effectiveness. This is consistent with the arguments of Elbanna and Child (2007). Similarly, operationalization of rationality in decision making was explained using organisational, politicization and behavioural theories which is consistent with the practice adopted by other researchers in the literature (see Section 4.4, Chapter 2). Intuition was theoretically operationalized with the support of the model developed by Elbanna and Child (2007) as no specific theory has been identified to support its operationalization in the SDMP literature (see Section 3.4). Decentralization of decision making was operationalized using decision theory which lends support on how decisions are taken by managers in organisations and contingency theory (see Section 3.5). Decision importance was operationalized using decision theory (see Section 3.6). The influence of external environmental and internal contextual factors

on the relationship between SDMP characteristics and SDMP outcomes was explained using contingency theory. Thus, it can be seen that two theories namely decision theory and contingency theory are seen to be the dominant theories whose application has been extended to explain the operationalization of the SDMP model in the context of HEIs. A unique aspect is the explanation of the treatment of intuition using the model developed by Elbanna and Child (2007) which acts as the supporting theory and the results of this research show that it is possible to use the model developed by Elbanna and Child (2007) to explain the importance and use of intuition in SDMP models. The use of organisational, politicization and behavioural theories as supporting theories to explain rationality in decision making is consistent with the arguments found in the literature (see Section 2.7.3). Thus, the research outcomes show that multiple theories need to be used to explain the operation of an SDMP model in organisations including HEIs. After discussing the theoretical implications, the next section discusses the methodological contribution made by this research.

7.5 Methodological contribution

This research has used a research method through which the outcome of the research indeed has been characterized by academicians involved in strategic decision making in HEIs. The participants in the survey were those who had been identified to be part of councils or committees in the HEIs that are responsible to take decisions that govern the HEIs. In this sense, the findings of this research can be considered to be based on the actual experience of participants who have been part of some decision making processes in the HEIs. This maximises the predictive power of the model developed. In addition, the questionnaire developed for this research went beyond testing the model prior to the implementation of the SDMP (that is to say that the data collected is not only related to past decisions prior to implementation but takes into consideration the actual implementation of those decisions and the results of those decisions). Thus it can be seen that the one to one correspondence introduced between the set of questions (DEC.EFFECQ1 - DEC.EFFECQ5) and (RATE6 –RATE10) confirmed whether the decisions taken by HEIs and tested through the SDMP model developed in this research are indeed effective when implemented. While the responses to items (DEC.EFFECQ1 - DEC.EFFECQ5) indicated the effectiveness of the SDMP, the responses to items (RATE6 –RATE10) indicated the actual result of the implementation of those decisions confirming whether the decisions taken through the SDMP were indeed effective. These methodological contributions enabled the researchers to collect precise data and test the model and perform an indirect test verify its practical significance.

In addition, the methodological contributions were enhanced further with the use of moderated regression analysis and SEM to ensure that the model was parsimonious. Moderated regression analysis provided the basis to identify the exact nature of interaction of the external environment and internal contextual factors in the relationship between the SDMP characteristics and SDMP outcome. The treatment of the items as variables in the regression analysis enabled the accurate determination of the influence of the independent variable on the dependent variables. The use of moderated regression analysis enabled the accurate determination of the moderation by environmental uncertainty and organisational performance. The analysis showed that the moderating variables acted as pure moderators as those variables modified the form of the relationship between the criterion and predictor variables namely the decision effectiveness and SDMP characteristics (rationality in decision making and intuition). This type of treatment provides a method to accurately understand the dynamics of the moderating variables and their impact on the relationship between the criterion and predictor variables.

While the moderated regression analysis produced results that enabled the verification of the hypotheses, the researcher went one step further to test the parsimonious nature of the model using path analysis which is a component of SEM. Although the analysis using SEM reduced the number of variables to six, the reduction could be justified by the fact that each one of the variables analysed, still measured the construct under investigation. For instance decision importance was represented by six possible variables namely DIMPORTANCEQ1 to DIMPORTANCEQ6 and each one of them was used to measure the construct. Thus, if at least one variable is used in the analysis it is presumed to measure the construct under investigation and if more than one variable is found to be usable in analysis, then to that extent the reliability of the construct's measurement is expected to be even better. For instance in the final model (see Figure 5.2) it can be seen that RATIONALITYQ2 – RATIONALITYQ4 have been used to measure rationality in decision making. This indicates that the reliability of the measure of rationality in decision making with three different items as variables is higher when compared to the use of a single item as a variable. Thus, while the results of this research achieved and reported at the stage where the outcomes of the moderated regression analysis could be considered adequate to test the hypotheses, at the same time, use of SEM provided a simplified version of the model depicted in Figure 5.2 (finally re-specified model). Usually a combination of moderated regression analysis and SEM is not employed in SDMP research, however this way of analyzing the data and verifying the hypotheses contributes to methodology that leads to a more parsimonious model with a high predictive power

that has a greater chance of finding acceptance in HEIs. After ascertaining the methodological contribution this research discusses the contribution to practice.

7.6 Contribution to practice

As has been mentioned in Section 2.3, the review of the literature shows that SDMP empirical models that support HEIs are very sparse, making the findings of this research potentially very useful in the HEIs. Major decisions that are strategic in nature are needed to be taken in HEIs to face those challenges successfully, within short periods of time, and this can lead to possible inconsistencies, inaccuracies (and potential anarchy) in decision making. Problems including enrollment related, infrastructural, quality related and competition, require strategic decision making, and deliberate SDMP by and large are not widely used in HEIs (see Section 2). Research outcomes are not coming forth to help HEIs either, as there is a dearth of research outcomes that address the SDMP in HEIs. This is a major lacuna that required attention. A practical model or tool was necessary to be developed that could help the HEIs in developing and implementing their SDMP. The outcome of this research offers such a model (see Figure 5.2) that is simple yet predictive. The use of decision importance as the SD specific characteristic provides an important opportunity for the HEIs to determine which of those decisions that need to be implemented are important and could be considered effective if the rationality in decision making and intuition are used as mediators. In addition, environmental uncertainty and organisational performance could be analysed to know to what extent those factors affect the relationship between decision importance and decision effectiveness. The model developed and tested in this research is simple and has the power to predict the process-decision outcome of the SDMP for a particular decision that is considered to be important. This model can be used to test the effectiveness of the decisions prior to the implementation of those decisions, which could potentially enable the HEIs to avoid taking and implementing ineffective decisions thereby reducing possible risks associated with the implementation of unimportant decisions such as loss of time, effort and money. Thus the outcome of this research may find potential practical application in every HEI.

7.7 Limitations of this research

Like all research, this research has a number of limitations which include the breadth of generalizability of the model across HEIs, the focus on a specific type of HEIs, and the use of a single independent variable (decision importance) and single dependent variable (decision effectiveness). Lack of generalizability arises because within the HEI sector there are varying types

of HEIs for instance institutions offering only engineering programmes differ significantly from those offering business programmes and each one of those institutions operate differently. This research did not segment the HEIs according to disciplines, which could probably have produced different results by segment. Similarly focusing on a particular type of HEIs, for instance institutions offering only management programmes, might have produced a different result as decisions that are taken in those institutions might differ when compared to institutions that offer programmes in other disciplines. Again, use of decision importance as the focal independent variable is a limitation, without considering other independent variables such as decision uncertainty or decision magnitude of impact. Inclusion of those variables could have altered the model's operationalisation significantly. Since decision importance has been used as a standalone independent variable, it is not possible to know how the model would operate with the introduction of other related variables as independent variable.

As far as SDMP characteristics are concerned, this research has chosen two widely used SDMP characteristics (rationality in decision making and intuition) and one sparingly addressed SDMP characteristics (decentralisation in decision making). Apart from these three there are other SDMP characteristics whose inclusion in the SDMP model could produce other less known aspects about SDMP characteristics and their relationship with SD specific characteristics and SDMP outcomes. This is another limitation of this research.

Similar arguments can be extended to the SDMP outcome variable namely decision effectiveness. Use of other variables other than decision effectiveness, for instance commitment of the organization, or quality of the SDMP, may have produced a different result. Each one of these factors has been identified to be important in the SDMP literature. However, it is not possible to include all possible variables in any single study. In this study, those variables/constructs considered, based on the review of the literature, to be most relevant to SDMP in the HEI sector were therefore selected from the totality of possible constructs. Furthermore, many of these limitations can be overcome in future research by simply enhancing the model or changing the independent and dependent variables and testing the model again. After presenting the limitations of this research, the next section provides suggestions for future research.

7.8 Future research

The outcome of this research provides opportunities to conduct further research for researchers in the area of SDMP and in the context of HEIs and has the potential to provide a greater insight into how the SDMP operates in the context of HEIs. For instance the model developed could be tested in specific HEIs such as those offering programmes in science or humanities. The results produced could be interesting to understand how the SDMP differs when compared with the results of this research. The decision making process in colleges that offer specific programmes differ with each other. Considering the results of this research where the relationship between the decision importance and decision effectiveness has been established using rationality in decision making and intuition, future work could consider using other context variables for instance formalization and politicization as mediating variables. In such a situation the results produced pertaining to the influence of decision importance on decision effectiveness could be different. In addition, the research has provided a strong basis to expand the concept to include an interactive component between the mediating variables. For instance the relationship between rationality and intuition is a major area of contradiction where two concepts supposed to oppose each other has been used together although without linking them. If one considers the results of this research which shows both rationality and intuition to have a role find use in the SDMP, then a supposition that there could be some conceptual relationship between these two constructs which if revealed could enable an understanding of the extent to which the two constructs could complement each other or oppose each other, would be a slient avenue for further research.

Next, alongside decision importance other variables such as decision uncertainty and decision magnitude of impact could be used to understand the combined effect of the three independent variables on the SDMP outcome. This aspect wass partially established in the results obtained by Elbanna and Child (2007) in the case of decision uncertainty who found that decision uncertainty can affect the relationship between rationality in decision making and decision effectiveness. Considering the results of this research which has established a clear relationship between decision importance and decision effectiveness, the use of other decision specific characteristics like decision uncertainty and decision magnitude of impact could provide insights useful to HEIs. For instance when HEIs are faced with situations where uncertain conditions exist like varying demands of students and job market conditions, then it may be necessary that the HEIs consider changing the curriculum or changing the enrollment policies. Any decision that is likely to involve uncertainty in the decision making process in terms of changing the curriculum or enrollment

policies could have serious repercussions. In these situations it is worthwhile to combine the two constructs namely decision importance and decision uncertainty which may together operate and produce a meaning SDMP outcome. Knowledge about such combination of decision specific characteristics could enable the HEIs make the most accurate decisions. Hence future research in this area could be very useful to both the body of SDMP knowledge as well as implementing the knowledge in HEIs in practice. Similarly in place of decision effectiveness, other variables such as quality of SDMP or organisaitonal commitment could be used to gain a wider understanding of the SDMP in HEIs. In addition it is recommended future research should consider the other SD specific characteristics (e.g decision uncertainty), SDMP characteristics (e.g. formalisaton and politicisation) and SDMP outcomes (e.g. decision commitment) which may produce significantly different results.

Furthermore, the conceptual model developed in this research could be tested in different geographical locations and different cultural settings that could enable gaining new knowledge on how the SDMP operates and whether similar research findings are obtained. For instance the findings of this research is likely to be affected if the same research was conducted in different educational settings like UK. The system of education in the UK is dynamic when compared to USA where the system of education is more stable. Dynamic educational settings may require knowledge of constructs that affect SDMP for instance decision uncertainty. In addition there could be aspects like decentralization that may have impact on the SDMP, for instance as seen in the case of Germany where decentralization has been found to be more successful than in Italy. Further, in many instances the variables may themselves need to be operationalized differently as found in the research work of Elbanna and Child (2007) who operationalized decision specific characteristics as moderators. Thus testing the model in varying educational settings and different geographical territories could make the model developed in this research widely acceptable. This will help in generalising the model. In addition future research should also seek to establish the reasons why decentralisation was not found to be a significant moderator despite the expectations that it would, based on the suggestions of prior literature.

Overall it can be seen that the outcomes of this research have opened a new branch of study pertaining to HEIs in the area of SDMP thus promising to reveal hitherto unknown facts about SDMP in HEIs.

References:

Abernethy, M. A., Bouwens, J., & Van Lent, L. (2004). Determinants of Control System Design in Divisionalized Firms. *The Accounting Review*, 545–70.

Abou-Moghli , A. (2016). Leadership Style in Strategic Decision Making and Factors of Perceived Environmental Uncertainty: As Integrative Framework . *International Business Management* , 5358-5362.

Abramson , R., Rahman , S., & Buckley, P. (2005). Tricks and Traps in Structural Equation Modelling: a GEM Australia Example Using AMOS Graphics. *Proceedings of ABBSA Conference* (pp. 558-599). Cairns Australia: ABBSA .

Abril, R. M., & Sc., M. C. (2001). An assessment of the theory underpinning the role of information quality in the single-loop decision making model. *Proceedings of the Sixth International Conference on Information Quality*.

Agor, W. (1983). Using intuition in public management. *Public Management*, 2-6.

Agor, W. H. (1986). The logic of intuition: How top executives make important decisions. *Organizational Dynamics*, 5-18 .

Agor, W. H. (1989). Intuition and strategic planning: how organisation can make productive decisions. *The Futurist*, 20-23.

Akhtar, M., & Jabeen, S. (2013). Decision Making Styles of University Leadership. *The Dialogue Volume VIII Number 3*, 273-284.

AlDhaen, E. (2015). Factors affecting Strategic Decision Effectiveness in Higher Education Institutions. *Research Fourm Ahlia University* , (pp. 1-14). Bahrain .

Alshamasi, A., & Aljojo, N. (2016). Difficulties in adapting feedback for individual learning styles in the Arabic Teacher Assisting and Subject Adaptive Material (TASAM) system. *International Journal of Management in Education*.

Andersen, T. J., Bresser, R. K., & Hallin , C. A. (2016). The Dynamics of Strategic Decision-Making: Using Updated Information from the Frontline. *SMS Special Conference* (pp. 1-21). Rome: Strategy Challenges in the 21st Century: Innovation, Entrepreneurship and Coopetition.

Andesto, R. (2016). The influence of perceived environmental uncertainty and business strategy on management accounting system (survey on the Indonesia advertising companies). *European Journal of Accounting, Auditing and Finance Research*, 27-36.

Ansoff, H. (1991). Critique of Henry Mintzberg's the design school: reconsidering the basic premises of strategic management:. *trategic Management Journal (12(6)*, i449-461.

Ansoff, I. (1980). Strategic Issue Management. *Strategic Management Journal* .

Arbuckle, J. L. (2005). *AMOS 6.0 User's Guide.* Spring House, PA: Amos Development Corporation.

Arrow , K. J. (1963). Social choice and individual values. *New Haven, CT: Yale*, p. 2nd Edition .

Ashmos, D., Duchon, D., & Bodensteiner, W. (1997). Linking issue labels and managerial actions: a study of participation in crisis vs. opportunity issues. *Journal of Applied Business Research*, 31-45.

Athapaththu, H. H. (2016). An Overview of Strategic Management: An Analysis of the Concepts and the Importance of Strategic Management. *International Journal of Scientific and Research Publications*, 124-127.

Atsan, N., & Gok, K. (2016). Decision-Making under Stress and Its Implications for Managerial Decision-Making: A Review of Literature. *The Journal of Business* , 38-47.

Atuahene-Gima , K., & Li , H. (2004). Strategic decision comprehensiveness and new product development outcomes in new technology ventures. *Academy of Management Journal*, 583–597.

Ayinde, K., Adejumo, T., & Solomon, G. (2016). A Study on Sensitivity and Robustness of One Sample Test. *Global Journal of Science Frontier Research: F Mathematics and Decision Sciences* .

Babatunde, B. O., & Adebisi, A. O. (2012). Strategic Environmental Scanning and Organization Performance in a Competitive Business Environment. *Economic Insights – Trends and Challenges*, 24-34 .

Bagheri, J. (2016). Overlaps between human resources' strategic planning and strategic management tools in public organizations. *Procedia - Social and Behavioral Sciences 230*, 430 – 438.

Bagozzi, R. P., & Fornell , C. (1982). Theoretical concepts, measurements, and meaning. *C. Fornell (ed.), A Second Genera- tion of Multivariate Analysis, Measurement and Evaluation*.

Ballarino, G. (2011). Decentralization and reform of higher education. Can Germany be an example for Italy ? . *Decentralization and reform of higher education, Italian Journal of Sociology of Education* , 46-71.

Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review*, 191-215 .

Bandura, A. (1986). Social Foundations of Thought and Action: A Social-Cognitive View. *Englewood Cliffs, NJ: Prentice Hall*.

Barankaya, I., & Ben, L. (2007). Decentralization and the productive efficiency of government: Evidence from Swiss cantons. *Journal of Public Economics*, 1197–1218.

Barnett, K., & Coate, R. (2005). Engaging the curriculum in higher education. . *The Society for Research in Higher Education. Maidenhead: Open University Press.*

Barwick , J. R. (2014). *A Historical Analyis of the Texas A&M University System's San Antonio Campus Initiative* . San Antonio, USA : Office of Graduate and Professional Studies of &M University System's .

Bateman , T., & Zeithaml, C. (1989). The psychological context of strategic decisions: a model and convergent experimental findings. *Strategic Management Journal*, 59-74.

Batool, N., Riaz, N., & Riaz, A. (2015). Integrated Use of Rational and Intuitive Decision Making Style: Modern Trends in Organizational Decision Making. *Pakistan Business Review* , 147-161.

Baum , J. R., & Wally , S. (2003). Strategic decision speed and firm performance. *Strategic Managment Journal* , 1107–1129.

Bazerman, M. H. (2006). Judgment in managerial decision making. *Hoboken, NJ: John Wile & Sons* .

Beach, L. R., & Mitchell, T. R. (1987). A contingency model for the selection of decision strategies. *Academy of management review*.

Becher , T., & Kogan , M. (1991). Process and Structure in Higher Education . *Routledge*, 2nd Edition .

Benjamin, R., Ewell, P., Miller, M. A., Rhodes, T. L., Pike, G. R., Banta, T. W., et al. (2012). The Seven Red Herrings About Standardized Assessments in Higher Education. *National Institute for Learning Outcomes Assessment (NILOA)*, 1-35.

Beresford, B., & Sloper , P. (2008). *Understanding the dynamics of decision-making and choice: A scoping study of key psychological theories to inform the design and analysis of the Panel.* UK: Social Policy Research Unit, University of York.

Birnbaum, R. (2001). Management fads in higher education: Where they come from, what they do, why they fail. *San Francisco: Jossey-Bass.*

Black, J., & Farias, G. (1997). “Genesis of complexity cycles”. *8th Annual International Conference of The Society for Chaos Theory in Psychology ancd Life Sciences, Boston University, .* Boston.

Blattberg, R. C., & Hoch, S. J. (1990). Database Models and Managerial Intuition: 50% Model 50% Manager. *Management Science*, 887-899.

Blau, P. (1973). The organization of academic work. . *New York: Wiley and Sons.*

Boer, H. d., & Vught, F. v. (2016). Higher Education Governance in the Netherlands from a Janus Head to Trimurti. *Higher Education Governance and Reform*, 25-32.

Boezerooij, P. (2006). E-learning strategies of higer education institutions : an exploraty study into the influence of environmental contingencies on strategic choices of higher education institutions with respect to integrating e-learning in their education delivery & support. *University of Twente*.

Bok , D. (1986). Higher Learning. Cambridge: Harvard University Press.

Bolden , R., Gosling, J., O'Brien, A., Peters, K., Ryan, M., & Haslam, A. (2012). Academic leadership: changing conceptions, identities and experiences in UK higher education. *Leadership Foundation for Higher Education*.

Bourgeois, L. (1981). On the measurement of organizational slack. *cademy of Management Review, 6:*, 29-39.

Bouwman, H., Heerschap, N., & De Reuver , M. (2013). Mobile Handset Study 2012: Evaluation of Mobile Measurment Software to monitor the use of smartphones and tablets in the Netherlands . *Delft/Deb Haag:CBS (Statistics Netherlands) and TUDelft University of Technology*.

Branden, S., & Sachse, K. (2012). Intuition comes with experience. *Cognitive Psychology and Ergonomics, Technische Universität Berlin, Germany*, 213-224 .

Brown , W. (2005). Exploring the association between broad and organizational performance in nonprofit organization. *Nonprofit Managment and Leadership* , 317-339.

Brüggen, E., Brakel, J. v., & Krosnick, J. (2016). Establishing the accuracy of online panels for survey research. *Statistics Netherlands*, 1-44.

Bryman, A. (2007). Barriers to integrating quantitative and qualitative research. *Journal of Mixed Methods Research*, 8–22.

Bryson, J. (1988). Strategic planning workbook for non-profit organisations. *Jossey-Bass, San Francisco, CA.*

Bryson, J. (2011). Strategic planning for public and nonprofit organizations (4th ed.). *San Francisco: Jossey-Bass* .

Bryson, J. M. (1988). Strategic planning workbook for non-profit organisations. *Jossey-Bass, San Francisco, CA.*

Bryson, J., & Bromiley, P. (1993). Critical factors affecting the planning and implementation of major projects. *Strategic Management Journal* , 319–337.

Burgelman, R. A. (1983). A process model of internal corporate venturing in the diversified major firm. *Administrative Science Quarterly*, 223-244.

Burgelman, R. A. (1993). A model of the interaction of the strategic behavior, corporate context, and the concept of strategy. . *The Academy of Management Review, 8(1)*, 61-70.

Burke, L. A., & Miller, M. A. (1999). 'Taking the mystery out of intuitive decision making'. *Academy of Management Executive*, 91-99.

Burke, S. (2001). Missing Values, Outliers, Robust Statistics & Non-parametric Methods. *LC.GC Europe Online Supplement, Statistics and data analysis*, 19-24.

Butler, R. (2000). Decision making. In Sorge, A.(ed.), Organisation. London : Thomson Learning.

Butler, R. (2002). Decision making. In: A. Sorge, ed. *Organisation. London: Thomson Learning*, 224–251.

Butler, R., Davies, L., Pike, R., & Sharp, J. (1993). Strategic Investment Decisions: Theory, Practice and Process. *Routledge*.

Butuner, H. (2016). Before and after Phases of Strategic Planning. *Universal Journal of Management 4 (3)* , 120-129.

Cabrera, A., Ratcliff, J., & Vries, W. d. (September 2009). Of Institutional Strategic Decisions & Performance Indicators: A strategy to improve institutional effectiveness. *EAIR Forum.* Berlin.

Cabrera, A., Ratcliff, J., & Wietse, d. (2000). Of Institutional Strategic Decisions & Performance Indicators: A Strategy to improve institutional effectiveness. *EAIR, Berlin*.

Camerer, C., & Thaler, R. (1995). 'Anomalies:Ultimatums, Dictators and Manners.'. *Journal of Economic Perspectives*, 209-219 .

Camfield, L., Duvendack, M., & Monteith, W. (2015). *ESRC-DFID joint Fund for Poverty Alleviation Research Evidence Synthesis Research Award (ESRA) for Research Methods.* USA: University of East Anglia.

Campbell, D. T., & Fiske , D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological bulletin*.

Campos, F. S., Franco, A. C., Oliveira, M. T., Firpo, R., Strelczuk, G., Fontoura, F. E., et al. (2014). Detection of bovine herpesvirus 2 and bovine herpes virus 4 DNA in trigeminal ganglia of naturally infected cattle bypolymerase chain reaction. *Veterinary Microbiology*, 182-188.

Cantini, C., Chellini, C., & Sagri , M. (2016). Big Data Analytics National Educational System Monitoring and Decision Making. *World Journal of Social Science Research*, 219-242.

Castells, M. (2001). *The new global economy. In J. Muller, N. Cloete & S. Badat (Eds.), Challenges of globalisation: South African debates with Manuel Castells* . Cape Town, SA: Maskew Miller Longman: 2-21.

Cerigioni, F. (2015). Familiarity and Similarity. *Universitat Autonoma de Barcelona - Barcelona GSE.*

CGMA. (2016). *Business Analytics and Decision Making: The Human Dimension* . The Chartered Institute of Management Accountants .

Cheng, V., Rhodes, J., & Lok , P. (2010). A framework for strategic decision making and performance among Chinese managers. *The International Journal of Human Resource Management*, 1373-1395.

Child , J., & Tsai, T. (2005). The Dynamic Between Firms' Environmental Strategies and Institutional Constraints in Emerging Economies: Evidence from China and Taiwan. *Journal of Management Studies* , 95-124.

Christensen, J., Simpson, W., Bisno, A., & Beachey, E. (1982). Adherence of slime-producing strains of Staphylococcus epidermidis to smooth surfaces. *Infect. Immun*.

CIMA. (2008). *Improving decision making in organisations: The opportunity to transform finance.* London U.K: CIMA Innovation and Development Department.

Clark, D. (2009). The performance and competitve effects on school autonomy . *Journal of Political Economy* , 745-783.

Cloete, N., Goedegebuure, L., & Gornitzka, A. (2016). Pathways through Higher Education Research - A festschrift in Honour of Peter Maassen. *Department of Education University of Oslo*.

Cochran, M. M. (1977). A comparison of group day and family child-rearing patterns in in Sweden. *Child development*, 702-707.

Cohen , M. D., March, J. G., & Olsen, J. P. (1972). A garbage can model of organizational choice. *Administrative Science Quarterly*, 1-25 .

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences (2nd ed.).* Hillsdale, NJ: Lawrence Earlbaum Associates.

Colignon , R., & Cray, D. (1980). Critical Organizatations . *Organizations Studies* .

Collier, N., Fishwick, F., & Floyd, S. W. (2004). Managerial involvement and perceptions of strategy process. *Long Range Planning*, 67–83.

Cooper, D. R., & Schindler , P. S. (1998). The research proposal. *Business research methods*.

Coughlan, M. (2011). *National Strategy for Higher Education for 2030.* Dublin: Department of Education and Skills.

Covin, J., & Slevin, D. (1989). Strategic managment of small firms in hostile and benign enviroment . *Strategic Managment Journal 10*, 75-87.

Cowlrick, I., Hedner, T., Wolf, R., Olausson, M., & Klofsten , M. (2011). Decision making in the pharmaceutical industry: analysis of entrepreneurial risk and attitude using uncertain information. *R&D Management*, 321-336.

Creswell, J. W. (2014). *A Concise Introduction to Mixed Methods Research.* USA : SAGE Publications, Inc. .

Creswell, J., & PlanoClark, V. (2007). *Designing and conducting mixed methods research.* ThousandOaks,CA: SAGE.

Crucke, S., & Decramer , A. (2016). The Development of a Measurement Instrument for the Organizational Performance of Social Enterprises. *Sustainability*.

D'Aveni, R. A. (1994). *Hypercompetition: Managing the Dynamics of Strategic Maneuvering.* New York: Free Press: 1st edn ed. .

Daft, R. L., & Macintosh, N. B. (1981). A tentative exploration into the amount and equivocality of information processing in organizational work units. *Administrative Science Quarterly, 26*, 207–224.

Dahan , G., & Senol, I. (2012). Corporate Social Responsibility in Higher Education Institutions: Istanbul Bilgi University Case. *American International Journal of Contemporary Research*.

Dane, E., & Pratt, M. (2007). Exploring Intuition and its Role in Managerial Decision Making . *The Academy of Management Review*, 33-54.

Dane, E., Pratt, M., G. , P., & Ford , J. K. (2009). International Review of Industrial and Organizational Psychology. *John Wiley & Sons*.

Daniel, P. F. (2005). Managerial determinants of decision speed in new ventures. *Strategic Management*, 355-366.

Darabos , M. (2013). Strategic Analysis of Croatian Cosmetics Industry. *2nd International Scientific Conference Economic and Social Development*, (pp. 951-960).

Day, G. (1997). Strategic channel design. *Sloan Management Review, 38(2)*, 59-70.

Dayan, M., & Elbanna, S. (2011). Antecedents of team intuition and its impact on the success of new product development projects. *Journal of Product Innovation Management, 28(7)*, 159-174.

Dean , J., & Sharfman, M. (1996). Does the process of decision matter ? A Study of Strategic-Decision Making Effectivness. *The Academy of Managment Journal*.

Dean, J. W., & Sharfman, M. P. (1993). Procedural rationality in the strategic decision making process . *Journal of Management Studies*, 587-610.

Dean, J. W., & Sharfman, M. P. (1993). The relationship between procedural rationality and political behaviour in strategic decision making. *Decision Sciences*, 1069–1083.

Diamond , A., Vorley, T., & Roberts, J. (2012). Behavioural Approaches to Understanding Student Choice. *HEA/NUS*.

Diana, S. (2008). Step your way through Path Analysis. *University of Northern Colorado*.

Dillman, D. A. (2007). *Mail and Internet surveys: The tailored design method.* Hoboken: Wiley.

Divjak , B., & Redep, N. (2015). Strategic Decision Making Cycle in Higher Education: Case Study of E-Learning. *International Association for Development of the Information Society*, 19-26.

Divjak, B. (2016). Challenges of Strategic Decision-Making within Higher Education and Evaluation of the Strategic Decisions. *Centre European Conference on Infomration and Intellent Systems* , (pp. 41-47).

Downs, A. (1957). An economic theory of democracy. *Boston: Addison-Wesley*.

Drucker , P. (1954). The Practice of Management. *Harper and Borders, New York* .

Drucker , P. (1993). Managing in turbulent times. *Routledge.London*.

Dutton, R., & Duncan, B. (1987). Strategic Issue Diagnosis and Creation of Momentum for Change. *Strategic Management Journal*.

Dutton , J. E. (1986). The Processing of Crisis and Non- Crisis Strategic Issues. *Journal of Managment Studies* , 501-517.

Eaton, K., Kaiser, K., & Smoke , P. (2010). The Political Economy of Decentralization Reforms Implications for Aid Effectiveness. *The International Bank for Reconstruction and Development/The World Bank*.

Ecclestone, K. (2001). 'I know a 2:1 when I see it': understanding criteria for degree classifications in franchised university programmes. *Journal of Further and Higher Education*, 301-313 .

Eisenhardt , K. M., & Zbaracki , M. J. (1992). Strategic decision making. *Strategic Management Journal* , 17-37.

Eisenhardt, K. M. (1989). Making fast strategic decisions in high-velocity environments. *Academy of Management Journal*, 543-576.

Eisenhardt, K. M., Kahwajy, J. L., & Bourgeois, L. (1997). How management teams can have a good fight. *Harvard Business Review, 75(4)*, , pp. 77-85.

Eisenhardt, K., & Bourgeois, L. (1988). Politics of strategic decision-making in high velocity environments: toward a midrange theory. *Academy of Management Journal*, 37-770.

ElBanna , S. (2012). Slack, planning and organizational performance: Evidence from the Arab Middle East. *European Management Review* , 99-115.

ElBanna, S. (2006). Strategic decision-making: Process Perspectives. *International Journal of Management Reviews*, 1-20.

ElBanna, S. (2011). Multi-Theoretic Perspectives of Strategy Processes. *Faculty of Business and Economics*.

ElBanna, S., & Child , J. (2007b). The influence of decision, environmental and firm characteristics on the rationality of strategic decision-making. *Journal of Management Studies* , 561-591.

ElBanna, S., & Child, J. (2007a). Influences on Strategic Decision Effectiveness: Development and Test of an Integrative Model. *Strategic Management Journal*, 431-453.

ElBanna, S., & Fadol, Y. (2016). The role of context in intuitive decision-making. *Journal of Management & Organization*, 642–661.

Elbanna, S., & Younies, H. (2008). The relationships between the characteristics of the strategy process: evidence from Egypt. *Management Decision*, 626-639.

ElBanna, S., Fadol , Y., & Barhem, B. (2015). The mediating role of the extensiveness of strategic planning on the relationship between slack resources and organizational performance. *Management Decision* , 1023-1044.

ElBanna, S., Thanos, I., & Colak, M. (2014). An exploratory study of the determinants of the quality of strategic decision implementation in Turkish industrial firms. *Journal of General Management*, 27-46.

Elfring, T., & Volberda, H. W. (2001). Schools of Thought in Strategic Management: Fragmentation, Integration or Synthesis. *Rethinking Strategy*.

Eling, K., Langerak, F., & Griffin, A. (2014). The performance effects of combining rational and intuitive approaches in making new product idea. *21st International Product Development Management Conference* (pp. 75-76). Limerick, Ireland: Technische Universiteit Eindhoven.

Epstein, S. (1990). 'Cognitive-experiential self-theory'. In *L. Pervin (ed) Handbook of personality theory and research* (pp. 165-192). New York NY : Guilford Press.

Epstein, S. (1998). 'Emotions and psychology from the perspective of cognitive-experiential Self Theory'. In *W. F. Flack and J. D. Laird (eds) Emotions in psychopathology: Theory and research, Series in affective science* (pp. 57-69). New York NY: Oxford University Press .

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of Convenience Sampling and Purposive Sampling. *American Journal of Theoretical and Applied Statistics*, 1-4.

Eurydice. (2008). *Higher Education Governance in Europe Policies, structures, funding and academic staff*.

Ewell, P. T. (2012). *Disciplining Peer Review: Addressing Some Deficiencies of U.S. Accreditation Practices. In M. LaCelle-Peterson and D. Rigdon (eds), A Festschrift in Honor of Frank B. Murray.* . Washington, DC: Teacher Education Accreditation Council (TEAC).

Faguet, J.-P. (2012). Decentralization and popular democracy: governance from below in Bolivia. *University of Michigan Press, Ann Arbor, USA*, 410-440.

Fairclough, R., & Thelwall , M. (2015). More precise methods for national research citation impact comparisons. *Journal of Informetrics*.

Fairclough, R., & Thelwall , M. (2015). National research impact indicators from Mendeley readers. *Journal of Informetrics*.

Fernee, H., & Sonck , N. (2013). Using smartphones in survey research: a multifunctional tool. Implementation of a time use app; a feasibility study. *The Netherlands Institute for Social Research/SCP*.

Fields, A. F. (2001). A Study on Intuition Decision-Making using Organizational Engineering Methodology . *Wayne Huizenga Graduate School of Business and Entrepreneurship of Nova Southeastern University*.

Fink , A. (2003). *How to Sample in Surveys.* USA: SAGE.

Fink , A. (2003). *The Survey Handbook.* USA: SAGE.

Fioretti, G., & Alessandro, L. (2010). Passing the Buck in the Garbage Can Model of Organizational Choice. *Comput Math Organ Theory*, 113-143 .

Fiske , E. B. (1996). *Decentralization of education: Politics and consensus.* USA : The International Bank for Reconstruction .

Floyd , E. S. (2014). *Strategic Plan 2014-2019.* USA: Washington State University.

Fredrickson, J. (1985). Effects of decision motive and organizational performance level on strategic decision processes. *Academy of Management Journal, 28(9)*, 821-843.

Fredrickson, J. W., & Iaquinto, A. L. (1989). Inertia and Creeping Rationality in Strategic Decision Processes. . *Academy of Management Journal, 32(4)*, pp. 516-542.

Fredrickson, J. W., & Mitchell, T. R. (1984). Strategic decision processes: Comprehensiveness and performance in an industry with an unstable environment. *Academy of Management Journal* , 399-423.

Fredrickson, J., & Mitchell, T. (1984). Strategic decision processes: comprehensiveness and performance in an industry with an unstable environment. *Academy of Management Journal*, 399–423.

Friedman, M. (1953). 'The Methodology of Positive Economics.'. *In Milton Friedman, Essays in Positive Economics. Chicago: The University of Chicago Press.*

Fudenberg, D., & Levine, D. (1997). Measuring players' losses in experimental games'. *Quarterly Journal of Economics*, 507-536.

Galbraith, J. R. (1973). Designing complex organizations. *Reading, MA. Addison-Wesley.*

Galiani, S., Gertler, P., & Schargrodsky, E. (2008). School Decentralization: Helping the Good Get Better, but Leaving the Poor Behind. *Journal of Public Economics*.

Galvin, P. (2014). A new vision for the Journal of Management & Organization: The role of context. *Journal of Management and Organization*, 1-5.

Ganesan , R., Spector , M., & Edmonds , G. (2002). The changing nature of instructional design for networked learning, in: C. STEEPLES & C. JONES (Eds). *Networked Learning: perspectives and issues*, (pp. 93–110). London, Springer-Verlag.

Garg, G., & Kothari , C. R. (2014). Research Methodology. Methods and Techniques. *New Age International Publishers*.

Gary , K. (2004). *The Power of Intuition: How to Use Your Gut Feelings to Make Better Decisions at Work.*

Glass , A. (2014). *The State of Higher Education 2014* . Paris : OECD Higher Education Programme (IMHE).

Godiwalla, Y. H. (2016). Foreign Unit Strategic Decision Making Process. *Journal of Management and Strategy*.

Gogtay, N., & Thatte, U. (2016). Samples and their Size: The Bane of Researchers (Part I). *Journal of The Association of Physicians of India*, 66-69.

Goldberg, P. (1983). The intuitive edge. *New York: G. P. Putnam's Sons*.

Goldstein, P. J., & Katz, R. N. (2005). Academic Analytics: The Uses of Management Information and Technology in Higher Education - Key Findings . *EDUCAUSE Center for Analysis and Research (ECAR)* .

Gopinathan, S., & Lee, M. H. (2004). *Centralized decentralization of higher education in Singapore.* The University of Hong: Comparative Education Research Centre (CERC), Springer.

Gordon , G., & Fischer , M. (2015). Strategic Planning in Public Higher Education: Management tool or publicity platform? . *Educational Planning* , 5-18.

Greene, J., Caracelli, V., & Graham, W. (1989). Toward a conceptual framework for mixed-method evaluation designs . *Educational Evaluation and Policy Analysis*, 255–274.

Greer, D. (1998). *Defining the scope and limits of autonomy New Jersey. In T. MacTaggart (ed) Seeking excellence through independence.* San Francisco: Jessey-Bass.

Guth, W. D., & MacMillan, I. C. (1986). Strategy Implementation Versus Middle Management Self-interest. *Strategic Management Jounal* , 313 - 327 .

Hacklin , F., & Wallnöfer, M. (2012). The business model in the practice of strategic decision making: insights from a case study. *Management Decision*, 166-188.

Haider , A. D. (2016). *Construction Program Management – Decision Making and Optimization Techniques.* Springer .

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate Data Analysis (6th ed.).* Upper Saddle River, N.J: Pearson Education Inc.

Hall , R. H. (1977). Organisations: structure and process. *Prentice-Hall* , 2nd Edition .

Hama, S. J., Omer, B., & Rshead, K. (2016). The simple correlation coefficient and path analysis of grain yield and its related components for some genotypes of wheat (Triticum aestivum L.) for two seasons in Iraqi Kurdistan. *Journal of Medicinal Plants Studies*, 68-70.

Hannan, M. T., & Freeman, J. H. (1977). The Population Ecology of Organizations" . *American Journal of Sociology*, 929-964.

Hanson, E., & Ulrich , C. (1994). Democracy, Decentralization and School-Based Management in Spain. *La Educación 27*, 51-132.

Hansson, S. O. (2005). *Decision Theory A Brief Introduction.* Stockholm: Swedish National Board for Spent Nuclear Fuel.

Hardy, Cynthia, Langley, Ann , Mintzberg, Henry and Rose, et al. (1983). Strategy Formation in the University Setting. *Review of Higher Education*, 407-433 .

Hart , S. L. (1992). An integrative framework for strategic making processes. *Academy of Management Review*,, 327-351.

Hatfield, J., Robinson, R., & Huseman, R. (1985). Evaluation of a test for assessing job. *Psychological Reports. 56 (1)*, 39-45.

Haukland, L. (2014). The Bologna Process: Between Democracy and Bureaucracy. *International Journal of Social Sciences Vol. III (3)*.

Hawawini, G. (2005). The future of business schools. *Journal of Management Development.24 (9).* , pp.770-782.

Hazelkorn, E. (2008). Rankings and the Battle for World Class Excellence: Institutional Strategies and Policy Choices. *Outcomes of higher education: Quality relevance and impact.* Paris.

Heinze, T. (2008). How to sponsor ground-breaking research: a comparison of funding schemes. *Science and Public Policy*, 302–318.

Heredia-Ortiz, E. (2007). The impact of education decentralization on education output: A cross-country study. *Georgia State University*.

Hickson, D., & Pugh, D. (2001). *Management Worldwide: Distinctive Styles Amid Globalization (2nd edn)*. . London, U.K: Penguin.

Hills , F., & Mahoney , T. (1978). University Budgets and Organizational Decision Making. *Administrative Science Quarterly Vol.23*, 454-465.

Hinton, K. E. (2012). *A Practical Guide to Strategic Planning in Higher Education.* Society for College and University Planning.

Hitt, M., & Tylor, B. (1991). Strategic Decision models: Integrating different perspectives. *Strategic Management Journal, 12(3)*, 327-351.

Hofer, W., & Schende, D. (1978). Strategy formulation: analytical concepts. *St. Paul, MN: West Publishing Company*.

Holmes-Smith, P., Coote, L., & Cunningham , E. (2006). Structural equation modeling: From the fundamentals to advanced topics. *SREAMS.* Melbourne: Streams Statsline.

Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural Equation Modelling: Guidelines for Determining Model Fit. *Electronic Journal of Business Research Methods*, 53-60.

Hough, J. R., & White, M. A. (2003). Environmental dynamism and strategic decision-making rationality: An examination at the decision level. *Strategic Management Journal*, 481–489.

How do women trade-off benefits and risks in chemotherapy treatment decisions based on gene expression profiling for early-stage breast cancer? A discrete choice experiment. (n.d.).

Huber , M. (2011). The Risk University: Risk identification at higher education institutions in England. *Centre for Analysis of Risk and Regulation London School of Economics and Political Science*.

Hussain , H. (December 2006). Decision making effectiveness and competencies: Case of Malaysia,. *Paper presented at the Australian and New Zealand Academy of Management Conference.* Beech Worth, Australia.

Immordino, K. M., Gigliotti, R. A., Ruben, B. D., & Tromp, S. (2016). Evaluating the Impact of Strategic Planning in Higher Education. *EDUCATIONAL PLANNING*, 35-48.

Ivanko, S. (2013). Organizational Behavior. *University of Ljubljana Faculty of Public Administration* , 1-280.

Ivory, C., Miskell, P., Shipton, H., White, A., & Neely, A. (2007). Future of UK business school's faculty: Retention, recruitment and development. *AIM Executive Briefing. London: Advanced Institute of Management.*

Ivory, C., Miskell, P., Shipton, H., White, A., Moeslein, A., & Neely, A. (2006). *UK Business Schools: Historical Contexts and Future Scenarios.* London : Summary Report from an EBK/AIM Management Research Forum.

Jamieson, K., & Hyland, P. (2006). Factors that influence Information Systems decisions and outcomes: A summary of key themes from four case studies. *Association for Information Systems*, (p. 43).

Janczak, S. (2005). The Strategic Decision-Making Process in Organizations. *Problems and Perspectives in Management Vol.3* , 58-70.

Janis, I. L. (1982). *Groupthink: Psychological studies of policy decisions and fiascoes (2nd ed.).* Boston, MA: Houghton Mifflin.

Janssens , W., DE Pelsmacker, P., & Van Kenhove, P. (2013). *Marketing Research with SPSS.* UK: Pearson.

Janssens, W., DE Pelsmacker, P., Wijnen, K., & Van Kenhove, P. (2008). *Marketing Research with SPSS.* Essex, UK: Pearson Education.

Jemison, D. B. (1981). Organizational vs Environmental Sources of Influence in Strategic Decision Making. *Strategic Management Journal, 2(2)*, 77-89.

John , W., Payne, & Bettman , J. W. (1992). Behavioural Decision Research: A Constractive Processing Perspective. *Annual Reviews*, 87-131.

Jones , B. D., Boushey , G., & Workman , S. (2006). Behavioral Rationality and the Policy Processes: Toward A New Model of Organizational Information Processing. *Handbook of Public Policy* , 39-64.

Judge, W. Q., & Miller, A. (1991). Antecedents and outcomes of decision speed in differential environmental context. *Academy of Management Journal 34(2)* , 449-463.

Julian , O. (2013). Relationship Between Strategic Planning and Organization's Performance in Non Govermental Organizations (NGOs) . *University of Nairobi* .

Jung, C. G. (1971). Psychological types. *Princeton University Press*.

Kahneman, D. (2002). 'Maps of Bounded Rationality: A Perspective on Intuitive Judgementand Choice.'. *Nobel Prize Lecture*.

Kahneman, D. (2003). A perspective on judgment and choice. *American Psychologist*, 697-720 .

Kahneman, D., & Tversky, A. (1979). ‘Prospect theory: An analysis of decisions under Risk' . *Econometrica*, 313–327.

Kalberg , S. (1980). Max Weber'sT ypes of RationalityC: ornerstones for the Analysis of Rationalization Processes in History . *The American Journal of Sociology*, 1145-1179.

Kasper, G. (1995). A Theoretical Foundation for Suidying the Effects of DSS on UserCalibration. *Working Paper, Texas Tech University*.

Katrinli, A., & Gunay, G. (2011). Corporate Social Responsibility, Strategy and Culture: Bati Anadolu. *International Journal of Business Strategy*, 32-38.

Kay , L. (1995). True Green. *Principles and Profits. Lodging 21*.

Khan , Q., Faguet, J. P., Gaukler, C., & Mekasha, W. (2014). “Decentralization’s effects on education, health and agriculture outcomes, and on distribution: Evidence from Ethiopia. *First Annual Bank Conference on Africa.* Paris.

Khatri, N., & Ng, H. (2000). The role of intuition in strategic decision making. *Human Relations, 53(1)*, 57-86.

Kleine , G., & Daniel, K. (2010). Strategic decisions: When can you trust your gut? *McKinsey & Company*.

Kline, R. (1998). Principles and Practice of Structural Equation Modeling. *New York: The Guilford Press*.

Kline, R. B. (2011). *Principles and practice of structural equation modelling (Third Edition)*. New York: Guilford Press.

Knight , P. T., & Yorke, M. (2003). Employability and Good Learning in Higher Education. *Teaching in Higher Education*.

Kolbe, L. M., Man, A.-P. d., & Bossink, B. (2013). The strategic decision making perspective: How do high-tech firms reach decisions? *35th DRUID Celebration Conference.* Barcelona, Spain.

Krishnan, S., & Singh, M. (2004). Strategic Human Resource Management: Three Stage Process ad Influancing Organisational Factors . *Indian Institute of Management*.

Kuncel, N. R., Klieger, D. M., Connelly, B. S., & Ones, D. S. (2013). Mechanical versus clinical data combination in selection and admissions decisions: A meta-analysis. *Journal of Applied Psychology*, 1060-1072.

Kuncel, N. R., Sackett, P. R., Iddekinge, C. V., & Lievens, F. (2017). Individual Differences and Their Measurement: A Review of 100 Years of Research. *Journal of Applied Psychology*, 1-20.

Labib , A., Read, M., Gladstone-Millar, C., Tonge, R., & Smith, D. (2014). Formulation of higher education institutional strategy using operational research approaches. *Studies in Higher Education*, No. 5, 885–904.

Ladd , L. (2016). Maturing from adolescence to adulthood: Major factors shaping the sector in 2016 . *Grand Thornton*, USA.

Langley, A. (1989). In search of rationality: the purposes behind the use of formal analysis in organizations. . *Administrative Science Quarterly, Volume 34*, 598–631.

Lefcheck, J. S. (2015). Piecewise structural equation modelling in r for ecology, evolution, and systematics. *Methods in Ecology and Evolution*.

Leslie, D. (2008). From strategic planning to strategy implementation in the hotel industry in South Africa. *University of Pretoria faculty of economic and management sciences* .

Li , Y., Guohui, S., & Eppler, M. J. (2008). Making Strategy Work: A Literature Review on the Factors influencing Strategy Implementation. *ICA*.

Li, B. (2008). The Classical Model of Decision Making Has Been Accepted as not providing an Accurate Account of How People Typically Make Decisions. *International Journal of Business and Management*, 151-154.

Lindblom, C. (1979). Still Muddling, Not e Through. *Proffesional Stream* , 517-526.

Lindblom, C. E. (1959). The science of "muddling through. *Public Administration Review*, 79-88.

Liu, O. L. (2009). Measuring Learning Outcomes in Higher Education . *R&D Connections No.10, ETS Research and Development* .

Locke, E. A., & Latham, G. P. (1990). A Theory of Goal Setting and Task Performance. *Englewood, NJ: Prentice-Hall, Inc*.

Louis, M. R. (1980). Surprise and Sense Making: What Newcomers Experience in Entering Unfamiliar Organizational Settings. *Administrative Science Quarterly 25(2)* , 226-251.

Lunenburg, F. C. (2010). The Decision Making Process . *National Fourm of Education Administration and Supervision Journal* , 1-12.

Machado, M. L., Taylor, J. S., & Farhangmehr, M. (2004). The Status of Strategic Planning in Portuguese Higher Education Institutions: Trappings or Substance?". *HigherEducation Policy*, 383-404.

Machingambi, S., & Wadesango, N. (2012). Conflict Management in Tertiary Educational Institutions in Zimbabwe: Issues and Challenges. *Journal of Social Science* , 63-69.

Machingambi, S., & Wadesango, N. (2012). The problem of access, quality and equity in South African higher education and strategies for revitalisation. *Journal of Social Science*, 283-291.

MacTaggart, T., & Associates. (1998). Seeking Excellance through indepence liberating colleges and universities from excessive regulation . *San Franciso: Jossy-Bass* .

MacTaggert, T. (1988). *Seeking Excellence through Independence. Liberating Colleges and Universities from Excessive Regulation. The Jossey-Bass Higher and Adult Education Series.* San Francisco, USA: Jossey-Bass Publishers.

Maduku, D. K. (2016). The effect of Institutional trust on internet banking acceptance: prespectives of south african banking. *SAJEMS NS* , 533-548.

Maduku, D. K., Mpinganjira, M., & Duh, H. (2016). Understanding Mobile Marketing Adoption Intention by South African SMEs: Multi-perspective framework. *International Journal of Information Mangement*.

Magd, H., & Bindah, E. V. (2016). Adoption of Effective Standard Key Performance Indicators to Sustain Quality Assurance in Oman Institution of Higher Learning. *TQM for Lean Prod. & Org. Dev.* Oman : University of University of Buraimi.

Mainardes, W., Ferreria , E., Joao, J., & Mario , L. (2014). Strategy and Strategic Managment Concepts: are they recongnised . *E+Ekonomie a Management* .

Majluf, N., & Hax, A. (1996). The strategy concept and process: a pragmatic approach. *2nd ed. New Jersey: Prentice-Hall.*

March , J. G., & Simon, H. A. (1958). Organizations. *New York: Wiley.*

Marshall, D. A., Deal, K., Bombard, Y., Leigh, N., MacDonald, K. V., & Trudeau, M. (2016). How do women trade-off benefits and risks in chemotherapy treatment decisions based on gene expression profiling for early-stage breast cancer? A discrete choice experiment. *BMJ Open*.

Maslow, A. (1970). Motivation and personality. (2nd Ed.). New York NY : Harper & Row .

Mason, R. B. (2007). The external environment's effect on management and strategy A complexity theory approach. *Management Decision*, 10-28.

McNally, R., & Schmidt, J. (2011). From the Special Issue Editors: An Introduction to the Special Issue on Decision Making in New Product Development and Innovation. *Journal of Product Innovation Management, 28(5)*, 619-622.

McNicholos, T. (1977). *Policy making and executive action 5th ed.* New York, USA : McGraw-Hill.

Mead-Fox, D. (2009). Tackling the leadership scarcity. *The Chronicle of Higher Education*.

Miller, C. C., & Ireland, R. D. (2005). "Intuition in strategic decision making: Friend or foe in the fast-paced 21st century?". *Academy of Management Executive*, 19-30.

Miller, D. (1987). The Structural and Environmental Correlates of Business Strategy. *Strategic Management Journal, Volume 8*, 55-76.

Miller, D., & Friesen, P. (1983). Strategy making and environment: the third link. *Strategic Management Journal* , 221–235.

Miller, D., Droge, C., & Toulouse, J. M. (1988). Corporate Control Type, Strategy, Size and Financial Performance. . *Journal of Management Studies, 25(5)*, 403-417.

Milliken , F. (1987). Three Types of Perceived Uncertainty about the Environment. *Academy of Management Review*.

Minor, J. T. (2004). Understanding Faculty Senates: Moving from Mystery to Models. *The Review of Higher Education*, 343-363.

Mintzberg , H., Ahlstrand , B., & Lampel, J. (1998). Strategy Safari . *Prentice Hall, London* .

Mintzberg, H. (1994). The Rise and Fall of Strategic Planning . *New York: Prentice-Hall*.

Mintzberg, H. A., Raisingham, D., & Theoret, A. (1976). The structure of unstructured decision process . *Administrative Science Quarterly 21(1)*, pp. 246-275.

Mintzberg, H., & Waters, J. A. (1985). Of Strategies deliberate and emergent. *Strategic Management*, 257–272.

Moilanen, J. H. (2014). *Developing and Sustaining Adult Learners, Page 283-304.* USA: Information Age Publishing.

Molina-Azorin, J. F., & López-Gamero, M. D. (2016). Mixed methods studies in environmental management research: Prevalence, purposes and designs. *Business Strategy and the Environment*, 134–148.

Molloy, S., & Schwenk, C. R. (1995). Effects of information technology on strategic decision making. *Journal of Management Studies* , 283-311.

Monroe , K. R. (1991). The theory of rational action: Its origins and usefulness for political science. *The economic approach to politics: A Critical reassessment of the theory of rational action* , 1-23.

Moorhead, G., & Griffin, R. W. (1989). Organizational Behavior. *Mifflin Company.* Boston, MA: Houghton.

Moutinho, L., & Phillips, P. (2000). The strategic planning index: A tool for measuring strategic planning effectiveness. *Journal of Travel Research, 38(4):*, 369-379.

Mueller, G. C. (1998). Strategic Decision-making and Performance: Decision Processes and Environmental Effects.

Mueller, G. C., Mone, M. A., & Barker, V. L. (2007). Formal strategic analyses and organizational performance: Decomposing the rational model. *Organization Studies*, 853–883.

Naidoo, J. (2005). Educational decentralization and scholl governance in south africa: from policy to practice. *International Institute for Educational Planning (IIEP)*.

Najib, A., & Baroto, D. (2016). The Relationship between Strategic Planning and Malaysian SMEs Business Performance: The Effect of Employee Participation, Implementation Incentive and Strategy Evaluation and Control. *The International Journal Of Business & Management*, 353-368.

NASPA, & UPCEA . (2014). *Thoughts from higher education leaders: Challenges and emerging trends in online education.* InsideTrack.

Nemeth, C., & Klein , G. (2010). The Naturalistic Decision Making Prespective . *Wiley Encyclopedia of Operations Research and Management Science*.

Neuman, L. W. (2014). *Social Research Methods: Qualitative and Quantitative Approaches Seventh Edition.* UK: Pearson .

Neven. (2002). Decentralization. *Institute Alterra.*

Nickols, F. (2016). *Strategy: Definitions & Meanings* . Distance Consulting .

Nikolopoulos, A. G. (2002). Assessing subjective influences on managerial decisions. *International Journal of Management and Decision Making*, pp.337–352.

Noda, T., & Bower, J. L. (2007). Strategy making as iterated processes of resource allocation. *Strategic Management Journal*, 159–192.

Nooraie, M. (2008). Decision magnitude of impact and strategic decision-making process output: The mediating impact of rationality of the decision-making process. *Management Decision*, 640–655 .

Nooraie, M. (2012). Factors Influencing Strategic Decision-Making Processes. *International Journal of Academic Research in Business and Social Sciences*, 405-429.

Nooraie, M. (2012). Factors influencing Startegic Decision-Making Processes. *International Journal of Academic Research in Business and Social Sciences, 2(7),*, pp. 405-429.

Nooraie, M. (2014). The Roles of Decentralization of the Decision Making Process between Contextual Factors and Decision Process Output. *International Review of Management and Business Research*.

Nutt , P. C. (1998b). Evaluating alternatives to make strategic choices. *Omega*, 333-354.

Nutt , P. C. (2000). Context, tactics, and the examination of alternatives during strategic decision-making . *European Journal of Operational Research*, 159-186.

Nutt , P. C. (2005). Search during decision making. *European Journal of Operational Research*, 851-876 .

Nutt , P. C. (2008a). Investigating the success of decision making processes. *Journal of Management Studies*, 425–455.

Nutt , P. C., & Wilson , D. C. (2010). Crucial Trends and Issues in Strategic Decision Making. *Handbook of Decision Making*, 27-53.

O'Regan, N., & Ghobadian, A. (2006). The Impact of Ownership on Small Firm Behaviour and Performance. *International Small Business Journal*, 555–586.

Oliver, S. L., & Hyun, E. (2011). Comprehensive curriculum reform in higher education: collaborative engagement of faculty and administrators. *Journal of Case Studies in Education*, 1-20.

Olson, B. J., Bao, Y., & Parayitam, S. (2007). Strategic decision making within Chinese firms: The effects of cognitive diversity and trust on decision outcomes. *Journal of World Business*, 35-46.

Olson, P. J., Parayitam, S., & Yongjian, B. (2008). Strategic decision making: The effects of cognitive diversity, conflict, and trust on decision outcomes. *Journal of Management*, 196-222.

Omotayo, T., & Kulatunga, U. (2015). The research methodology for the development of a kaizen costing framework suitable for indigenous construction firms in Lagos, Nigeria. *Association of Researchers in Construction Management (ARCOM).* Dublin, Ireland: Dublin Institute of Technology.

O'Regan, N., Sims, M. A., & Gallear, D. (2006). The Strategic Planning-Environment-Performance Relationship Re-visited in HTSFs. *Paper presented at the 14th Annual High Technology Small Firms Conference,.* University of Twente, Dutch.

Ormerod, P. (2005). Why Most Things Fail – Evolution, Extinction & Economics. *Faber and Faber Ltd, London.*

Oster , M., Ladd , L., Gomez , K., Mulligan, J., Page , B., Morrone , D., et al. (2016). *The State of Higher Education in 2016.* USA: Grand Thorton.

Ostrom, E. (2006). Converting threats into opportunities . *PS Political Science & Politics vol. 40*, 3-12 .

Page , B. (2016). *Setting aside Uncertainty in Strategic Planning* . USA: Grand Thorton .

Pallant , J. (2010). *A Step by Step Guide to Data Analysis using SPSS for Windows* . USA: Open University Press.

Pallant, J. (2013). *PSS survival manual : A step by step guide to data analysis using IBM SPSS (4th ed.).* Crows Nest, NSW: Allen & Unwin.

Papadakis, M. V., & Lyriotaki, M.-N. (2013). Career impact: the missing link influencing strategic decision-making processes? *Int. J. Management and Decision Making*, 121.

Papadakis, V. M., & Barwise, P. (1997). What can we tell managers about making strategic decisions? In Papadakis, V.M. amd Barwise, P. (eds). *Strategic Decisions*, 267–287.

Papadakis, V. M., & Lioukas, C. S. (2003). Strategic decision processes and outcomes: effects of context', in Nagao, D.H. (Eds.): Best Paper Proceedings of the Business Policy and Strategy Division of the 6th Annual Meeting of the Academy of Management. *6th Annual Meeting of the Academy of Management.* Seattle, Washington.

Papadakis, V., & Barwise, P. (1998). What can we tell Managers about making startegic decisions ? *Kluwer Academic Publishers*.

Papadakis, V., & Lioukas, S. (1996). Do Early Perceptions of Strategic Decisions Influence Strategic processes?: An Empirical Investigation. (pp. 46-50). Academy of Management.

Papadakis, V., Lioukas, S., & Chambers, D. (1998). Strategic decision-making: the role of management and context. *Strategic Management Journal*, 115 -147 .

Papulovaa, Z., & Gazovaa, A. (2015). Role of Strategic Analysis in Strategic Decision-Making. *Procedia Economics and Finance*, 571 – 579.

Payne , J. W. (1976). Task complexity and contingent processing in decision making: An information search and protocol analysis. *Organizational behavior and human performance*.

Payne, J. W., Betteman , J. R., & Johnson , E. J. (1992). Behavioural Decision Research: A Construction Proccessing Prospective. *Annual Reviews Physcol* , 87-131.

Pazzaglia, A. M., Stafford, E. T., & Rodriguez, S. M. (2016). Survey methods for educators: Selecting samples and administering surveys (part 2 of 3). *Applied Research Methods National Center for Education Evaluation and Regional Assistance* .

Peter , J. P. (1981). Construct validity: a review of basic issues and marketing practices. *Journal of Marketing Research*, 133-145.

Pfeffer, J., & Moore , W. (1980). Power in University Budgeting: A Replication and Extension. *Administrative Science Quarterly Vol.25* , 637-653 .

Pfeffer, J., & Salancik, G. (1978.). The External Control of Organizations: A Resource Dependence Perspective. *Harper and Row, London* .

Philibin, S. (2015). Exploring the Challenges and Oppurtunities for Higher Education Institutions: Work domain analysis and development of strategic options. *Managment of Engineering and Technology International Conference*, (pp. 1137-1150). Portland .

Phillips, P. A., & Moutinho, L. (38(4)). The strategic planning index: A tool for measuring strategic planning effectiveness. *Journal of Travel Research*, 369-379.

Pinson, S., & Pavlos, M. (1996). An Intelligent Distributed System for Strategic Decision Making. *Group Decision and Negotiation,*, 77-108 .

Plevka, V., Pieter, S., Tampe`re, C. M., & Hubert, M. (2017). Analysis of travel activity determinants using robust statistics. *Transportation*, 979–996.

Pretz, J. E. (2008). Intuition versus analysis: Strategy and experience in complex everyday problem solving. *Memory & Cognition*, 554-566.

Pretz, J., & Totz , K. (2007). Measuring individual differences in affective, heuristic, and holistic intuition. *Personality and Individual differences*, 1247–1257.

Priem, R., Rasheed, A., & Kotulic, A. (1995). Rationality in strategic decision processes,environmental dynamism and firm performance. *Journal of Management. 21*, 913-929.

Pritchard, O., Rosalind, M., Rosalind, A., & Attila, J. (2016). *Positioning Higher Education Institutions From Here to There.* The Netherlands: Sense Publishers.

Prusty, G., & Mohapatra, P. (2016). Aqueous Compatibility of Starch with Albumin Bovine: An Ultrasonic Study. *Journal of Bionanoscience,*, 348-355.

Quinlan, C., Babin, B. J., Carr, J. C., Griffin, M., & Zikmund, W. G. (2015). *Business research methods.* Andover, Hampshire, United Kingdom: Cengage Learning EMEA .

Quinn, J. B. (1980). Strategies for Change: Logical Incrementalism. *Irwin: Homewood*.

Rahman, M. S. (2017). The Advantages and Disadvantages of Using Qualitative and Quantitative Approaches and Methods in Language "Testing and Assessment" Research: A Literature Review. *Journal of Education and Learning*, 103-112.

Rajagopalan, N., Rasheed, A., & Datta, D. (1993). Strategic decision processes: critical review and future directions. *Journal of Management*, 349–385.

Rajagopalan, R. N., Spreitzer, G. M., Datta, & K, D. (1997). A multi-theoretic model of strategic decision making processes. *In Papadakis, V. and Barwise, P. (eds), Strategic Decisions. London: Kluwer*, 229–250.

Ralucaa, D., & Alecsandrub, S. V. (2012). Strategic planning at the level of Higher Education Institution. *Social and Behavioral Sciences 58*, 1-10.

Rasheed,, Goll, I., & A., M. A. (1997). Rational decision-making and firm performance: the moderating role of enviroment. *Strategic Management Journal,*, 583-591.

Reichert, S. (2009). Institutional Diversity in European Education Tensions and challenges for policy makers and institutional leaders. *European University Association*.

Reklitis, P., & Trivellas, P. (2002). Performance implications of aligning generic strategies with the business environment. *International Journal of Management and Decision Making*, pp.319–336.

Rhodes, T. (2012). Getting Serious About Assessing Authentic Student Learning. *National Institute for Learning Outcomes*.

Richter, A., & Schmidt, S. L. (2005). How Does Strategy Process Influence Strategy Content? Antecedents of Consistency between resources allocation decisions and corporate strategy. *Schmalenbach Business Review*, 332 – 350.

Rimarčík, M. (2007). *Štatistika pre prax.* ISBN 978-80-969813-1-1.

Robbins, S. P., & Coulter, M. (2013). *Management (12th ed.).* UK: Pearson.

Roberta , R. (2017). Decentralization and Subnational Governance: Theory and Praxis. *Handbook of Research on Sub-National Governance and Development* .

Robinson, R., & Pearce, J. (1985). Strategic Management, Strategic Formulation and Implementation. *2nd ed. U.S.A.: Irwin, inc.*

Rocha, N., Power, N., Bushnell DM, F. M., & Fleck, M. (2012). The EUROHIS-QOL 8-item index: comparative psychometric properties to its parent WHOQOL-BREF. *Value in Health : the Journal of the International Society for Pharmacoeconomics and Outcomes Research*, 449-457.

Rodrigues , S., & Hickson , D. (1995). Success in Decision Making: Different organizations, differing reasons for success. *Journal of Management Studies* .

Romanelli, E., & Tushman, L. (1986). "Inertia,Environments and Strategic Choice: A Quasi-Experimental Design for Comparative-Longitudinal Research". *Management Science Vol.32*, 608-621.

Rossoni, L., Engelbert, R., & Bellegard, N. (2016). Normal science and its tools: Reviewing the effects of exploratory factor analysis in management. *R.Adm., São Paulo*, 198-211.

Rouwelaar, H. T., & Bots, J. (2008). Business Unit Controller Involvement in Management - An Empirical Study in the netherlands. *NRG Working Paper Series* , 3-39.

S, C., & S, D. (2005). Doing the Right Thing: Ethical Issues in Higher Education . *Journal of Family and Consumer Sciences* , 20-26.

Sa, M., & Chai, Y. K. (2015). A Survey on Success Factors of Business Performance for Small and Medium Enterprises in the Malaysian Accommodation Industry. *The International Journal Of Business & Management*, 309-314.

Sadler-Smith, E., & Shefy, E. (2004). The intuitive executive: understanding and applying 'gut feel' in decision-making. *Academy of Management Executive*, 76-91.

Sae-Khow, J. (2014). Developing of Indicators of an E-learning Benchmarking Model for Higher Education Institutions . *TOJET: The Turkish Online Journal of Educational Technology, volume 13 issue 2*, 35-43.

Salton, G. (1996). Organizational Engineering. *Ann Arbor, MI: Professional Communication Inc.* .

Sapsford , R., & Jupp , V. (2006). *Data collection and analysis (2nd Edition)*. London UK : SAGE .

Saunders, I. M., Roelfsema, C. M., Christiaan, S. R., Canto, R., Brown, C. J., & Leon, J. X. (2013). Benthic and substrate cover data derived from photo-transect surveys in Lizard Island Reef. *Data Publisher for Earth & Environmental Science*.

Saunders, M., Lewis , P., & Thornhill, A. (2003). *Research Methods for Business Students.* Harlow: Pearson Education.

Schiavone, F. (2011). Strategic reactions to technology competition: A decision-making model. *Management Decision*, 801-809.

Schneider, A. (2003). Decentralization: Conceptualization and Measurement. *Studies in Comparative International Development*, 32-56.

Schneider, S. C., & De Meyer, A. (1991). Interpreting and Responding to Strategic Issues: The Impact of National Culture. *Strategic Management Journal, 12(4)*, , pp. 307-320.

Scholes, K., & Johson, G. (2004). Exploring corporate strategy: text and cases. *6th ed. Harlow: Pearson Education Limited.*

Schumacker, R. E., & Lomax, R. G. (2008). *A Beginner's Guide to Structural Equation Modeling Second Edition* . New York, USA.

Schumacker, R., & Lomax, R. (2016). *A beginner's guide to structural equation modeling.* New York, USA: Routledge.

Schwenk , C. R. (1995). Strategic Decision Making . *Journal of Management* , 471-493.

Scott, D., Freguson, G. D., & Jelsma, J. (2017). The use of the EQ-5D-Y health related quality of life outcome measure in children in the Western Cape, South Africa: psychometric properties, feasibility and usefulness - a longitudinal, analytical study . *Health and Quality of Life Outcomes*, 1-14.

Sekaran, U., & Bougie, R. J. (2016). *Research Methods For Business: A Skill Building Approach.* UK: John Wiley & Sons.

Sevier, R. A. (2000). Strategic planning in higher education: Theory and practice. *Council for Advancement and Support of Higher Education*.

Shah, M. (2013). *Student Feedback and Improvement Systems in Tertiary Education.* UAE: Commission for Academic Accreditation.

Shapiro, S., & Spence, M. T. (1997). Managerial intuition: A conceptual and operational Framework. *Business Horizons*, 63-68.

Sharp , L. (2009). Together we need to think about funding education holistically over the long-term. *Higher Education Associations Sustainiblity Consortium* .

Shrivastava, P., & Grant, G. H. (1985). Empirically derived models of strategic decision-making processes. . *Strategic Management journal, 6(2)*, 97-113.

Simon , H. A. (1955). A behavioral model of rational choice. *Quarterly Journal of Economics*, 99-118.

Simon , H. A., & March , J. G. (1993). Organizations. *Cambridge, MA: Blackwell*.

Simon, H. (1987). Making management decisions: The role of intuition and emotion . *Academy of Management Executive*, 57-64.

Simon, H. A. (1960). The new science of management decision. *Harper and Row*.

Simon, H., & March, J. (1985). Organizations. *Wiley, NewYork* .

Sinclair, M., & Ashkanasy, N. M. (2005). Intuition: Myth or a Decision-Making Tool? *Management Learning*, 353–370.

Sinha, D. (1990). The contribution of formal planning to decisions. *Strategic Management Journal.11*, 479-492.

Slovak , P. (1990). Choice. In Thinking: An invitation to cognitive science. *Daniel Osherson and Edward E. Smith, eds. Cambridge,Mass: MIT Press* .

Soderqvist, M. (2007). Internationalisation and it management at higher education institutions. *Helsinki School of Economics* .

Soetanto, R., & Dainty , A. (2009). Integrating uncertainty management in strategic planning practice. *Construction Research Congress*, 309 - 319.

Sonck, N., & Fernee, H. (2013). Using smartphones in survey research: a multifunctional tool. *Sociaal en Cultureel Planbureau*.

Sridharan, H., Zhao, C., & Krug, R. M. (2010). Species Specificity of the NS1 Protein of Influenza B Virus NS1 Binds only human and non-human primate ubiquitin-like isg15 proteins. *Journal of Biological Chemistry*.

Stanovich, K. E., & West , R. F. (2000). Individual differences in reasoning: Implications for the rationality debate?". *Behavioral and Brain Sciences*, 654-726 .

Storey, D. (1994). *Understanding the Small Business Sector.* London : Routledge.

Stowell, M. (2004). Equity, justice and standards: assessment decision making in higher education. *Assessment & Evaluation in Higher Education*, 495-509.

Suhonen, N. (2007). Normative and Descriptive Theories of Decision Making under Risk:A Short Review. *Economics and Business Administration*, 1-22.

Sutcliffe, K., & McNamara, G. (2001). Controlling decision-making practice in organizations. *Organization Science, Vol. 12, No. 4*, pp.484–501.

Taghavifard, M. T., Damghani, K., & Moghaddam, R. (2009). Decision Making Under Uncertain and Risky Situations. *Society of Actuaries*.

Taira , J. Y. (2004). Autonomy of Public Higher Education: A Case Study of Stakeholder Prespective.

Talbot, C. (2005). Performance Management. In E. Ferlie, E. Lynn, & C. Pollitt, *In The Oxford handbook of public management* (pp. 196-212). Oxford: Oxford university press.

Taleski, P., & Bogdanovski , V. (2015). Statistical analyses of the performance of Macedonian investment and pension funds. *Croatian Operational Research Review*.

Tat, H. H., Hooi, P. S., Rasli, A. M., Chin, T. A., & Yusoff, R. M. (2012). The Role of Intuition in Decision Making: An Empirical Study on Academic Staff in a Malaysian Public University. *Faculty of Management and Human Resource Development, Universiti Teknologi Malaysia,*.

Tavakol, M., & Dennick , R. (2011). Making sense of Cronbach's alpha. *International journal of medical education*.

Teddlie, C., & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences.* USA: SAGE.

Teece, D. J. (2010). Business Models, Business Strategy and Innovation. *Long Range Planning Volume 43*, 172 -194.

Tetlock, P. (2000). Coping with Trade-offs: Psychological Constraints and Political Implications In Lupia. *Elements of Reason Cambridge: Cambridge University Press* .

Thomas, G. H. (1996). Resource Allocation in Higher Education: a cultural perspective. *Research in Post-Complsory Education* , 35-51.

Thomas, H. G. (1995). Implementing Change: a case study of devolved formula-based resource allocation systems in two UK universities. USA.

Thomas, H. G. (2006). Resource Allocation in Higher Education: a cultural. *Research in Post-Compulsory Education*, 35-51.

Thompson, A., & Strickland , A. (2003). *Strategic Management Concept and Cases edition.* New York, USA.

Thomson, R. (2010). *Finding Meaningful Performance Measures For Higher Education:*. Philadelphia: Thomson Reuters.: A Report For Executives. .

Thorne, S. (2015, May 12). *Data analysis in qualitative research*. Retrieved from http://ebn.bmj.com/ on .

Ticehurst, G. W., & Veal , A. J. (2000). Questionnaire surveys. *Business Research Methods: A Managerial Approach*.

Treisman, D. (2007). The Architecture of Government: Rethinking Political Decentralization. *New York: Cambridge University Press*.

Tremblay, K., Lalancette, D., & Roseveare, D. (2012). *Assessment of Higher Education Learning Outcomes AHELO Feasibility Study Report - Volume 1* . France : OECD.

Trochim, W. (2006). Research methods knowledge base. *Social Research Methods* .

Tromp, S. A., & Ruben, B. D. (2010). *Strategic planning in higher education: A guide for leaders. (2nd ed.).* Washington, DC: NACUBO.

Trull , S. G. (1966). Some Factors Involved in Determining Total Decision Success. *Management Science*, 270-280.

Tushman, M. L., & Nadler, D. A. (1978). Information processing as an integrating concept in organizational design. *Academy of Management Review, 3*, 613–624.

Ullman, J. B. (2001). *Structural equation modelling, Using Multivariate Statistics (4th ed.).* Boston, USA: B. G. Tabachnick & L. S.Fidell (Eds.).

UNESCO. (2016). *Changing dynamics in the governance of education: A comparative analysis of emerging issues and reforms in emerging countries.* Paris: Division for Policies and Lifelong Learning Systems.

Universities UK. (2011). *Efficiency and effectiveness in higher education A report by the Universities UK Efficiency and Modernisation Task Group.* London: Universities UK.

Uzun , K. (2016). Critical Investigation of a Qualitative Research Article From Ontological and Epistemological Perspectives. *International Journal of Social Sciences and Education Research*, 959-967.

Van Vught, F. (1995). Policy models and policy instruments in higher education the effects of governmental policy-making on the innovative behaviour of higher education institutions. *IHS Political Science Series*.

Vaughan, F. E. (1979). Awakening intuition. *New York: Anchor Books*.

Vught , V. (1995). Policy Models and Policy Instruments in Higher Education, The Effects of Govermental Policy-Making on the Innovative Behaviour of Higher Education Insititutions. *Institut für Höhere Studien (IHS), Wien Institute for Advanced Studies, Vienna Reihe Politikwissenschaft / Political Science Series*.

Wadesango, N., & Machingambi, S. (2012). Conflict Management in Tertiary Educational Institutions in Zimbabwe: Issues and Challenges. *Journal of Social Science* , 63-69.

Wally, S., & Baum, J. R. (1994). Personal and structural determinants of the pace of strategic decision-making. *Academy of Management Journal, 37(4)*, pp. 932-956.

Walter, J., Kellermanns, F. W., & Lechner, C. (2012). Decision Making Within and Between Organizations: Rationality, Politics, and Alliance Performance. *Journal of Management*, 1582-1610.

Walter, J., Lechner, C., & Kellermanns, F. W. (2008). Disentangling alliance management processes: Decision making, politicality, and alliance performance. *Journal of Management Studies*, 530-560.

Wass, C., Denman-Brice, A., Rios, C., & Matzel, L. D. (2012). Covariation of learning and "reasoning" abilities in mice: evolutionary conservation of the operations of intelligence. *Journal of Experimental Psychology Animal Behavior Processes*, 109-124.

Weick, K. E. (1979). Educational organizations as loosely coupled systems. *Administrative Science Quarterly*, 1-19.

Welham, B., & Hart , T. (2016). Fiscal decentralisation: A public financial management introductory guide. *Overseas Development Institute*, 3-21.

Wendy, K. (1997). Managing strategic contradictions: a top management model for managing innovation streams. *Organization Science, 16(5)*, 522-536.

Whittemore, C. T. (1998). Structures and processes required for research, higher education and technology transfer in the agricultural sciences: a policy appraisal. *Agricultural Economics*, 269-282.

Wideman, M. R. (2002). Project Teamwork, Personality Profiles and the Population at Large: Do we have enough of the right kind of people? *29th Annual Project Management Institute Seminar/Symposium "Tides of Change"*. Long Beach, California, USA: AEW Services, Vancouver, BC.

Wilson, D. C. (2003). Strategy as decision making. In S. Cummings, & D. Wilson (Eds.). Oxford : Blackwell.

Wilson, V. (2016). Research Methods: Sampling. *Based Library and Information Practice*, 45–47.

Xue, C. T. (2016). An Examination of the Strategic Use of IT Applications in Achieving Competitive Advantages. *International Journal of Advance Research in Computer Science and Management Studies*, 16-25.

Yanosky , R. (2009). Institutional Data Managment in Higher Education . *Educause Centre for Applied Research* .

Yazdi, S. V. (2013). Review of Centralization and Decentralization Approaches to Curriculum Development in Iran. *International Journal of Academic Research in Business and Social Sciences Vol. 3, No. 4*, 97-115.

Zidane, Y. J., Johansen, A., Hussein, B. A., & Andersen, B. (2016). PESTOL - Framework for Project Evaluation on Strategic,Tactical and Operational Levels. *International Journal of Information Systems and Project Management*, 25-41.

Appendix 4.1

Research Study – Strategic decision making in Higher Education

Dear Sir or Madam

I am a PhD student of Brunel University, UK. I am doing my research in the area of strategic decision making process. The title of my research is "Relationship between strategic decision importance and strategic decision process effectiveness in Higher Education Institutions". The purpose is to gain an understanding on how strategic decisions are made in HEIs and whether decisions considered as important are determining the effectiveness of the decision making process. I expect to develop a model to test whether decision importance plays an important role in determining the effectiveness of the strategic decision making process and what factors could intervene in the relationship between strategic decision importance and strategic decision making process effectiveness. Towards achieving this purpose as part of my research I need to collect data from academic staff who are part of the decision making process in the HEIs. I have developed a self-administered questionnaire to facilitate ease of completing the survey. Answering the questionnaire will enable me to collect the data required to understand this crucial area of HEI operation. I would be very thankful for your contribution to my survey, to enable me to complete my PhD research. It is my humble request to you to spare some time to answer this questionnaire and return to me as soon as possible. I assure you that the information provided by you will only be used for the purpose of this research and strict confidence will be maintained by me. I further assure you that your response you will be kept confidential and will not be accessible to be used by any third party. Should you require any explanation or clarification please do not hesitate to call me on the telephone number or e-mail provided below.

Thank you for your kind support and cooperation in this important study.

Yours sincerely

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Section 1: Demographic information; (Please tick "**X**" to whichever applies below.)

Gender	Female	
	Male	

Age	20 - 35	
	36 - 50	
	50 or above	

Number of years worked	5 or below	
	6 - 10	
	11 - 15	
	16 - 20	
	20 or above	

Are you a member of any council or committee (e.g. department council or college council or university council or any other decision making committee or council	Yes	No

Section 2: Strategic decisions

Please indicate your level of agreement with the statements given below by rating with an "X" each item on the five point Likert scale shown.

Please note: Strategic decisions are defined as those decisions made by top management or managing faculty one step below the top management in an institution which affect the health and survival of the institution.

A. Decision importance

Decision importance is likely to signify whether the strategic decision made by the chairperson/dean is important or not, given the fact all strategic decisions may not be considered evenly by the chairperson/dean and chairperson/dean may like to deal with those decisions differently. Following questions refer to any decision that might have been taken in your department/college and that has strategic importance.

Q1. ***How far did you anticipate a decision to change things in your department?***				
Not Much	**Little**	**Somewhat**	**Much**	**A Great Deal**
1	2	3	4	5
Q2. ***To what extent did you expect that decision to set parameters for subsequent decisions?***				
Not Much	**Little**	**Somewhat**	**Much**	**A Great Deal**
1	2	3	4	5
Q3. ***How serious the consequences would be for your department <u>if something in that decision went wrong</u>?***				
Not at all serious	**Not serious**	**Neutral**	**Serious**	**Extremely Serious**
1	2	3	4	5
Q4. How serious would the consequences have been of delaying that decision (e.g. lower enrolment of students or lower revenue to the institution)?				
Not at all serious	**Not serious**	**Neutral**	**Serious**	**Extremely Serious**
1	2	3	4	5
Q5. ***How important was that decision to the institution?***				
Not important At all	**Not Important**	**Neutral**	**Important**	**Extremely Important**
1	2	3	4	5

Q6. ***How far ahead in the future did you initially expect the decision to significantly influence the whole institution?***									
1	2	3	4	5	6	7	8	9	10
Year	**Year**	**Year**	**Year**	**Year**	**Year**	**Year**	**Year**	**Year**	**Year**

B. Rationality in decision making: Rationality characterizes that behaviour which is logical in pursuing goals.

Ques. No.	Items	Very non-compre-hensive 1	Non-compre-hensive 2	Neither 3	Compre-hensive 4	Very compre-hensive 5
Please indicate how rational your department usually is in making important strategic decisions....						
Q7.	to gather relevant information					
Q8.	to analyse relevant information					
Q9.	to use analytic techniques					
Q10.	to focus attention on crucial information					

C. Intuition: Intuition refers to where/ when choices were made intuitively by the decision-makers, drawing on their prior experience or knowledge of the situation.

Ques. No.	Items	Not much	Little	Somewhat	Much	A great deal
While making decisions in your department …						
Q11.	to what extent the chairperson/dean relies on personal judgment?	1	2	3	4	5
Q12.	to what extent chairperson/dean depend on gut feeling? (gut feeling could mean the chairperson's/dean's instinct)	1	2	3	4	5
Q13.	how much emphasis is placed on past experience? (emphasis placed on past experience means the decision made by chairperson/dean using their previous experience in a similar situation)	1	2	3	4	5
Q14.	how much emphasis is placed on intuition as a useful decision making tool?	1	2	3	4	5
Q15.	to what extent do chairperson/dean trust in their intuition?	1	2	3	4	5

D. Decentralisation: It refers to the level of autonomy delegated to managers (Chenhall & Morris, 1986) that is chairpersons or deans in the context of HEIs.

Ques. No.	***Please indicate who can make the following decisions (your business unit (BU) or (corporate) (Corp) organization)***	100% BU	Between 100% BU and equal	Equal	Between equal and 100% corp	100% corp
Q16.	Strategic decisions (e.g. development of new programme; unit strategy)	1	2	3	4	5
Q17.	Investment decisions (e.g. acquiring new assets and financing information systems)	1	2	3	4	5
Q18.	Marketing decisions (e.g. campaigns; promotions, decisions on fee fixation)	1	2	3	4	5
Q19.	Decision regarding internal processes (e.g. setting academic priorities; inputs used and/or processes employed to deliver programmes)	1	2	3	4	5
Q20.	Human Resources (e.g. hiring/firing; compensation and setting career paths for the personnel employed within your unit; reorganizing your unit; creation of new jobs)	1	2	3	4	5

E. Department Performance: This is an indicator of the outcomes of the department and is measured in terms of aspects that include growth rate in student retention, academic standards, market share, growth rate of tuition revenues, growth rate of student enrolments, research outcomes, quality of programmes offered, academic and administrative employee satisfaction, efficiency of operations and community engagement.

Please rate the performance of your department in comparison to departments similar in size and scope over the period of making a strategic decision on each of the following criteria?						
Ques. No.	**Performance criteria**	**Very poor**				**Excellent**
Q21.	Student retention	1	2	3	4	5
Q22.	Academic standards	1	2	3	4	5
Q23.	Market share	1	2	3	4	5
Q24.	Growth rate of tuition revenues	1	2	3	4	5
Q25.	Growth rate of student enrolments	1	2	3	4	5
Q26.	Research outcomes	1	2	3	4	5
Q27.	Quality of programmes offered	1	2	3	4	5
Q28.	Academic and administrative employee satisfaction	1	2	3	4	5
Q29.	Efficiency of operations	1	2	3	4	5
Q30.	Community engagement	1	2	3	4	5

F. Environmental uncertainty: It means that decision makers do not have sufficient information about environmental factors, and they have a difficult time predicting external changes.

Could you describe the environment in which your department was operating during the making of a strategic decision? Using the scale provided, from 1 (very easy to predict) to 5 (very difficult to predict), indicate if each variable was easy or difficult to predict. Please tick the appropriate number.						
		Very Poor	**Poor**	**Good**	**Very Good**	**Excellent**
Ques. No.	**Programme**					
Q31.	Students' preferences.	1	2	3	4	5
Q32.	Programme demand.	1	2	3	4	5
Q33.	Changes in programme.	1	2	3	4	5
Q34.	Changes in programme quality.	1	2	3	4	5
Q35.	New programme introductions.	1	2	3	4	5
	Economy					
Q36.	Inflation rate.	1	2	3	4	5
Q37.	Exchange rate with the dollar.	1	2	3	4	5
Q38.	Interest rate.	1	2	3	4	5
Q39.	Results of economic restructuring.	1	2	3	4	5
	Competition					
Q40.	Changes in competitors' tuition fees.	1	2	3	4	5
Q41.	Changes in the education sector served by competitors.	1	2	3	4	5
Q42.	Changes in competitors' strategies.	1	2	3	4	5
Q43.	Entry of new universities into the education sector.	1	2	3	4	5
	Governmental policies					
Q44.	Monetary policy.	1	2	3	4	5
Q45.	Public service provision.	1	2	3	4	5
Q46.	Fees for tuition controlled by the government.	1	2	3	4	5
Q47.	Legal regulations affecting the education sector.	1	2	3	4	5
Q48.	National laws affecting international universities	1	2	3	4	5

G. Decision effectiveness: Refers to the outcome of the decision making process in terms of aspects that include the right choice of a decision, successful achievement of the objectives of a strategic decision and expected revenue.

Please answer the following two questions;			
G1. From the list of objectives that your department planned to accomplish with a strategic decision, please allocate from 1- 20 points among these objectives in terms of their relative importance to the department as you thought during the making of that strategic decision. (Examples of a strategic decision could be implementing a quality management system or investing money in creating infrastructure for offering programmes for a higher number of student enrolments etc.).			
Ques. No.	**Objective No.**	**Objectives**	**Points (out of 20 each)**
Q49.	**G1.1**	To increase the enrollment rate in the programme offered by the department	
Q50.	**G1.2**	To enhance quality management within the department	
Q51.	**G1.3**	To achieve confidence grade in the external QA review conducted by government authorities on the programme offered by the department	
Q52.	**G1.4**	To establish additional classrooms that are well equipped for the students	
Q53.	**G1.5**	To integrate professional certification into the curriculum	
	Total of points		**100**

G2. Please, with respect to each of the objectives you have mentioned in the previous question, determine to what extent your department was successful in attaining it.						
Ques. No.	**Objective No.**	**Complete failure**				**Complete success**
Q54.	**G1.1**	1	2	3	4	5
Q55.	**G1.2**	1	2	3	4	5
Q56.	**G1.3**	1	2	3	4	5
Q57.	**G1.4**	1	2	3	4	5
Q58.	**G1.5**	1	2	3	4	5

Appendix 4.2

Survey instrument uploaded on Survey Monkey

Research Study – Strategic decision making in Higher Education_New

Welcome to My Survey

Dear Sir or Madam
I am a PhD student of Brunel University, UK. I am doing my research in the area of strategic decision making process. The title of my research is "Relationship between strategic decision importance and strategic decision process effectiveness in Higher Education Institutions". The purpose is to gain an understanding on how strategic decisions are made in HEIs and whether decisions considered as important are determining the effectiveness of the decision making process. I expect to develop a model to test whether decision importance plays an important role in determining the effectiveness of the strategic decision making process and what factors could intervene in the relationship between strategic decision importance and strategic decision making process effectiveness. Towards achieving this purpose as part of my research I need to collect data from academic staff who are part of the decision making process in the HEIs. I have developed a self-administered questionnaire to facilitate ease of completing the survey. Answering the questionnaire will enable me to collect the data required to understand this crucial area of HEI operation. I would be very thankful for your contribution to my survey, to enable me to complete my PhD research. It is my humble request to you to spare some time to answer this questionnaire and return to me as soon as possible. I assure you that the information provided by you will only be used for the purpose of this research and strict confidence will be maintained by me. I further assure you that your response you will be kept confidential and will not be accessible to be used by any third party. Should you require any explanation or clarification please do not hesitate to call me on the telephone number or e-mail provided below.

Thank you for your kind support and cooperation in this important study.

Yours sincerely
Esra AlDhaen
PhD student
Brunel University, UK

Email: esaldhaen@ahlia.edu.bh
Mobile: + 973 37778836
Kingdom of Bahrain.

Next

Research Study – Strategic decision making in Higher Education_New

Section 1: Demographic information; (Please tick "X" to whichever applies below.)

*** Gender**

- ◯ Male
- ◯ Female

*** What is your age?**

- ◯ 20-35
- ◯ 36-50
- ◯ 50 or above

*** Number of years worked**

- ◯ 5 or below
- ◯ 6 - 10
- ◯ 11 - 15
- ◯ 16 - 20
- ◯ 20 or above

*** Are you a member of any council or committee (e.g. department council or college council or university council or any other decision making committee or council)**

- ◯ Yes
- ◯ No

Prev Next

Appendix 4.3

Ethical Approval

College of Business, Arts and Social Sciences Research Ethics Committee

23 February 2016

Letter of approval

Proposer: Esra Saleh Al Dhaen

Title: Factors Affecting Strategic Decision Effectiveness in Higher Education Institutions (HEIs)

Dear Esra,

The College Research Ethics Committee has approved your research ethics application for the above-named project, which is to be undertaken in 2016.

Any changes to the protocol contained in your application, and any unforeseen ethical issues which arise during the project, must be notified to the Committee.

The Committee would appreciate a report on the project following its completion. This should include some indication of the success of the project, whether any adverse events occurred, and whether any participants withdrew from the research.

Kind regards,

James Knowles
Chair, Research Ethics Committee
College of Business, Arts and Social Sciences
Brunel University London

Appendix 4.4

Coding Sheet

Questions Number (Coding)	Description
Decision Importance	
DIMPORTANCEQ1	How far did you anticipate a decision to change things in your department?
DIMPORTANCEQ2	To what extent did you expect that decision to set parameters for subsequent decisions?
DIMPORTANCEQ3	How serious the consequences would be for your department if something in that decision went wrong?
DIMPORTANCEQ4	How serious would the consequences have been of delaying that decision (e.g. lower enrolment of students or lower revenue to the institution)?
DIMPORTANCEQ5	How important was that decision to the institution?
DIMPORTANCEQ6	How far ahead in the future did you initially expect the decision to significantly influence the whole institution?
Rationality	
RATIONALITYQ1	To gather relevant information
RATIONALITYQ2	To analyse relevant information
RATIONALITYQ3	To use analytic techniques
RATIONALITYQ4	To focus attention on crucial information
Intuition	
INTUTIONQ1	To what extent the chairperson/dean relies on personal judgment?
INTUTIONQ2	To what extent chairperson/dean depend on gut feeling? (gut feeling could mean the chairperson's/dean's instinct)
INTUTIONQ3	How much emphasis is placed on past experience? (emphasis placed on past experience means the decision made by chairperson/dean using their previous experience in a similar situation)
INTUTIONQ4	How much emphasis is placed on intuition as a useful decision making tool?
INTUTIONQ5	To what extent do chairperson/dean trust in their intuition?
Decentralization	
DECENTRALIZATIONQ1	Strategic decisions (e.g. development of new programme; unit strategy)
DECENTRALIZATIONQ2	Investment decisions (e.g. acquiring new assets and financing information systems)
DECENTRALIZATIONQ3	Marketing decisions (e.g. campaigns; promotions, decisions on fee fixation)
DECENTRALIZATIONQ4	Decision regarding internal processes (e.g. setting academic priorities; inputs used and/or processes employed to deliver programmes)
DECENTRALIZATIONQ5	Human resources (e.g. hiring/firing; compensation and setting career paths for the personnel employed within your unit; reorganizing your unit; creation of new jobs)
Internal Performance	
PERFORMANCEQ3	Market share
PERFORMANCEQ5	Growth rate of student enrolments
PERFORMANCEQ6	Research outcomes
PERFORMANCEQ7	Quality of programmes offered
PERFORMANCEQ8	Academic and administrative employee satisfaction
PERFORMANCEQ9	Efficiency of operations
PERFORMANCEQ10	Community engagement
External Environment	
ENVIROMENT.PRQ1	Student preferences
ENVIROMENT.PRQ2	Programme demand.
ENVIROMENT.PRQ3	Changes in programme.

ENVIROMENT.PRQ4	Changes in programme quality
ENVIROMENT.PRQ5	New programme introductions
ENVIROMENT.ECONQ6	Inflation rate
ENVIROMENT.ECONQ7	Exchange rate with the dollar
ENVIROMENT.ECONQ8	Interest rate.
ENVIROMENT.ECONQ9	Results of economic restructuring
ENVIROMENT.COMPQ10	Changes in competitors' tuition fees
ENVIROMENT.COMPQ11	Changes in the education sector served by competitors.
ENVIROMENT.COMPQ12	Changes in competitors' strategies.
ENVIROMENT.COMPQ13	Entry of new universities into the education sector.
ENVIROMENT.GOVQ14	Monetary policy
ENVIROMENT.GOVQ15	Public service provision.
ENVIROMENT.GOVQ16	Fees for tuition controlled by the government
ENVIROMENT.GOVQ17	Legal regulations affecting the education sector
ENVIROMENT.GOVQ18	National laws affecting international universities
Decision Effectiveness	
Section G1	
DEC.EFFECQ1	To increase the enrollment rate in the programme offered by the department
DEC.EFFECQ2	To enhance quality management within the department
DEC.EFFECQ3	To achieve confidence grade in the external QA review conducted by government authorities on the programme offered by the department
DEC.EFFECQ4	To establish additional classrooms that are well equipped for the students
DEC.EFFECQ5	To integrate professional certification into the curriculum
Section G2	
RATEQ6	Q54. G.1.1
RATEQ7	Q55. G.1.2
RATEQ8	Q56. G.1.3
RATEQ9	Q57. G.1.4
RATEQ10	Q58. G.1.5

Appendix 4.5

List of regression equations that were analysed using SPSS to test the conceptual model in Figure 3.1

RATIONALITYQ1 = A11 + B01 DIMPORTANCEQ1 + B02 DIMPORTANCEQ2 + B03 DIMPORTANCEQ3 + B04 DIMPORTANCEQ4 + B05 DIMPORTANCEQ5 + B06 DIMPORTANCEQ6 + E1
RATIONALITYQ2 = A12 + B11 DIMPORTANCEQ1 + B12 DIMPORTANCEQ2 + B13 DIMPORTANCEQ3 + B14 DIMPORTANCEQ4 + B15 DIMPORTANCEQ5 + B16 DIMPORTANCEQ6 + E2
RATIONALITYQ3 = A13 + B21 DIMPORTANCEQ1 + B22 DIMPORTANCEQ2 + B23 DIMPORTANCEQ3 + B24 DIMPORTANCEQ4 + B25 DIMPORTANCEQ5 + B26 DIMPORTANCEQ6 + E3
RATIONALITYQ4 = A14 + B31 DIMPORTANCEQ1 + B32 DIMPORTANCEQ2 + B33 DIMPORTANCEQ3 + B34 DIMPORTANCEQ4 + B35 DIMPORTANCEQ5 + B36 DIMPORTANCEQ6 + E4
INTUITIONQ1 = A21 + C01 DIMPORTANCEQ1 + C02 DIMPORTANCEQ2 + C03 DIMPORTANCEQ3 + C04 DIMPORTANCEQ4 + C05 DIMPORTANCEQ5 + C06 DIMPORTANCEQ6 + E5
INTUITIONQ2 = A22 + C11 DIMPORTANCEQ1 + C12 DIMPORTANCEQ2 + C13 DIMPORTANCEQ3 + C14 DIMPORTANCEQ4 + C15 DIMPORTANCEQ5 + C16 DIMPORTANCEQ6 + E6
INTUITIONQ3 = A23 + C21 DIMPORTANCEQ1 + C22 DIMPORTANCEQ2 + C23 DIMPORTANCEQ3 + C24 DIMPORTANCEQ4 + C25 DIMPORTANCEQ5 + C26 DIMPORTANCEQ6 + E7
INTUITIONQ4 = A24 + C31 DIMPORTANCEQ1 + C32 DIMPORTANCEQ2 + C33 DIMPORTANCEQ3 + C34 DIMPORTANCEQ4 + C35 DIMPORTANCEQ5 + C36 DIMPORTANCEQ6 + E8
INTUITIONQ5 = A25 + C31 DIMPORTANCEQ1 + C32 DIMPORTANCEQ2 + C33 DIMPORTANCEQ3 + C34 DIMPORTANCEQ4 + C35 DIMPORTANCEQ5 + C36 DIMPORTANCEQ6 + E9
DECENTRALIZATIONQ1 = A31 + D01 DIMPORTANCEQ1 + D02 DIMPORTANCEQ2 + D03 DIMPORTANCEQ3 + D04 DIMPORTANCEQ4 + D05 DIMPORTANCEQ5 + D06 DIMPORTANCEQ6 + E10
DECENTRALIZATIONQ2 = A32 + D11 DIMPORTANCEQ1 + D12 DIMPORTANCEQ2 + D13 DIMPORTANCEQ3 + D14 DIMPORTANCEQ4 + D15 DIMPORTANCEQ5 + D16 DIMPORTANCEQ6 + E11
DECENTRALIZATIONQ3 = A33 + D21 DIMPORTANCEQ1 + D22 DIMPORTANCEQ2 + D23 DIMPORTANCEQ3 + D24 DIMPORTANCEQ4 + D25 DIMPORTANCEQ5 + D26 DIMPORTANCEQ6 + E12
DECENTRALIZATIONQ4 = A34 + D31 DIMPORTANCEQ1 + D32 DIMPORTANCEQ2 + D33 DIMPORTANCEQ3 + D34 DIMPORTANCEQ4 + D35 DIMPORTANCEQ5 + D36 DIMPORTANCEQ6 + E13
DECENTRALIZATIONQ5 = A35 + D31 DIMPORTANCEQ1 + D32 DIMPORTANCEQ2 + D33 DIMPORTANCEQ3 + D34 DIMPORTANCEQ4 + D35 DIMPORTANCEQ5 + D36 DIMPORTANCEQ6 + E14
DEC.EFFECQ1 = A41 + F01 RATIONALITYQ1 + F02 RATIONALITYQ2 + F03 RATIONALITYQ3 + F04 RATIONALITYQ4 + E15
DEC.EFFECQ2 = A42 + F11 RATIONALITYQ1 + F12 RATIONALITYQ2 + F13 RATIONALITYQ3 + F14 RATIONALITYQ4 + E16
DEC.EFFECQ3 = A43 + F21 RATIONALITYQ1 + F22 RATIONALITYQ2 + F23 RATIONALITYQ3 + F24 RATIONALITYQ4 + E17
DEC.EFFECQ4 = A44 + F31 RATIONALITYQ1 + F32 RATIONALITYQ2 + F33 RATIONALITYQ3 + F34 RATIONALITYQ4 + E18
DEC.EFFECQ5 = A45 + F41 RATIONALITYQ1 + F42 RATIONALITYQ2 + F43 RATIONALITYQ3 + F44 RATIONALITYQ4 + E19
DEC.EFFECQ1 = A51 + G01 INTUITIONQ1 + G02 INTUITIONQ2 + G03 INTUITIONQ3 + G04 INTUITIONQ4 + G05 INTUITIONQ4 + E20
DEC.EFFECQ2 = A52 + G11 INTUITIONQ1 + G12 INTUITIONQ2 + G13 INTUITIONQ3 + G14 INTUITIONQ4 + G15 INTUITIONQ4 + E21
DEC.EFFECQ3 = A53 + G21 INTUITIONQ1 + G22 INTUITIONQ2 + G23 INTUITIONQ3 + G24 INTUITIONQ4 + G25 INTUITIONQ4 + E22
DEC.EFFECQ4 = A54 + G31 INTUITIONQ1 + G32 INTUITIONQ2 + G33 INTUITIONQ3 + G34 INTUITIONQ4 + G35 INTUITIONQ4 + E23

DEC.EFFECQ5 = A55 + G41 INTUITIONQ1 + G42 INTUITIONQ2 + G43 INTUITIONQ3 + G44 INTUITIONQ4 + G45 INTUITIONQ4 + E24
DEC.EFFECQ1 = A61 + H01 DECENTRALIZATIONQ1 + H02 DECENTRALIZATIONQ2 + H03 DECENTRALIZATIONQ3 + H04 DECENTRALIZATIONQ4 + H05 DECENTRALIZATIONQ4 + E25
DEC.EFFECQ2 = A62 + H11 DECENTRALIZATIONQ1 + H12 DECENTRALIZATIONQ2 + H13 DECENTRALIZATIONQ3 + H14 DECENTRALIZATIONQ4 + H15 DECENTRALIZATIONQ4 + E26
DEC.EFFECQ3 = A63 + H21 DECENTRALIZATIONQ1 + H22 DECENTRALIZATIONQ2 + H23 DECENTRALIZATIONQ3 + H24 DECENTRALIZATIONQ4 + H25 DECENTRALIZATIONQ4 + E26
DEC.EFFECQ4 = A64 + H31 DECENTRALIZATIONQ1 + H32 DECENTRALIZATIONQ2 + H33 DECENTRALIZATIONQ3 + H34 DECENTRALIZATIONQ4 + H35 DECENTRALIZATIONQ4 + E28
DEC.EFFECQ5 = A65 + H41 DECENTRALIZATIONQ1 + H42 DECENTRALIZATIONQ2 + H43 DECENTRALIZATIONQ3 + H44 DECENTRALIZATIONQ4 + H45 INTUITIONQ4 + E29
Moderation
Example of moderation of the relationship RATIONALITYQ1 → DEC.EFFECQ1 by PERFORMANCEQ1
DEC.EFFECQ1 = M01 + φ1 RATIONALITYQ1+ φ2 PERFORMANCEQ1+ φ3 [(RATIONALITYQ1) (PERFORMANCEQ1]
Example of moderation of the relationship RATIONALITYQ1 → DEC.EFFECQ1 by ENVIROMENT.PRQ1
DEC.EFFECQ1 = M01 + φ1 RATIONALITYQ1+ φ2 ENVIROMENT.PRQ1+ φ3 [(RATIONALITYQ1) (ENVIROMENT.PRQ2]

Appendix 5.1

Descriptive Statistics

		Q1.	Q2.	Q3.	Q4.	Q5.	Q6.	Q7.	Q8.	Q9.	Q10.	Q11.	Q12.	Q13.	Q14.	Q15.
N	Valid	485	485	485	485	485	485	485	485	485	485	485	485	485	485	485
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean		2.8866	3.8082	3.8041	3.7711	3.8722	4.4845	4.2536	3.3773	3.4474	3.4165	3.4412	3.6948	3.7010	3.7052	3.7897
Median		3.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
Std. Deviation		1.64063	1.00943	1.02891	1.00986	.96217	2.75484	1.33284	1.23646	1.33756	1.26448	1.36180	1.05513	1.12416	1.05904	1.06847
Minimum		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Maximum		5.00	5.00	5.00	5.00	5.00	10.00	10.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00

		Q16.	Q17.	Q18.	Q19.	Q20.	Q23.	Q25.	Q26.	Q27.	Q28.	Q29.	Q30.
N	Valid	485	485	485	485	485	485	485	485	485	485	485	485
	Missing	0	0	0	0	0	0	0	0	0	0	0	0
Mean		3.7505	3.7629	3.6948	3.7093	3.7031	3.8144	3.7155	3.7443	3.6495	3.7278	3.6062	3.6680
Median		4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
Std. Deviation		1.08217	1.12056	1.02534	1.16599	1.14744	1.21228	1.03725	1.04674	1.05862	1.02053	.98939	1.11299
Minimum		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Maximum		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00

		Q31.	Q32.	Q33.	Q34.	Q35.	Q36.	Q37.	Q38.	Q39.	Q40.	Q41.	Q42.	Q43.	Q44.
N	Valid	485	485	485	485	485	485	485	485	485	485	485	485	485	485
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean		3.7155	3.7505	3.6784	3.6227	3.6660	3.7320	3.5773	3.4928	3.4660	3.5072	3.8103	3.7320	3.7299	3.6557
Median		4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	3.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
Std. Deviation		1.14518	1.11601	1.14074	1.10404	1.02034	1.03168	1.22673	1.09585	1.19112	1.22409	1.04303	1.08821	1.06563	1.10362
Minimum		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Maximum		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00

		Q45.	Q46.	Q47.	Q48.	Q49.	Q50.	Q51.	Q52.	Q53.	Q54.	Q55.	Q56.	Q57.	Q58.
N	Valid	485	485	485	485	485	485	485	485	485	485	485	485	485	485
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean		3.7423	3.7237	3.6082	3.5608	3.7423	3.1031	3.1485	3.2660	3.2928	3.3113	2.7691	2.6268	2.5979	2.7979
Median		4.0000	4.0000	4.0000	4.0000	4.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	2.0000	3.0000	3.0000
Std. Deviation		1.07832	1.09372	1.02808	1.10170	1.08405	1.02535	.94400	.96068	.98588	1.00411	1.40405	1.26414	1.25688	1.24499
Minimum		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Maximum		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00

Appendix 5.1

Descriptive statistics – continued

		Q1.	Q2.	Q3.	Q4.	Q5.	Q6.	Q7.	Q8.	Q9.	Q10.	Q11.	Q12.	Q13.	Q14.	Q15.
N	Valid	485	485	485	485	485	485	485	485	485	485	485	485	485	485	485
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Skewness		-.009	-.504	-.469	-.448	-.427	.668	.831	-.556	-.613	-.599	-.696	-.351	-.478	-.448	-.563
Std. Error of Skewness		.111	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111
Kurtosis		-1.633	-.468	-.638	-.382	-.514	-.235	2.281	-.542	-.726	-.640	-.650	-.872	-.593	-.611	-.643
Std. Error of Kurtosis		.221	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221

	Q16.	Q17.	Q18.	Q19.	Q20.	Q23.	Q25.	Q26.	Q27.	Q28.	Q29.	Q30.
Valid	485	485	485	485	485	485	485	485	485	485	485	485
Missing	0	0	0	0	0	0	0	0	0	0	0	0
Skewness	-.454	-.628	-.413	-.392	-.464	-.681	-.413	-.462	-.438	-.384	-.239	-.473
Std. Error of Skewness	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111
Kurtosis	-.769	-.391	-.490	-.830	-.849	-.611	-.628	-.455	-.482	-.582	-.598	-.530
Std. Error of Kurtosis	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221

	Q31.	Q32.	Q33.	Q34.	Q35.	Q36.	Q37.	Q38.	Q39.	Q40.	Q41.	Q42.	Q43.	Q44.	Q45.	Q46.	Q47.	Q48.
Valid	485	485	485	485	485	485	485	485	485	485	485	485	485	485	485	485	485	485
Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Skewness	-.513	-.454	-.453	-.322	-.314	-.556	-.689	-.369	-.438	-.519	-.635	-.467	-.463	-.371	-.436	-.425	-.247	-.351
Std. Error of Skewness	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111
Kurtosis	-.712	-.826	-.782	-.724	-.588	-.253	-.389	-.377	-.599	-.632	-.243	-.495	-.543	-.686	-.771	-.697	-.666	-.607
Std. Error of Kurtosis	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221

	Q49.	Q50.	Q51.	Q52.	Q53.	Q54. G.1.1	Q55. G.1.2	Q56. G.1.3	Q57. G.1.4	Q58. G.1.5
Valid	485	485	485	485	485	485	485	485	485	485
Missing	0	0	0	0	0	0	0	0	0	0
Skewness	-.598	.347	.173	.036	-.016	-.028	.182	.286	.329	.059
Std. Error of Skewness	.111	.111	.111	.111	.111	.111	.111	.111	.111	.111
Kurtosis	-.429	-1.112	-.977	-1.053	-1.081	-1.168	-1.295	-1.013	-.911	-1.018
Std. Error of Kurtosis	.221	.221	.221	.221	.221	.221	.221	.221	.221	.221

Appendix 5.2 Reliability Analysis

Inter-Item Correlation Matrix

	Q1.	Q2.	Q3.	Q4.	Q5.	Q6.	Q7.	Q8.	Q9.	Q10.	Q11.	Q12.	Q13.	Q14.	Q15.	Q16.	Q17.	Q18.	Q19.	Q20.	Q23.
Q1.	1.000	.366	.265	.266	.317	.237	-.054	.529	.587	.601	.587	.369	.393	.348	.361	.412	.414	.352	.298	.349	.320
Q2.	.366	1.000	.049	.151	.124	.200	.010	.224	.185	.328	.171	.189	.029	.289	.202	.196	.152	.217	.111	.291	.209
Q3.	.265	.049	1.000	.175	.169	.126	-.066	.060	.253	.214	.296	.067	.085	.063	.304	.195	.132	.133	.073	-.023	.153
Q4.	.266	.151	.175	1.000	.076	.058	-.070	.157	.143	.308	.195	.214	.131	.130	.214	.250	.193	.172	.038	.169	.048
Q5.	.317	.124	.169	.076	1.000	.233	-.055	.126	.239	.183	.385	.132	.182	.129	.189	.172	.305	.149	.068	.068	.205
Q6.	.237	.200	.126	.058	.233	1.000	-.100	.171	.213	.232	.179	.279	.032	.245	.179	.140	.204	.306	.083	.104	.054
Q7.	-.054	.010	-.066	-.070	-.055	-.100	1.000	-.063	-.085	-.120	-.146	-.076	.048	-.076	.029	-.056	-.027	-.016	.111	-.007	-.026
Q8.	.529	.224	.060	.157	.126	.171	-.063	1.000	.372	.349	.410	.259	.283	.309	.152	.452	.232	.195	.145	.341	.143
Q9.	.587	.185	.253	.143	.239	.213	-.085	.372	1.000	.414	.481	.278	.280	.283	.247	.264	.263	.259	.215	.212	.170
Q10.	.601	.328	.214	.308	.183	.232	-.120	.349	.414	1.000	.427	.272	.136	.280	.383	.337	.274	.350	.204	.262	.195
Q11.	.587	.171	.296	.195	.385	.179	-.146	.410	.481	.427	1.000	.183	.107	.225	.290	.282	.295	.205	.175	.269	.305
Q12.	.369	.189	.067	.214	.132	.279	-.076	.259	.278	.272	.183	1.000	.031	.162	.183	.116	.272	.231	.111	.188	.107
Q13.	.393	.029	.085	.131	.182	.032	.048	.283	.280	.136	.107	.031	1.000	.150	.011	.198	.137	.159	.258	.069	.100
Q14.	.348	.289	.063	.130	.129	.245	-.076	.309	.283	.280	.225	.162	.150	1.000	.080	.166	.226	.189	.044	.256	.109
Q15.	.361	.202	.304	.214	.189	.179	.029	.152	.247	.383	.290	.183	.011	.080	1.000	.158	.200	.209	.090	.207	.201
Q16.	.412	.196	.195	.250	.172	.140	-.056	.452	.264	.337	.282	.116	.198	.166	.158	1.000	.127	.149	.098	.195	.185
Q17.	.414	.152	.132	.193	.305	.204	-.027	.232	.263	.274	.295	.272	.137	.226	.200	.127	1.000	.167	.018	.079	.212
Q18.	.352	.217	.133	.172	.149	.306	-.016	.195	.259	.350	.205	.231	.159	.189	.209	.149	.167	1.000	-.036	.093	.116
Q19.	.298	.111	.073	.038	.068	.083	.111	.145	.215	.204	.175	.111	.258	.044	.090	.098	.018	-.036	1.000	.013	.121
Q20.	.349	.291	-.023	.169	.068	.104	-.007	.341	.212	.262	.269	.188	.069	.256	.207	.195	.079	.093	.013	1.000	.158
Q23.	.320	.209	.153	.048	.205	.054	-.026	.143	.170	.195	.305	.107	.100	.109	.201	.185	.212	.116	.121	.158	1.000
Q25.	.310	.291	.188	.161	.127	.264	-.126	.121	.156	.306	.237	.302	-.091	.215	.255	.167	.224	.268	.048	.160	.175
Q26.	.380	.092	.072	.158	.164	.085	-.062	.204	.231	.238	.176	.174	.279	.211	.175	.173	.237	.085	.178	.208	.081
Q27.	.346	.237	.132	.064	.161	.164	-.022	.327	.185	.250	.171	.169	.115	.234	.143	.208	.163	.118	.150	.203	.125
Q28.	.292	.084	.154	.166	.166	.128	.024	.229	.295	.239	.271	.159	.143	.212	.254	.157	.285	.108	-.004	.188	.128
Q29.	.298	.150	.082	.245	.066	.083	.021	.198	.157	.381	.203	.168	.043	.106	.133	.194	.206	.230	.071	.095	.111
Q30.	.442	.162	.243	.033	.321	.254	-.003	.279	.328	.295	.394	.228	.200	.152	.283	.267	.333	.259	.118	.148	.115
Q31.	.403	.198	.075	.137	.211	.333	-.123	.218	.338	.333	.316	.237	.136	.273	.138	.173	.168	.371	.105	.215	.157
Q32.	.517	.233	.238	.160	.180	.051	.032	.356	.229	.362	.384	.141	.143	.139	.306	.277	.281	.184	.247	.152	.294
Q33.	.454	.174	.082	.235	.241	.166	-.071	.389	.298	.344	.391	.195	.136	.313	.192	.268	.280	.116	.240	.187	.111
Q34.	.422	.141	.239	.108	.178	.195	-.070	.280	.364	.302	.309	.082	.312	.103	.248	.295	.178	.258	.189	.159	.170
Q35.	.303	.142	.097	.208	.125	.141	.027	.200	.276	.342	.151	.164	.109	.119	.131	.188	.176	.054	.292	.162	.042
Q36.	.381	.149	.192	-.013	.234	.153	-.041	.109	.271	.227	.370	.187	.022	.151	.230	.108	.224	.167	.158	.256	.315
Q37.	.553	.313	.232	.252	.222	.303	-.076	.356	.353	.547	.438	.397	.104	.292	.351	.309	.351	.362	.230	.294	.208
Q38.	.582	.170	.172	.166	.236	.136	.002	.363	.393	.369	.345	.207	.304	.168	.339	.231	.366	.243	.182	.217	.108
Q39.	.537	.293	.154	.225	.229	.233	-.095	.371	.332	.410	.321	.268	.294	.329	.274	.344	.323	.364	.220	.241	.215
Q40.	.531	.198	.227	.148	.227	.211	-.036	.281	.405	.350	.331	.275	.122	.229	.327	.225	.376	.184	.270	.200	.164

Q41.	.350	.156	.112	.239	.108	.100	-.037	.298	.148	.257	.207	.212	.138	.146	.068	.357	.124	.010	.203	.179	.194
Q42.	.395	.198	.158	.087	.230	.161	-.110	.187	.317	.258	.290	.197	.237	.258	.177	.133	.249	.201	.116	.150	.236
Q43.	.312	.152	.142	.081	.005	.320	-.147	.291	.220	.340	.237	.175	.060	.180	.291	.121	.152	.183	.018	.122	.223
Q44.	.390	.106	.175	.083	.132	.062	.048	.260	.277	.264	.343	.087	.095	.157	.264	.238	.168	.130	.169	.097	.085
Q45.	.503	.292	.210	.285	.203	.190	-.121	.399	.322	.362	.365	.308	.146	.299	.184	.267	.213	.224	.216	.269	.178
Q46.	.488	.143	.211	.145	.241	.170	-.007	.219	.426	.349	.328	.188	.262	.218	.219	.134	.297	.207	.180	.196	.201
Q47.	.422	.162	.170	.218	.081	.181	-.092	.208	.320	.425	.265	.267	.168	.298	.175	.278	.145	.143	.239	.173	.076
Q48.	.391	.223	.143	.090	.155	.114	.003	.277	.183	.151	.224	.174	.167	.075	.213	.166	.156	.179	.169	.228	.216
Q49.	.438	.168	.153	.180	.309	.271	-.145	.284	.349	.317	.413	.287	.096	.214	.226	.230	.332	.275	.147	.038	.196
Q50.	-.341	-.117	-.188	-.149	-.114	-.119	.040	-.142	-.237	-.264	-.258	-.022	-.212	-.118	-.237	-.157	-.155	-.229	-.120	-.074	-.224
Q51.	-.285	-.126	-.142	-.088	-.145	-.101	.000	-.128	-.128	-.247	-.234	-.102	-.057	-.130	-.129	-.166	-.213	-.205	-.088	-.112	-.075
Q52.	-.236	-.084	-.050	.042	-.140	.004	-.146	-.184	-.228	-.134	-.172	-.193	-.162	.022	-.070	-.073	-.191	-.089	-.171	-.142	-.142
Q53.	-.266	-.006	-.210	.020	-.159	-.124	.061	-.201	-.236	-.123	-.260	-.184	.014	-.159	-.175	-.139	-.148	-.122	-.057	-.087	-.079
Q54.	-.283	-.133	-.047	-.115	-.051	-.150	.100	-.233	-.225	-.153	-.166	-.086	-.013	-.230	-.037	-.172	-.151	-.128	-.041	-.180	-.008
Q55.	.102	.119	-.006	.001	.026	-.035	-.012	.059	.043	.060	.006	.079	-.031	.085	-.027	.029	.040	-.036	-.017	.063	-.026
Q56.	.061	.041	-.083	-.041	-.022	-.090	-.020	.076	.078	-.028	-.045	.057	.068	-.007	-.002	.006	-.022	-.026	-.015	-.028	.053
Q57.	.100	.024	.049	.053	.015	.109	-.188	.081	.013	.069	.070	.002	.041	.102	.085	.035	-.019	.039	-.050	-.007	-.110
Q58.	.030	.076	-.041	.118	-.008	.084	-.006	-.003	.071	.061	-.028	.027	.088	.019	-.041	.076	-.017	.101	-.001	.084	.001

Appendix 5.2 Reliability Analysis

Inter-Item Correlation Matrix - Continued

	Q25.	Q26.	Q27.	Q28.	Q29.	Q30.	Q31.	Q32.	Q33.	Q34.	Q35.	Q36.	Q37.	Q38.	Q39.	Q40.	Q41.
Q1.	.310	.380	.346	.292	.298	.442	.403	.517	.454	.422	.303	.381	.553	.582	.537	.531	.350
Q2.	.291	.092	.237	.084	.150	.162	.198	.233	.174	.141	.142	.149	.313	.170	.293	.198	.156
Q3.	.188	.072	.132	.154	.082	.243	.075	.238	.082	.239	.097	.192	.232	.172	.154	.227	.112
Q4.	.161	.158	.064	.166	.245	.033	.137	.160	.235	.108	.208	-.013	.252	.166	.225	.148	.239
Q5.	.127	.164	.161	.166	.066	.321	.211	.180	.241	.178	.125	.234	.222	.236	.229	.227	.108
Q6.	.264	.085	.164	.128	.083	.254	.333	.051	.166	.195	.141	.153	.303	.136	.233	.211	.100
Q7.	-.126	-.062	-.022	.024	.021	-.003	-.123	.032	-.071	-.070	.027	-.041	-.076	.002	-.095	-.036	-.037
Q8.	.121	.204	.327	.229	.198	.279	.218	.356	.389	.280	.200	.109	.356	.363	.371	.281	.298
Q9.	.156	.231	.185	.295	.157	.328	.338	.229	.298	.364	.276	.271	.353	.393	.332	.405	.148
Q10.	.306	.238	.250	.239	.381	.295	.333	.362	.344	.302	.342	.227	.547	.369	.410	.350	.257
Q11.	.237	.176	.171	.271	.203	.394	.316	.384	.391	.309	.151	.370	.438	.345	.321	.331	.207
Q12.	.302	.174	.169	.159	.168	.228	.237	.141	.195	.082	.164	.187	.397	.207	.268	.275	.212
Q13.	-.091	.279	.115	.143	.043	.200	.136	.143	.136	.312	.109	.022	.104	.304	.294	.122	.138
Q14.	.215	.211	.234	.212	.106	.152	.273	.139	.313	.103	.119	.151	.292	.168	.329	.229	.146
Q15.	.255	.175	.143	.254	.133	.283	.138	.306	.192	.248	.131	.230	.351	.339	.274	.327	.068
Q16.	.167	.173	.208	.157	.194	.267	.173	.277	.268	.295	.188	.108	.309	.231	.344	.225	.357
Q17.	.224	.237	.163	.285	.206	.333	.168	.281	.280	.178	.176	.224	.351	.366	.323	.376	.124
Q18.	.268	.085	.118	.108	.230	.259	.371	.184	.116	.258	.054	.167	.362	.243	.364	.184	.010
Q19.	.048	.178	.150	-.004	.071	.118	.105	.247	.240	.189	.292	.158	.230	.182	.220	.270	.203
Q20.	.160	.208	.203	.188	.095	.148	.215	.152	.187	.159	.162	.256	.294	.217	.241	.200	.179
Q23.	.175	.081	.125	.128	.111	.115	.157	.294	.111	.170	.042	.315	.208	.108	.215	.164	.194
Q25.	1.000	.089	.157	.097	.156	.188	.213	.322	.181	.128	.053	.209	.358	.087	.188	.316	.170
Q26.	.089	1.000	.264	.082	-.018	.115	.067	.149	.279	.167	.154	.028	.122	.261	.187	.161	.122
Q27.	.157	.264	1.000	.049	.109	.106	.068	.178	.214	.226	.161	.154	.318	.124	.259	.227	.149
Q28.	.097	.082	.049	1.000	.143	.215	.208	.140	.180	.153	.147	.038	.223	.113	.162	.356	.074
Q29.	.156	-.018	.109	.143	1.000	.101	.145	.192	.109	.138	.158	.143	.389	.174	.217	.199	.116
Q30.	.188	.115	.106	.215	.101	1.000	.253	.301	.207	.280	.159	.223	.315	.363	.329	.329	.157
Q31.	.213	.067	.068	.208	.145	.253	1.000	.106	.351	.175	.143	.275	.373	.270	.367	.298	.230
Q32.	.322	.149	.178	.140	.192	.301	.106	1.000	.299	.272	.132	.236	.333	.322	.288	.386	.281
Q33.	.181	.279	.214	.180	.109	.207	.351	.299	1.000	.097	.144	.109	.365	.277	.358	.367	.353
Q34.	.128	.167	.226	.153	.138	.280	.175	.272	.097	1.000	.123	.179	.311	.287	.280	.331	.142
Q35.	.053	.154	.161	.147	.158	.159	.143	.132	.144	.123	1.000	.087	.283	.227	.191	.210	.276
Q36.	.209	.028	.154	.038	.143	.223	.275	.236	.109	.179	.087	1.000	.341	.261	.211	.270	.093
Q37.	.358	.122	.318	.223	.389	.315	.373	.333	.365	.311	.283	.341	1.000	.350	.383	.374	.239
Q38.	.087	.261	.124	.113	.174	.363	.270	.322	.277	.287	.227	.261	.350	1.000	.352	.246	.174
Q39.	.188	.187	.259	.162	.217	.329	.367	.288	.358	.280	.191	.211	.383	.352	1.000	.339	.184

Q40.	.316	.161	.227	.356	.199	.329	.298	.386	.367	.331	.210	.270	.374	.246	.339	1.000	.291
Q41.	.170	.122	.149	.074	.116	.157	.230	.281	.353	.142	.276	.093	.239	.174	.184	.291	1.000
Q42.	.278	.112	.157	.090	.122	.288	.216	.239	.107	.352	.055	.352	.294	.258	.242	.216	.075
Q43.	.224	.082	.209	.082	.193	.067	.286	.179	.182	.117	.128	.240	.248	.279	.186	.162	.142
Q44.	.162	.305	.144	.197	.116	.236	.104	.348	.334	.178	.085	.186	.115	.313	.327	.301	.133
Q45.	.278	.271	.339	.130	.154	.183	.193	.389	.388	.184	.284	.142	.445	.274	.341	.323	.320
Q46.	.187	.234	.200	.253	.168	.208	.201	.104	.286	.369	.210	.236	.421	.305	.224	.285	.229
Q47.	.137	.206	.215	.073	.238	.200	.216	.210	.292	.194	.214	.172	.303	.265	.382	.309	.212
Q48.	.205	.089	.162	.153	.055	.279	.199	.228	.118	.241	.226	.211	.245	.233	.211	.270	.220
Q49.	.354	.135	.161	.235	.071	.234	.370	.273	.317	.229	.146	.296	.294	.218	.320	.345	.229
Q50.	-.196	-.143	-.062	-.062	.012	-.131	-.248	-.216	-.212	-.223	-.078	-.214	-.241	-.205	-.205	-.150	-.098
Q51.	-.145	-.072	-.103	-.080	-.150	-.175	-.112	-.220	-.205	-.190	-.131	-.205	-.278	-.139	-.209	-.219	-.139
Q52.	-.003	-.146	-.083	-.055	-.042	-.120	-.085	-.109	-.131	-.215	-.166	-.193	-.162	-.197	-.107	-.183	-.172
Q53.	-.128	-.101	-.086	-.116	.059	-.167	-.087	-.213	-.193	-.084	-.032	-.183	-.162	-.149	-.095	-.336	-.175
Q54.	-.119	-.111	-.128	-.113	-.064	-.105	-.110	-.218	-.241	-.151	-.130	-.049	-.198	-.177	-.198	-.258	-.155
Q55.	-.034	.029	.052	.038	.068	.030	-.041	-.004	.018	-.024	.060	-.010	.037	.022	.016	.102	.028
Q56.	-.024	.014	-.004	.096	-.019	-.050	.032	-.027	-.063	-.042	-.028	-.090	-.046	.041	-.012	-.042	-.059
Q57.	.088	.102	.051	.061	.037	.054	.077	.018	.044	.042	-.053	-.032	.084	.021	.051	.055	-.104
Q58.	-.040	.043	.004	-.024	.153	-.004	.045	-.041	-.024	.065	-.006	-.007	.052	.023	.112	-.076	-.031

Appendix 5.2 Reliability Analysis

Inter-Item Correlation Matrix - Continued

	Q42.	Q43.	Q44.	Q45.	Q46.	Q47.	Q48.	Q49.	Q50.	Q51.	Q52.	Q53.	Q54.	Q55.	Q56.	Q57.	Q58.
Q1.	.395	.312	.390	.503	.488	.422	.391	.438	-.341	-.285	-.236	-.266	-.283	.102	.061	.100	.030
Q2.	.198	.152	.106	.292	.143	.162	.223	.168	-.117	-.126	-.084	-.006	-.133	.119	.041	.024	.076
Q3.	.158	.142	.175	.210	.211	.170	.143	.153	-.188	-.142	-.050	-.210	-.047	-.006	-.083	.049	-.041
Q4.	.087	.081	.083	.285	.145	.218	.090	.180	-.149	-.088	.042	.020	-.115	.001	-.041	.053	.118
Q5.	.230	.005	.132	.203	.241	.081	.155	.309	-.114	-.145	-.140	-.159	-.051	.026	-.022	.015	-.008
Q6.	.161	.320	.062	.190	.170	.181	.114	.271	-.119	-.101	.004	-.124	-.150	-.035	-.090	.109	.084
Q7.	-.110	-.147	.048	-.121	-.007	-.092	.003	-.145	.040	.000	-.146	.061	.100	-.012	-.020	-.188	-.006
Q8.	.187	.291	.260	.399	.219	.208	.277	.284	-.142	-.128	-.184	-.201	-.233	.059	.076	.081	-.003
Q9.	.317	.220	.277	.322	.426	.320	.183	.349	-.237	-.128	-.228	-.236	-.225	.043	.078	.013	.071
Q10.	.258	.340	.264	.362	.349	.425	.151	.317	-.264	-.247	-.134	-.123	-.153	.060	-.028	.069	.061
Q11.	.290	.237	.343	.365	.328	.265	.224	.413	-.258	-.234	-.172	-.260	-.166	.006	-.045	.070	-.028
Q12.	.197	.175	.087	.308	.188	.267	.174	.287	-.022	-.102	-.193	-.184	-.086	.079	.057	.002	.027
Q13.	.237	.060	.095	.146	.262	.168	.167	.096	-.212	-.057	-.162	.014	-.013	-.031	.068	.041	.088
Q14.	.258	.180	.157	.299	.218	.298	.075	.214	-.118	-.130	.022	-.159	-.230	.085	-.007	.102	.019
Q15.	.177	.291	.264	.184	.219	.175	.213	.226	-.237	-.129	-.070	-.175	-.037	-.027	-.002	.085	-.041
Q16.	.133	.121	.238	.267	.134	.278	.166	.230	-.157	-.166	-.073	-.139	-.172	.029	.006	.035	.076
Q17.	.249	.152	.168	.213	.297	.145	.156	.332	-.155	-.213	-.191	-.148	-.151	.040	-.022	-.019	-.017
Q18.	.201	.183	.130	.224	.207	.143	.179	.275	-.229	-.205	-.089	-.122	-.128	-.036	-.026	.039	.101
Q19.	.116	.018	.169	.216	.180	.239	.169	.147	-.120	-.088	-.171	-.057	-.041	-.017	-.015	-.050	-.001
Q20.	.150	.122	.097	.269	.196	.173	.228	.038	-.074	-.112	-.142	-.087	-.180	.063	-.028	-.007	.084
Q23.	.236	.223	.085	.178	.201	.076	.216	.196	-.224	-.075	-.142	-.079	-.008	-.026	.053	-.110	.001
Q25.	.278	.224	.162	.278	.187	.137	.205	.354	-.196	-.145	-.003	-.128	-.119	-.034	-.024	.088	-.040
Q26.	.112	.082	.305	.271	.234	.206	.089	.135	-.143	-.072	-.146	-.101	-.111	.029	.014	.102	.043
Q27.	.157	.209	.144	.339	.200	.215	.162	.161	-.062	-.103	-.083	-.086	-.128	.052	-.004	.051	.004
Q28.	.090	.082	.197	.130	.253	.073	.153	.235	-.062	-.080	-.055	-.116	-.113	.038	.096	.061	-.024
Q29.	.122	.193	.116	.154	.168	.238	.055	.071	.012	-.150	-.042	.059	-.064	.068	-.019	.037	.153
Q30.	.288	.067	.236	.183	.208	.200	.279	.234	-.131	-.175	-.120	-.167	-.105	.030	-.050	.054	-.004
Q31.	.216	.286	.104	.193	.201	.216	.199	.370	-.248	-.112	-.085	-.087	-.110	-.041	.032	.077	.045
Q32.	.239	.179	.348	.389	.104	.210	.228	.273	-.216	-.220	-.109	-.213	-.218	-.004	-.027	.018	-.041
Q33.	.107	.182	.334	.388	.286	.292	.118	.317	-.212	-.205	-.131	-.193	-.241	.018	-.063	.044	-.024
Q34.	.352	.117	.178	.184	.369	.194	.241	.229	-.223	-.190	-.215	-.084	-.151	-.024	-.042	.042	.065
Q35.	.055	.128	.085	.284	.210	.214	.226	.146	-.078	-.131	-.166	-.032	-.130	.060	-.028	-.053	-.006
Q36.	.352	.240	.186	.142	.236	.172	.211	.296	-.214	-.205	-.193	-.183	-.049	-.010	-.090	-.032	-.007
Q37.	.294	.248	.115	.445	.421	.303	.245	.294	-.241	-.278	-.162	-.162	-.198	.037	-.046	.084	.052
Q38.	.258	.279	.313	.274	.305	.265	.233	.218	-.205	-.139	-.197	-.149	-.177	.022	.041	.021	.023
Q39.	.242	.186	.327	.341	.224	.382	.211	.320	-.205	-.209	-.107	-.095	-.198	.016	-.012	.051	.112

Q40.	.216	.162	.301	.323	.285	.309	.270	.345	-.150	-.219	-.183	-.336	-.258	.102	-.042	.055	-.076
Q41.	.075	.142	.133	.320	.229	.212	.220	.229	-.098	-.139	-.172	-.175	-.155	.028	-.059	-.104	-.031
Q42.	1.000	.167	.045	.189	.316	.148	.210	.225	-.196	-.146	-.191	-.102	-.009	-.003	.023	-.037	.036
Q43.	.167	1.000	.086	.171	.180	.222	.196	.269	-.133	-.055	-.020	-.106	-.089	-.016	.020	.058	-.082
Q44.	.045	.086	1.000	.227	.137	.269	.122	.259	-.080	-.145	-.108	-.188	-.114	.069	-.045	.068	-.052
Q45.	.189	.171	.227	1.000	.262	.272	.256	.312	-.189	-.157	-.139	-.178	-.313	.052	.025	.042	.033
Q46.	.316	.180	.137	.262	1.000	.166	.187	.262	-.231	-.196	-.199	-.126	-.087	.014	-.036	.006	.058
Q47.	.148	.222	.269	.272	.166	1.000	.050	.167	-.081	-.249	-.135	-.115	-.196	.138	-.094	.063	.059
Q48.	.210	.196	.122	.256	.187	.050	1.000	.135	-.190	-.100	-.122	-.119	-.098	-.023	-.019	.056	-.021
Q49.	.225	.269	.259	.312	.262	.167	.135	1.000	-.238	-.086	-.071	-.163	-.220	-.046	.055	.098	.021
Q50.	-.196	-.133	-.080	-.189	-.231	-.081	-.190	-.238	1.000	.200	.029	.080	.085	.477	.074	-.037	-.042
Q51.	-.146	-.055	-.145	-.157	-.196	-.249	-.100	-.086	.200	1.000	.134	-.069	.064	.065	.505	.033	-.099
Q52.	-.191	-.020	-.108	-.139	-.199	-.135	-.122	-.071	.029	.134	1.000	.147	-.056	-.098	-.083	.529	.074
Q53.	-.102	-.106	-.188	-.178	-.126	-.115	-.119	-.163	.080	-.069	.147	1.000	.219	-.120	-.096	-.048	.503
Q54.	-.009	-.089	-.114	-.313	-.087	-.196	-.098	-.220	.085	.064	-.056	.219	1.000	-.075	.036	-.140	.079
Q55.	-.003	-.016	.069	.052	.014	.138	-.023	-.046	.477	.065	-.098	-.120	-.075	1.000	.092	-.131	-.224
Q56.	.023	.020	-.045	.025	-.036	-.094	-.019	.055	.074	.505	-.083	-.096	.036	.092	1.000	-.122	-.137
Q57.	-.037	.058	.068	.042	.006	.063	.056	.098	-.037	.033	.529	-.048	-.140	-.131	-.122	1.000	-.003
Q58.	.036	-.082	-.052	.033	.058	.059	-.021	.021	-.042	-.099	.074	.503	.079	-.224	-.137	-.003	1.000

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.888	.887	55

Appendix 5.3 Correlation analysis of retained items of each outcome

The SPSS correlation matrices

Correlations				
		Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?	Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?	Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?
Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?	Pearson Correlation	1	.317**	.237**
	Sig. (2-tailed)		.000	.000
	N	485	485	485
Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?	Pearson Correlation	.317**	1	.233**
	Sig. (2-tailed)	.000		.000
	N	485	485	485
Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?	Pearson Correlation	.237**	.233**	1
	Sig. (2-tailed)	.000	.000	
	N	485	485	485
**. Correlation is significant at the 0.01 level (2-tailed).				

Correlations				
		Q8. TO ANALYSE RELEVANT INFORMATION	Q9. TO USE ANALYTIC TECHNIQUES	Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION
Q8. TO ANALYSE RELEVANT INFORMATION	Pearson Correlation	1	.372**	.349**
	Sig. (2-tailed)		.000	.000
	N	485	485	485
Q9. TO USE ANALYTIC TECHNIQUES	Pearson Correlation	.372**	1	.414**
	Sig. (2-tailed)	.000		.000
	N	485	485	485
Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION	Pearson Correlation	.349**	.414**	1
	Sig. (2-tailed)	.000	.000	
	N	485	485	485
**. Correlation is significant at the 0.01 level (2-tailed).				

Appendix 5.3 Correlation analysis of retained items of each outcome

The SPSS correlation matrices – Continued

Correlations			
		Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?	Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?
Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?	Pearson Correlation	1	.290**
	Sig. (2-tailed)		.000
	N	485	485
Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?	Pearson Correlation	.290**	1
	Sig. (2-tailed)	.000	
	N	485	485
**. Correlation is significant at the 0.01 level (2-tailed).			

Correlations			
		Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)	Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)
Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)	Pearson Correlation	1	.195**
	Sig. (2-tailed)		.000
	N	485	485
Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)	Pearson Correlation	.195**	1
	Sig. (2-tailed)	.000	
	N	485	485
**. Correlation is significant at the 0.01 level (2-tailed).			

Appendix 5.3 Correlation analysis of retained items of each outcome

The SPSS correlation matrices – Continued

Correlations					
		Q26.RESEARCH OUTCOMES	Q27.QUALITY OF PROGRAMMES OFFERED	Q28. ACADEMIC AND ADMINISTRATIVE EMPLOYEE SATISFACTION	Q30. COMMUNITY ENGAGMENT
Q26.RESEARCH OUTCOMES	Pearson Correlation	1	.264**	.082	.115*
	Sig. (2-tailed)		.000	.072	.011
	N	485	485	485	485
Q27.QUALITY OF PROGRAMMES OFFERED	Pearson Correlation	.264**	1	.049	.106*
	Sig. (2-tailed)	.000		.279	.019
	N	485	485	485	485
Q28. ACADEMIC AND ADMINISTRATIVE EMPLOYEE SATISFACTION	Pearson Correlation	.082	.049	1	.215**
	Sig. (2-tailed)	.072	.279		.000
	N	485	485	485	485
Q30. COMMUNITY ENGAGMENT	Pearson Correlation	.115*	.106*	.215**	1
	Sig. (2-tailed)	.011	.019	.000	
	N	485	485	485	485
**. Correlation is significant at the 0.01 level (2-tailed).					
*. Correlation is significant at the 0.05 level (2-tailed).					

Appendix 5.3 Correlation analysis of retained items of each outcome

The SPSS correlation matrices – Continued

Correlations								
		Q36. INFLATION RATE	Q37. EXCHANGE RATE WITH THE DOLLAR	Q38. INTEREST RATE.	Q39. RESULTS OF ECONOMIC RESTRUCTURING	Q40. CHANGES IN COMPETITORS' TUITION FEES	Q42. CHANGES IN COMPETITORS' STRATEGIES.	Q46. FEES FOR TUITION CONTROLLED BY THE GOVERNMENT
Q36. INFLATION RATE	Pearson Correlation	1	.341**	.261**	.211**	.270**	.352**	.236**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	485	485	485	485	485	485	485
Q37. EXCHANGE RATE WITH THE DOLLAR	Pearson Correlation	.341**	1	.350**	.383**	.374**	.294**	.421**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	485	485	485	485	485	485	485
Q38. INTEREST RATE.	Pearson Correlation	.261**	.350**	1	.352**	.246**	.258**	.305**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	485	485	485	485	485	485	485
Q39. RESULTS OF ECONOMIC RESTRUCTURING	Pearson Correlation	.211**	.383**	.352**	1	.339**	.242**	.224**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	485	485	485	485	485	485	485
Q40. CHANGES IN COMPETITORS' TUITION FEES	Pearson Correlation	.270**	.374**	.246**	.339**	1	.216**	.285**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	485	485	485	485	485	485	485
Q42. CHANGES IN COMPETITORS' STRATEGIES.	Pearson Correlation	.352**	.294**	.258**	.242**	.216**	1	.316**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	485	485	485	485	485	485	485
Q46. FEES FOR TUITION CONTROLLED BY THE GOVERNMENT	Pearson Correlation	.236**	.421**	.305**	.224**	.285**	.316**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	485	485	485	485	485	485	485

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix 5.3 Correlation analysis of retained items of each outcome

The SPSS correlation matrices – Continued

Correlations			
		Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT	Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT
Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT	Pearson Correlation	1	-.238**
	Sig. (2-tailed)		.000
	N	485	485
Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT	Pearson Correlation	-.238**	1
	Sig. (2-tailed)	.000	
	N	485	485

Appendix 5.4 Sample correlation of retained items

Inter-Item Correlation Matrix																						
	DIMPORTANCEQ1	DIMPORTANCEQ5	DIMPORTANCEQ6	RATIONALITYQ2	RATIONALITYQ3	RATIONALITYQ4	INTUTIONQ1	INTUTIONQ5	DECENTRALIZATIONQ16	DECENTRALIZATIONQ20	PERFORMANCEQ6	PERFORMANCEQ7	PERFORMANCEQ8	PERFORMANCEQ10	ENVIROMENT.ECONQ6	ENVIROMENT.ECONQ7	ENVIROMENT.ECONQ8	ENVIROMENT.ECONQ9	ENVIROMENT.COMPQ10	ENVIROMENT.GOVQ12	ENVIROMENT.GOVQ16	DEC.EFFECQ1	DEC.EFFECQ2
DIMPORTANCEQ1	1.000	.317	.237	.529	.587	.601	.587	.361	.412	.349	.380	.346	.292	.442	.381	.553	.582	.537	.531	.395	.488	.438	-.341
DIMPORTANCEQ5	.317	1.000	.233	.126	.239	.183	.385	.189	.172	.068	.164	.161	.166	.321	.234	.222	.236	.229	.227	.230	.241	.309	-.114
DIMPORTANCEQ6	.237	.233	1.000	.171	.213	.232	.179	.179	.140	.104	.085	.164	.128	.254	.153	.303	.136	.233	.211	.161	.170	.271	-.119
RATIONALITYQ2	.529	.126	.171	1.000	.372	.349	.410	.152	.452	.341	.204	.327	.229	.279	.109	.356	.363	.371	.281	.187	.219	.284	-.142
RATIONALITYQ3	.587	.239	.213	.372	1.000	.414	.481	.247	.264	.212	.231	.185	.295	.328	.271	.353	.393	.332	.405	.317	.426	.349	-.237
RATIONALITYQ4	.601	.183	.232	.349	.414	1.000	.427	.383	.337	.262	.238	.250	.239	.295	.227	.547	.369	.410	.350	.258	.349	.317	-.264
INTUTIONQ1	.587	.385	.179	.410	.481	.427	1.000	.290	.282	.269	.176	.171	.271	.394	.370	.438	.345	.321	.331	.290	.328	.413	-.258
INTUTIONQ5	.361	.189	.179	.152	.247	.383	.290	1.000	.158	.207	.175	.143	.254	.283	.230	.351	.339	.274	.327	.177	.219	.226	-.237
DECENTRALIZATIONQ16	.412	.172	.140	.452	.264	.337	.282	.158	1.000	.195	.173	.208	.157	.267	.108	.309	.231	.344	.225	.133	.134	.230	-.157
DECENTRALIZATIONQ20	.349	.068	.104	.341	.212	.262	.269	.207	.195	1.000	.208	.203	.188	.148	.256	.294	.217	.241	.200	.150	.196	.038	-.074
PERFORMANCEQ6	.380	.164	.085	.204	.231	.238	.176	.175	.173	.208	1.000	.264	.082	.115	.028	.122	.261	.187	.161	.112	.234	.135	-.143
PERFORMANCEQ7	.346	.161	.164	.327	.185	.250	.171	.143	.208	.203	.264	1.000	.049	.106	.154	.318	.124	.259	.227	.157	.200	.161	-.062
PERFORMANCEQ8	.292	.166	.128	.229	.295	.239	.271	.254	.157	.188	.082	.049	1.000	.215	.038	.223	.113	.162	.356	.090	.253	.235	-.062
PERFORMANCEQ10	.442	.321	.254	.279	.328	.295	.394	.283	.267	.148	.115	.106	.215	1.000	.223	.315	.363	.329	.329	.288	.208	.234	-.131
ENVIROMENT.ECONQ6	.381	.234	.153	.109	.271	.227	.370	.230	.108	.256	.028	.154	.038	.223	1.000	.341	.261	.211	.270	.352	.236	.296	-.214
ENVIROMENT.ECONQ7	.553	.222	.303	.356	.353	.547	.438	.351	.309	.294	.122	.318	.223	.315	.341	1.000	.350	.383	.374	.294	.421	.294	-.241
ENVIROMENT.ECONQ8	.582	.236	.136	.363	.393	.369	.345	.339	.231	.217	.261	.124	.113	.363	.261	.350	1.000	.352	.246	.258	.305	.218	-.205
ENVIROMENT.ECONQ9	.537	.229	.233	.371	.332	.410	.321	.274	.344	.241	.187	.259	.162	.329	.211	.383	.352	1.000	.339	.242	.224	.320	-.205
ENVIROMENT.COMPQ10	.531	.227	.211	.281	.405	.350	.331	.327	.225	.200	.161	.227	.356	.329	.270	.374	.246	.339	1.000	.216	.285	.345	-.150
ENVIROMENT.GOVQ12	.395	.230	.161	.187	.317	.258	.290	.177	.133	.150	.112	.157	.090	.288	.352	.294	.258	.242	.216	1.000	.316	.225	-.196
ENVIROMENT.GOVQ16	.488	.241	.170	.219	.426	.349	.328	.219	.134	.196	.234	.200	.253	.208	.236	.421	.305	.224	.285	.316	1.000	.262	-.231
DEC.EFFECQ1	.438	.309	.271	.284	.349	.317	.413	.226	.230	.038	.135	.161	.235	.234	.296	.294	.218	.320	.345	.225	.262	1.000	-.238
DEC.EFFECQ2	-.341	-.114	-.119	-.142	-.237	-.264	-.258	-.237	-.157	-.074	-.143	-.062	-.062	-.131	-.214	-.241	-.205	-.205	-.150	-.196	-.231	-.238	1.000

Appendix 5.5 Correlation analysis of retained items of each construct

Conditions that need to be satisfied for conducting regression

I. *Make certain assumptions and check them. In this research the assumptions made were based on those suggested by Janssens et al. (2008) and listed below.*

a) Causality is present whereby independent variables explain any variation that takes place in the dependent variables.

b) All the relevant independent variables have been taken into consideration.

c) The dependent and independent variables are measured using interval scales.

d) The relationship between the dependent and independent variables is linear.

e) There exists an additive relationship between the dependent and independent variables.

f) The residual characteristics including that the residuals show that the observations (responses obtained from participants in the survey) made are independent of each other, the residuals are normally distributed, the variance is the same for each value of the independent variable and if subsequent variables occur there is no relationship that exists between them.

g) There are sufficient number of observations that enables a good fit.

h) There is no multicollinearity and

i) Outliers are addressed.

II. *Ascertain the meaningfulness of the model.*

III. *Interpret the results obtained through regression for the independent variables.*

Each one of the above steps [I (a) to I (i)] has been tested with regard to the dependent and independent variables and discussed below. In order to ensure that the discussions provided here are optimum, only an example of the tests mentioned above with regard to equations 5.1 to 5.3 are provided. For the other

equations only results have been provided and detailed discussions are not provided although they are provided in Appendices 5.6 to 5.9.

I(a) Causality is present whereby independent variables explain any variation that takes place in the dependent variables

In equations 5.1 to 5.3, it has been shown that rationality in decision making represented by RATIONALITYQ2, RATIONALITYQ3 and RATIONALITYQ4 as dependent variables are related to decision importance represented by DIMPORTANCEQ1, DIMPORTANCEQ5 and DIMPORTANCEQ6 as independent variables. That there could exist causality between the dependent and independent variables is supported by the arguments given in the theoretical framework. Thus it can be said that the first assumption has been checked. Similar arguments can be used to check this assumption with regard to the remaining equations.

I(b) All the relevant independent variables have been taken into consideration

Essentially seven variables measured by 50 items were chosen for studying the strategic decision making process in higher education institutions. Since the main argument is that decision importance affects the decision effectiveness in the strategic decision making process (see Chapter 3), the relevant variables that affect this relationship between decision importance and decision effectiveness were considered based on prior research, a method considered acceptable in the literature (Janssens et al. 2008) . Thus the necessary independent variables considered relevant for examining the relationship between decision importance and decision effectiveness were decision importance, rationality in decision making, intuition and decentralization in decision making. These

variables were extracted from the work of different researchers (see Chapter 3). In addition, these variables were measured using observed variables namely

Appendix 5.5 Correlation analysis of retained items of each construct - Continued

the items measuring them (see questionnaire in Appendix 4.1). These observed variables were also extracted from prior publications and were already tested for their relevance to the process of strategic decision making earlier by other researchers (see Section 4.5.1 in Chapter 4). Thus it was concluded that all relevant independent variables have been taken into consideration.

I(c) The dependent and independent variables are measured using interval scales

From Section 4.5.1 it can be seen that independent and dependent variables were measured using interval-scaled items (see questionnaire in Appendix 4.1). This assumption was considered as checked and accepted.

I(d) The relationship between the dependent and independent variables is linear

To check whether equations 5.1 to 5.3 are linear, a non-linear quantity namely $(DIMPORTANCEQ6)^2$ was introduced in the equations and SPSS used to check the linearity of the equations. Linear regression as a tool was used to check linear nature of the equations. The equations then can be rewritten as:

$RATIONALITYQ2 = k_0 + k_1\ DIMPORTANCEQ1 + k_2\ DIMPORTANCEQ5 + k_3\ DIMPORTANCEQ6 +$

$k_A\ (DIMPORTANCEQ6)^2 + e_1 \rightarrow (5.28)$

$$RATIONALITYQ3 = k_4 + k_5\ DIMPORTANCEQ1 + k_6\ DIMPORTANCEQ5 + k_7\ DIMPORTANCEQ6 + k_B\ (DIMPORTANCEQ6)^2 + e_2 \rightarrow (5.29)$$

$$RATIONALITYQ4 = k_8 + k_9\ DIMPORTANCEQ1 + k_{10}\ DIMPORTANCEQ5 + k_{11}\ DIMPORTANCEQ6 + k_C\ (DIMPORTANCEQ6)^2 + e_3 \rightarrow (5.30)$$

The results of the regression tests are given in Tables 5.IV to 5.VI.

Appendix 5.5 Correlation analysis of retained items of each construct - Continued

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.534[a]	.285	.281	1.04863	.285	63.972	3	481	.000
2	.535[b]	.286	.280	1.04934	.001	.348	1	480	.555

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION? Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION? Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION? Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT? SQDIMPORTANCEQ6

c. Dependent Variable: Q8. TO ANALYSE RELEVANT INFORMATION

Table 5.4, Regression with a non-linear component in equation 5.1

Appendix 5.5 Correlation analysis of retained items of each construct - Continued

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.594[a]	.352	.348	1.07975	.352	87.240	3	481	.000
2	.594[b]	.353	.348	1.08010	.001	.691	1	480	.406

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION? Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION? Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION? Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION? Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT? SQDIMPORTANCEQ6

Table 5.5, Regression with a non-linear component in equation 5.2

Appendix 5.5 Correlation analysis of retained items of each construct - Continued

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.609[a]	.371	.367	1.00614	.371	94.482	3	481	.000
2	.609[b]	.371	.366	1.00686	.000	.319	1	480	.572

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION? Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION? Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION? Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION? Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT? SQDIMPORTANCEQ6

Table 5.6, Regression with a non-linear component in equation 5.3

Note: In tables 5.IV to 5.VI the term $(DIMPORTANCEQ6)^2$ is coded in SPSS as SQDIMPORTANCEQ6.

From Tables 5.4 to 5.6 it can be seen that the second models in all three cases were found to have value of "Sig. F Change" as greater than 0.05, indicating that the introduction of the squared component namely $(DIMPORTANCEQ6)^2$ made the regression not significant whereas model 1 is showing a value of "Sig. F Change" less than 0.05 indicating that the original equation is significant. Thus it can be said that equations 5.1 to 5.3 are linear. Similar arguments could be extended to equations 5.4 to 5.13. The SPSS report on regressing non-linear quantities with respect to equations 5.4 to 5.13 is provided in Appendix 5.6 and all equations where a non-linear quantity was introduced the SPSS output showed (Model 2 in all cases) that the value of "Sig. F Change" was higher than 0.05 while for Model 1 the value of "Sig. F Change" was lower than 0.05. indicating that the original regression equations 5.1 to 5.13 are linear.

I(e) There is an additive relationship between the dependent and independent variables

In order to check the additive nature of the equations 5.1 to 5.13, the procedure followed was the same like the one in the previous section related to checking the linearity of the equation, except that in place of a non-linear factor a multiplying factor was introduced. For instance, equations 5.1 to 5.3 are rewritten as:

$$RATIONALITYQ2 = k_0 + k_1\ DIMPORTANCEQ1 + k_2\ DIMPORTANCEQ5 + k_3\ DIMPORTANCEQ6 +$$

$$k_{AA}\ (DIMPORTANCEQ1 * DIMPORTANCEQ5) + e_1 \rightarrow (5.41)$$

$$RATIONALITYQ3 = k_4 + k_5\ DIMPORTANCEQ1 + k_6\ DIMPORTANCEQ5 + k_7\ DIMPORTANCEQ6 +$$

$$k_{AB}\ (DIMPORTANCEQ1 * DIMPORTANCEQ5) + e_2 \rightarrow (5.42)$$

$$RATIONALITYQ4 = k_8 + k_9\ DIMPORTANCEQ1 + k_{10}\ DIMPORTANCEQ5 + k_{11}\ DIMPORTANCEQ6 + k_{AC}\ (DIMPORTANCEQ1 * DIMPORTANCEQ6) + e_3 \rightarrow (5.43)$$

Appendix 5.5 Correlation analysis of retained items of each construct - Continued

The results of the regression conducted on equations 5.41 to 5.43 are provided in Tables 5.7 to 5.9.

Note: The factor (DIMPORTANCEQ1 * DIMPORTANCEQ5) is coded as PRODIM1DIM5 in SPSS.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.534a	.285	.281	1.04863	.285	63.972	3	481	.000
2	.534b	.285	.279	1.04962	.000	.094	1	480	.759

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION? Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION? Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION? Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION? Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT? PRODIM1DIM5

Table 5.7, Regression with a multiplier PRODIM1DIM5 in equation 5.41

Appendix 5.5 Correlation analysis of retained items of each construct - Continued

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.594[a]	.352	.348	1.07975	.352	87.240	3	481	.000
2	.594[b]	.353	.347	1.08061	.000	.234	1	480	.629

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION? Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION? Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION? Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION? Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?PRODIM1DIM5

Table 5.8, Regression with a multiplier PRODIM1DIM5 in equation 5.42

Appendix 5.5 Correlation analysis of retained items of each construct - Continued

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.609[a]	.371	.367	1.00614	.371	94.482	3	481	.000
2	.609[b]	.371	.366	1.00704	.000	.141	1	480	.707

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION? Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION? Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION? Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION? Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT? PRODIM1DIM6

Table 5.9, Regression with a multiplier PRODIM1DIM6 in equation 5.43

Note: The factor (DIMPORTANCEQ1 * DIMPORTANCEQ6) is coded as PRODIM1DIM6 in SPSS. As in the case of non-linearity tests, in the additive tests also the models (model 2) generated with the multipliers (see Tables 5.7 to 5.9) were tested for the significance of the "Sig. F Change" value which was found to be insignificant in all three cases with the values exceeding 0.05. However, the models (model 1)

Appendix 5.5 Correlation analysis of retained items of each construct - Continued

generated with the original equations without the multipliers (see Tables 5.7 to 5.9) were found to be significant with the "Sig. F Change" value of significance found to be less than 0.05. Thus it was concluded that the regression equations 5.1 to 5.3 were additive in nature. Similar tests were conducted for the other regression equations 5.4 to 5.13 and it was found that all those regression equations were additive (see Appendix 5.7) except equation 5.12. The additive property was not found in equation 5.12 and hence it was decided to test the equation by rewriting it as follows:

$$DEC.EFFECQ1 = k_{43} + k_{44}\ DECENTRALIZATIONQ1 + e_{12} \rightarrow 5.54$$

or

$$DEC.EFFECQ1 = k_{43} + k_{45}\ DECENTRALIZATIONQ5 + e_{12} \rightarrow 5.55$$

These two equations have not become univariate regressions. Hence the additive property is not applied. Equations 5.54 and 5.55 will be individually regressed to test the relationship later. After checking the linear and additive properties of the equations 5.1 to 5.13, the next test was for residual characteristics.

I(f) Residuals

Observations are independent of each other: It was ensured that the data was collected from participants who were individuals working in different universities and departments and there was no proximity between any two participants that would have led to a situation where one participant influences the other.

Residuals are normally distributed

From Appendix 5.8 it can be seen that the histograms and normal P-P plot of regression standardized residual are within acceptable limits for all equations (5.1 to 5.12) except 5.13 which shows that the

Appendix 5.5 Correlation analysis of retained items of each construct - Continued

residuals are not normally distributed raising questions whether regression is needed to be conducted on equation 5.13. A decision about this was deferred to a later section where the SPSS report on homoscedasticity was checked.

Homoscedasticity

This refers to the test that verifies the statement that "the residual has the same variance for every value of the independent variable" (Janssens et al. 2008, p. 157). This is assessed by checking the scatter plot produced by SPSS for the equations 5.1 to 5.13. The presence of homoscedasticity is confirmed if the scatter plot shows that there no pattern that could be detected (e.g. triangle or diamond) (Janssens et al. 2008, p. 157). This is one of the conditions required to be met before regressing the equations. Thus the scatter plots given in Appendix 5.9 for each one of the equations 5.1 to 5.13 show that no specific patterns could be detected and it was concluded that homoscedasticity is present.

I(g) There number of observations is sufficient that indicates a good fit

According to Janssens et al. (2008) this condition is said to have been met if the number of observations is at least five times as many as the variables. That is to say if the number of variables in this research is 53 then the number of observations available for data analysis at the minimum should be (5 x53) = 265. In this research 485 observations are available. This shows that this condition has been achieved.

I(h) There is no multicollinearity

Multicollinearity refers to a high degree of correlation between the independent variables does not exist. Typical values considered as showing the presence of multicollinearity is that correlation between two

independent variables are those exceeding 0.8 (Pallant, 2013). From Appendix 5.2 it can be seen that none of the correlation values exceeded 0.8 indicating that multicollinearity does not exist.

I(i) Outliers are addressed

This assumption has been discussed and addressed by checking the Mahalanobis distance

After checking the assumptions it was clear that now the actual regression of equations 5.1 to 5.13 can be conducted to **check the meaningfulness of the model in Figure 3.1**. The following sections provide the regression analysis.

The steps "Ascertain the meaningfulness of the model and Interpret the results obtained through regression for the independent variables" have been (addressed in the main text in Chapter 5.

Appendix 5.6 Test of linearity

$$RATIONALITYQ2 = k_0 + k_1\ DIMPORTANCEQ1 + k_2\ DIMPORTANCEQ5 + k_3\ DIMPORTANCEQ6 + k_A\ (DIMPORTANCEQ6)^2 + e_1 \rightarrow (5.28)$$

$$RATIONALITYQ3 = k_4 + k_5\ DIMPORTANCEQ1 + k_6\ DIMPORTANCEQ5 + k_7\ DIMPORTANCEQ6 + k_B\ (DIMPORTANCEQ6)^2 + e_2 \rightarrow (5.29)$$

$$RATIONALITYQ4 = k_8 + k_9\ DIMPORTANCEQ1 + k_{10}\ DIMPORTANCEQ5 + k_{11}\ DIMPORTANCEQ6 + k_C\ (DIMPORTANCEQ6)^2 + e_3 \rightarrow (5.30)$$

Regression results after introducing the factor $(DIMPORTANCEQ6)^2$ in all the three equations:

Note: $(DIMPORTANCEQ6)^2$ is coded in SPSS as SQDIMPORTANCEQ6

Regression of Equation 5.28

$$RATIONALITYQ2 = k_0 + k_1\ DIMPORTANCEQ1 + k_2\ DIMPORTANCEQ5 + k_3\ DIMPORTANCEQ6 + k_A\ (DIMPORTANCEQ6)^2 + e_1 \rightarrow (5.28)$$

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.534[a]	.285	.281	1.04863	.285	63.972	3	481	.000
2	.535[b]	.286	.280	1.04934	.001	.348	1	480	.555

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?, SQDIMPORTANCEQ6

c. Dependent Variable: Q8. TO ANALYSE RELEVANT INFORMATION

Regression of Equation 5.29

$$RATIONALITYQ3 = k_4 + k_5\ DIMPORTANCEQ1 + k_6\ DIMPORTANCEQ5 + k_7\ DIMPORTANCEQ6 + k_B\ (DIMPORTANCEQ6)^2 + e_2 \rightarrow (5.29)$$

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.594[a]	.352	.348	1.07975	.352	87.240	3	481	.000
2	.594[b]	.353	.348	1.08010	.001	.691	1	480	.406

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?, SQDIMPORTANCEQ6

Regression of Equation 5.30

$$RATIONALITYQ4 = k_8 + k_9\ DIMPORTANCEQ1 + k_{10}\ DIMPORTANCEQ5 + k_{11}\ DIMPORTANCEQ6 + k_C\ (DIMPORTANCEQ6)^2 + e_3 \rightarrow (5.30)$$

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.609[a]	.371	.367	1.00614	.371	94.482	3	481	.000
2	.609[b]	.371	.366	1.00686	.000	.319	1	480	.572

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?, SQDIMPORTANCEQ6

Regression of Equation 5.31

$$INTUTIONQ1 = k_{12} + k_{13}\ DIMPORTANCEQ1 + k_{14}\ DIMPORTANCEQ5 + k_{15}\ DIMPORTANCEQ6 + k_D\ (DIMPORTANCEQ6)^2 + e_4 \rightarrow (5.31)$$

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.623[a]	.388	.385	1.06838	.388	101.787	3	481	.000
2	.623[b]	.388	.383	1.06948	.000	.004	1	480	.951

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?, SQDIMPORTANCEQ6

Regression of Equation 5.32

$$INTUTIONQ5 = k_{17} + k_{18}\ DIMPORTANCEQ1 + k_{19}\ DIMPORTANCEQ5 + k_{20}\ DIMPORTANCEQ6 + k_E\ (DIMPORTANCEQ6)^2 + e_5 \rightarrow (5.32)$$

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.379[a]	.144	.138	.99181	.144	26.906	3	481	.000
2	.381[b]	.145	.138	.99214	.001	.672	1	480	.413

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?, SQDIMPORTANCEQ6

Regression of Equation 5.33

$$DECENTRALIZATIONQ16 = k_{21} + k_{22}\ DIMPORTANCEQ1 + k_{23}\ DIMPORTANCEQ5 + k_{24}\ DIMPORTANCEQ6 + k_F\ (DIMPORTANCEQ6)^2 + e6 \rightarrow (5.33)$$

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.416[a]	.173	.168	.98705	.173	33.594	3	481	.000
2	.416[b]	.173	.166	.98801	.000	.067	1	480	.795

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?, SQDIMPORTANCEQ6

Regression of Equation 5.34

$$DECENTRALIZATIONQ20 = k_{25} + k_{26}\ DIMPORTANCEQ1 + k_{27}\ DIMPORTANCEQ5 + k_{28}\ DIMPORTANCEQ6 + k_G\ (DIMPORTANCEQ6)^2 + e_7 \rightarrow (5.34)$$

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.353[a]	.124	.119	1.07702	.124	22.787	3	481	.000
2	.354[b]	.125	.118	1.07766	.001	.433	1	480	.511

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?, SQDIMPORTANCEQ6

Regression of Equation 5.35

$$DEC.EFFECQ1 = k_{29} + k_{30}\,RATIONALITYQ2 + k_{31}\,RATIONALITYQ3 + k_{32}\,RATIONALITYQ4 + k_H\,(RATIONALITYQ2)\,e_8 \rightarrow (5.35)$$

Note: $(RATIONALITYQ2)^2$ is coded in SPSS as SQRATIONALITYQ2

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.416[a]	.173	.168	.98867	.173	33.630	3	481	.000
2	.419[b]	.176	.169	.98821	.002	1.450	1	480	.229
a. Predictors: (Constant), Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION, Q8. TO ANALYSE RELEVANT INFORMATION, Q9. TO USE ANALYTIC TECHNIQUES									
b. Predictors: (Constant), Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION, Q8. TO ANALYSE RELEVANT INFORMATION, Q9. TO USE ANALYTIC TECHNIQUES, SQRATIONALITYQ2									

Regression of Equation 5.36

$$DEC.EFFECQ2 = k_{33} + k_{34}\,RATIONALITYQ2 + k_{35}\,RATIONALITYQ3 + k_{36}\,RATIONALITYQ4 + k_I\,(RATIONALITYQ2)^2\,e_9 \rightarrow (5.36)$$

Note: $(RATIONALITYQ2)^2$ is coded in SPSS as SQRATIONALITYQ2

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.300[a]	.090	.084	.98128	.090	15.814	3	481	.000
2	.300[b]	.090	.082	.98218	.000	.120	1	480	.729
a. Predictors: (Constant), Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION , Q8. TO ANALYSE RELEVANT INFORMATION, Q9. TO USE ANALYTIC TECHNIQUES									
b. Predictors: (Constant), Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION , Q8. TO ANALYSE RELEVANT INFORMATION, Q9. TO USE ANALYTIC TECHNIQUES, SQRATIONALITYQ2									

Regression of Equation 5.37

$DEC.EFFECQ1 = k_{37} + k_{38}\ INTUTIONQ1 + k_{39}\ INTUTIONQ5 + k_K\ (INTUTIONQ1)^2 + e_{10} \rightarrow (5.37)$

Note: $(INTUTIONQ1)^2$ is coded in SPSS as SQINTUTIONQ1

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.428[a]	.183	.180	.98189	.183	53.978	2	482	.000
2	.433[b]	.187	.182	.98044	.004	2.433	1	481	.119
a. Predictors: (Constant), Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?, Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?									
b. Predictors: (Constant), Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?, Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?, SQINTUTIONQ1									

Regression of Equation 5.38

$DEC.EFFECQ2 = k_{40} + k_{41}\ INTUTIONQ1 + k_{42}\ INTUTIONQ5 + k_L\ (INTUTIONQ1)^2 + e_{11} \rightarrow (5.38)$

Note: $(INTUTIONQ1)^2$ is coded in SPSS as SQINTUTIONQ1

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.308[a]	.095	.091	.97745	.095	25.298	2	482	.000
2	.309[b]	.095	.090	.97821	.000	.248	1	481	.619
a. Predictors: (Constant), Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?, Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?									
b. Predictors: (Constant), Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?, Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?, SQINTUTIONQ1									

Regression of Equation 5.39

$$DEC.EFFECQ1 = k_{43} + k_{44}\ DECENTRALIZATIONQ1 + k_{45}\ DECENTRALIZATIONQ5 + k_O\ (DECENTRALIZATIONQ1)^2 + e_{12} \rightarrow (5.39)$$

Note: $(DECENTRALIZATIONQ1)^2$ is coded in SPSS as SQDECENTRALIZATIONQ1

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.230[a]	.053	.049	1.05705	.053	13.522	2	482	.000
2	.235[b]	.055	.049	1.05708	.002	.969	1	481	.325

a. Predictors: (Constant), Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS), Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)

b. Predictors: (Constant), Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS), Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY), SQDECENTRALIZATIONQ1

Regression of Equation 5.40

$$DEC.EFFECQ2 = k_{46} + k_{47}\ DECENTRALIZATIONQ1 + k_{48}\ DECENTRALIZATIONQ5 + k_P\ (DECENTRALIZATIONQ1)^{2+} e_{13} \rightarrow (5.40)$$

Note: $(DECENTRALIZATIONQ1)^2$ is coded in SPSS as SQDECENTRALIZATIONQ1

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.163[a]	.027	.023	1.01365	.027	6.618	2	482	.001
2	.167[b]	.028	.022	1.01404	.001	.628	1	481	.429

a. Predictors: (Constant), Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS), Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)

b. Predictors: (Constant), Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS), Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY), SQDECENTRALIZATIONQ1

Appendix 5.7 - Test of additive nature of the regression equations 5.4 to 5.13

INTUTIONQ1 = k_{12} + k_{13} DIMPORTANCEQ1 + k_{14} DIMPORTANCEQ5 + k_{15} DIMPORTANCEQ6 + k_{AD} (DIMPORTANCEQ1* DIMPORTANCEQ5) + e_4 → (5.44)

Regression of Equation 5.44

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.623[a]	.388	.385	1.06838	.388	101.787	3	481	.000
2	.624[b]	.389	.384	1.06885	.001	.573	1	480	.449

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?, PRODIM1DIM5

Note: (DIMPORTANCEQ1* DIMPORTANCEQ5) is coded as PRODIM1DIM5 in SPSS.

INTUTIONQ5 = k_{17} + k_{18} DIMPORTANCEQ1 + k_{19} DIMPORTANCEQ5 + k_{20} DIMPORTANCEQ6 + K_{AE} (DIMPORTANCEQ1 * DIMPORTANCEQ5) + e_5 → (5.45)

Regression of Equation 5.45

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.379[a]	.144	.138	.99181	.144	26.906	3	481	.000
2	.380[b]	.145	.138	.99226	.001	.563	1	480	.454

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?, PRODIM1DIM5

Note: (DIMPORTANCEQ1* DIMPORTANCEQ5) is coded as PRODIM1DIM5 in SPSS.

DECENTRALIZATIONQ16 = k_{21} + k_{22} DIMPORTANCEQ1 + k_{23} DIMPORTANCEQ5 + k_{24} DIMPORTANCEQ6 + K_{AF} (DIMPORTANCEQ1 * DIMPORTANCEQ5) + e_6 → (5.46)

Appendix 5.7

Test of additive nature of the regression equations 5.4 to 5.13 linearity - Continued

Regression of Equation 5.46

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.416[a]	.173	.168	.98705	.173	33.594	3	481	.000
2	.418[b]	.175	.168	.98716	.002	.892	1	480	.345
a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?									
b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?, PRODIM1DIM5									

Note: (DIMPORTANCEQ1* DIMPORTANCEQ5) is coded as PRODIM1DIM5 in SPSS.

$$DECENTRALIZATIONQ16 = k_{25} + k_{26}\ DIMPORTANCEQ1 + k_{27}\ DIMPORTANCEQ5 + k_{28}\ DIMPORTANCEQ6 + K_{AG}\ (DIMPORTANCEQ1 * DIMPORTANCEQ5) + e_7 \rightarrow (5.47)$$

Regression of Equation 5.47

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.353[a]	.124	.119	1.07702	.124	22.787	3	481	.000
2	.353[b]	.124	.117	1.07814	.000	.001	1	480	.974
a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?									
b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?, PRODIM1DIM5									

Note: (DIMPORTANCEQ1* DIMPORTANCEQ5) is coded as PRODIM1DIM5 in SPSS.

$$DEC.EFFECQ1 = k_{29} + k_{30}\ RATIONALITYQ2 + k_{31}\ RATIONALITYQ3 + k_{32}\ RATIONALITYQ4 + K_{AH}\ (RATIONALITYQ2* RATIONALITYQ3) + e_8 \rightarrow (5.48)$$

Regression of Equation 5.48

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.416[a]	.173	.168	.98867	.173	33.630	3	481	.000
2	.416[b]	.173	.167	.98969	.000	.008	1	480	.930
a. Predictors: (Constant), Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION , Q8. TO ANALYSE RELEVANT INFORMATION, Q9. TO USE ANALYTIC TECHNIQUES									
b. Predictors: (Constant), Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION , Q8. TO ANALYSE RELEVANT INFORMATION, Q9. TO USE ANALYTIC TECHNIQUES, PRODRATQ2RATQ3									

Note: (RATIONALITYQ2* RATIONALITYQ3) is coded as PRODRATQ2RATQ3 in SPSS.

DEC.EFFECQ2 = k_{33} + k_{34} RATIONALITYQ2 + k_{35} RATIONALITYQ3 + k_{36} RATIONALITYQ4 + K_{AI} (RATIONALITYQ2* RATIONALITYQ3) + e_9 → (5.49)

Regression of Equation 5.49

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.300[a]	.090	.084	.98128	.090	15.814	3	481	.000
2	.300[b]	.090	.083	.98214	.000	.162	1	480	.687
a. Predictors: (Constant), Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION, Q8. TO ANALYSE RELEVANT INFORMATION, Q9. TO USE ANALYTIC TECHNIQUES									
b. Predictors: (Constant), Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION , Q8. TO ANALYSE RELEVANT INFORMATION, Q9. TO USE ANALYTIC TECHNIQUES, PRODRATQ2RATQ3									

Note: (RATIONALITYQ2* RATIONALITYQ3) is coded as PRODRATQ2RATQ3 in SPSS.

DEC.EFFECQ1 = k_{37} + k_{38} INTUTIONQ1 + k_{39} INTUTIONQ5 + k_{AJ} (INTUTIONQ1* INTUTIONQ5) + e_{10} → (5.50)

Regression of Equation 5.50

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.428[a]	.183	.180	.98189	.183	53.978	2	482	.000
2	.431[b]	.186	.181	.98119	.003	1.686	1	481	.195
a. Predictors: (Constant), Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?, Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?									
b. Predictors: (Constant), Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?, Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?, PRODINT1INT5									

Note: (INTUTIONQ1* INTUTIONQ5) is coded as PRODINT1INT5 in SPSS.

DEC.EFFECQ2 = k_{40} + k_{41} INTUTIONQ1 + k_{42} INTUTIONQ1 + k_{AK} (INTUTIONQ1*INTUTIONQ5) + e_{11} → (5.51)

Regression of Equation 5.51

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.308[a]	.095	.091	.97745	.095	25.298	2	482	.000
2	.309[b]	.095	.090	.97820	.000	.258	1	481	.612
a. Predictors: (Constant), Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?, Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?									
b. Predictors: (Constant), Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?, Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?, PRODINT1INT5									

Note: (INTUTIONQ1* INTUTIONQ5) is coded as PRODINT1INT5 in SPSS.

DEC.EFFECQ1 = k_{43} + k_{44} DECENTRALIZATIONQ1 + k_{45} DECENTRALIZATIONQ5 + k_{AL} (DECENTRALIZATIONQ1* DECENTRALIZATIONQ5) + e_{12} → (5.52)

Regression of Equation 5.52

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.230[a]	.053	.049	1.05705	.053	13.522	2	482	.000
2	.284[b]	.081	.075	1.04263	.028	14.427	1	481	.000
a. Predictors: (Constant), Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS), Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)									
b. Predictors: (Constant), Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS), Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY), PRODDDECENTQ1DECENTQ5									

Note: (DECENTRALIZATIONQ1* DECENTRALIZATIONQ5) is coded as PRODDDECENTQ1DECENTQ5 in SPSS.

Note: Model 2 indicates that the product term PRODDDECENTQ1DECENTQ5 when regressed along with the two variables DECENTRALIZATIONQ1 and DECENTRALIZATIONQ5 to determine the dependent variable DEC.EFFECQ1 shows that the regressed output is significant which indicates that the model 2 is acceptable. This indicates non-additivity. In this situation a decision was taken to rewrite equation 5.12 for instance

$DEC.EFFECQ1 = k_{43} + k_{44}\ DECENTRALIZATIONQ1 + e_{12}$ or

$DEC.EFFECQ1 = k_{43} + k_{45}\ DECENTRALIZATIONQ5 + e_{12}$

This will ensure that additive property is not applied to the regression equation.

PRODDDECENTQ1DECENTQ5

$$DEC.EFFECQ2 = k_{46} + k_{47}\ DECENTRALIZATIONQ1 + k_{48}\ DECENTRALIZATIONQ5 + k_{AL}\ (DECENTRALIZATIONQ1^{*}\ DECENTRALIZATIONQ5) + e_{12} \rightarrow (5.53)$$

Regression equation 5.53

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.163[a]	.027	.023	1.01365	.027	6.618	2	482	.001
2	.164[b]	.027	.021	1.01465	.000	.050	1	481	.823

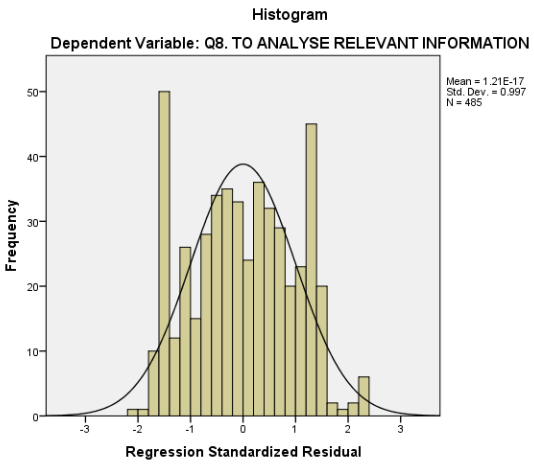
a. Predictors: (Constant), Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS), Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)

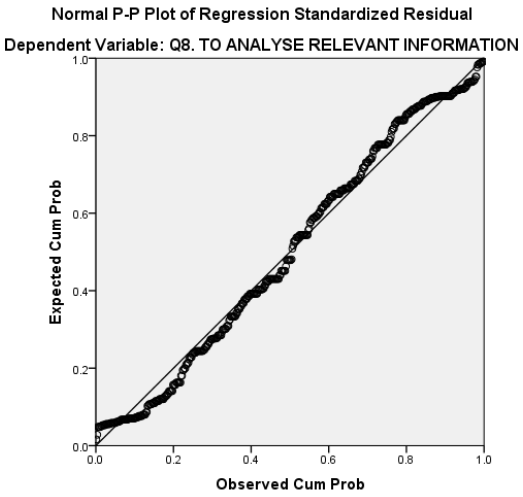
b. Predictors: (Constant), Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS), Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY), PRODDDECENTQ1DECENTQ5

Note: (DECENTRALIZATIONQ1* DECENTRALIZATIONQ5) is coded as PRODDDECENTQ1DECENTQ5 in SPSS.

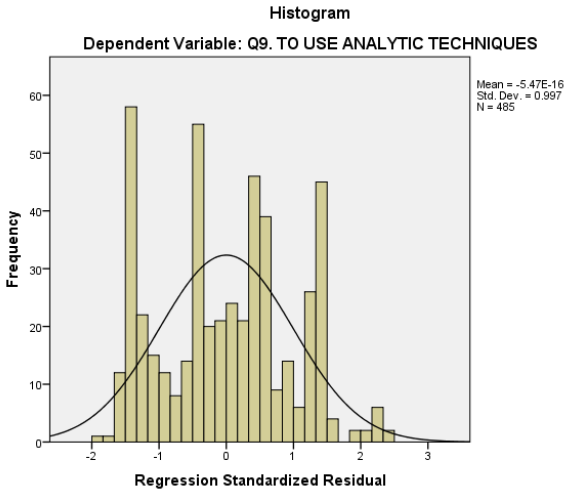
Appendix 5.8- Normality test using residuals: Application of Normal P-P plot of regression standardized residual using SPSS (refer to Janssens et al. 2008).

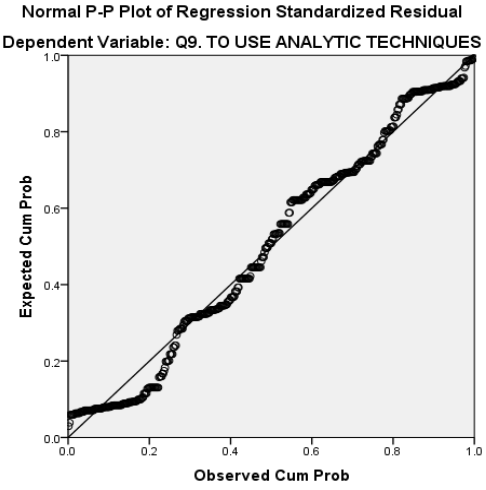
A. Normality test of residuals concerning equation 5.1 using Histogram and normal P-P plot of regression standardized residual.





B. Normality test of residuals concerning equation 5.2 using Histogram and normal P-P plot of regression standardized residual.

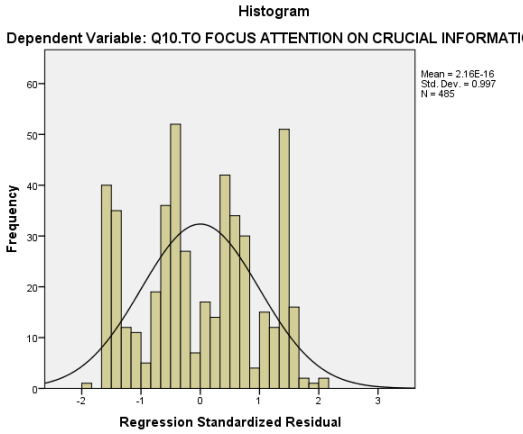


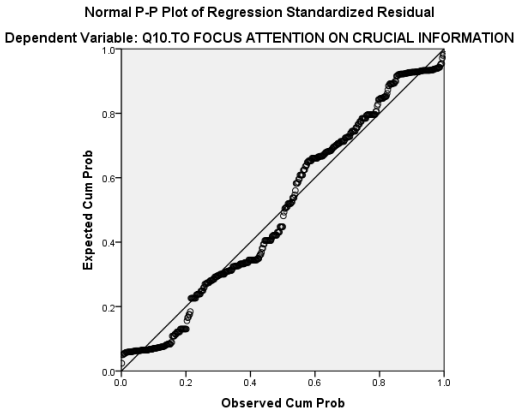


Appendix 5.8

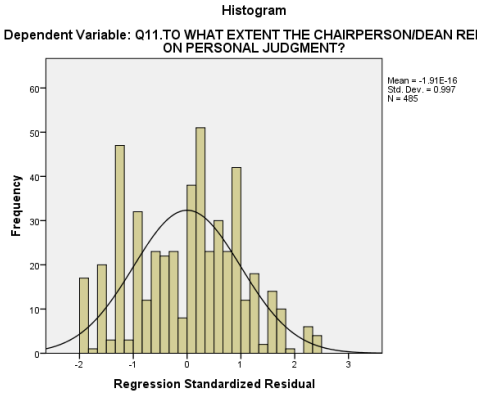
Normality test using residuals: Application of Normal P-P plot of regression standardized residual using SPSS (refer to Janssens et al. 2008) - Continued

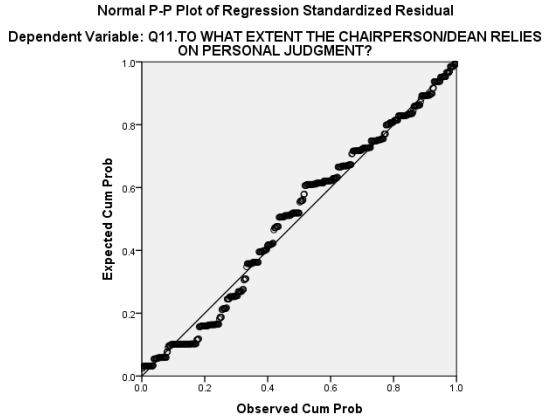
C. Normality test of residuals concerning equation 5.3 using Histogram and normal P-P plot of regression standardized residual.



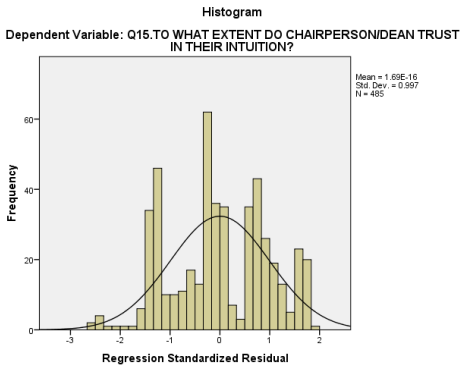


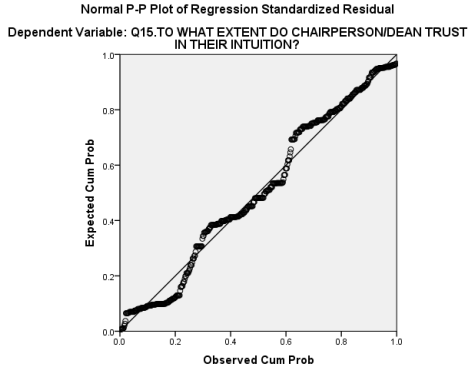
D. Normality test of residuals concerning equation 5.4 using Histogram and normal P-P plot of regression standardized residual.





E. Normality test of residuals concerning equation 5.5 using Histogram and normal P-P plot of regression standardized residual.

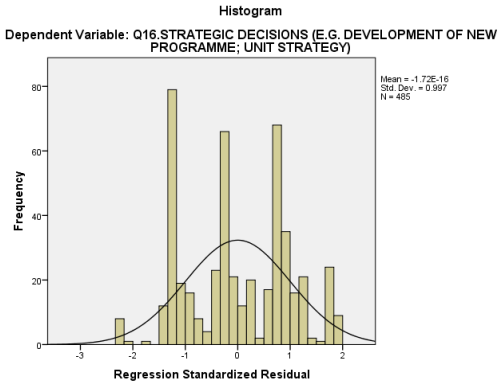


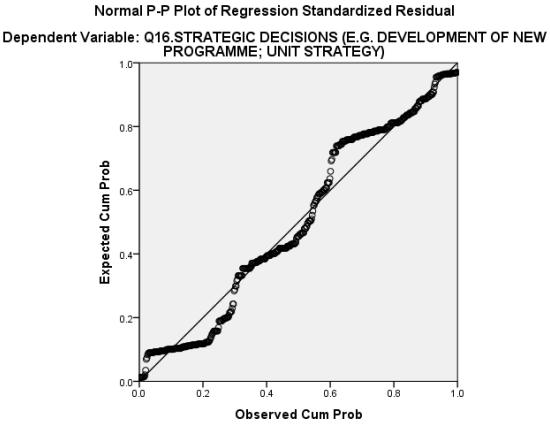


Appendix 5.8

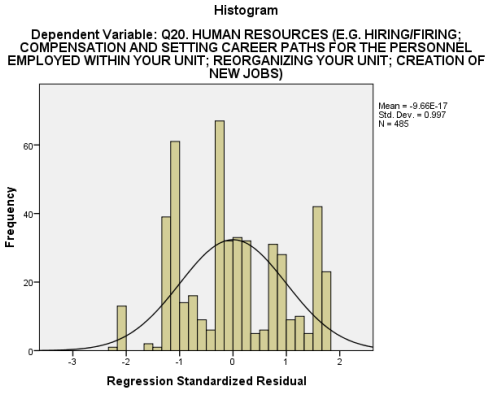
Normality test using residuals: Application of Normal P-P plot of regression standardized residual using SPSS (refer to Janssens et al. 2008) - Continued

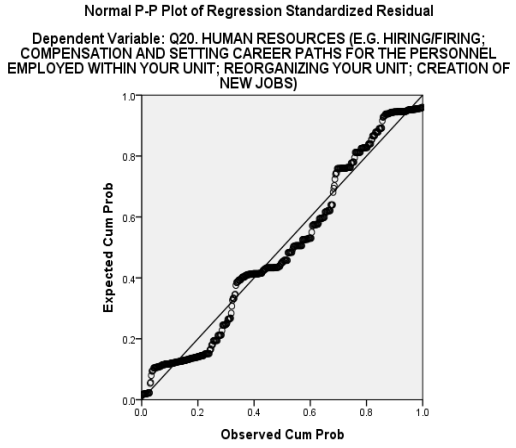
F. Normality test of residuals concerning equation 5.6 using Histogram and normal P-P plot of regression standardized residual.





G. Normality test of residuals concerning equation 5.7 using Histogram and normal P-P plot of regression standardized residual.

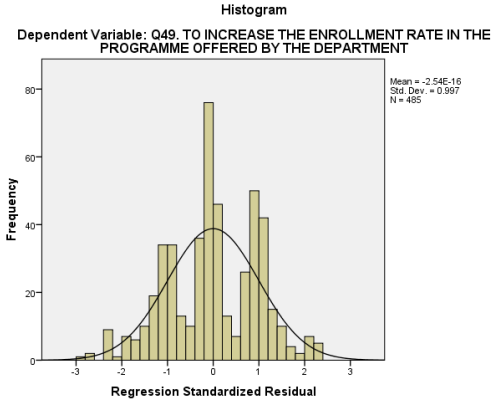


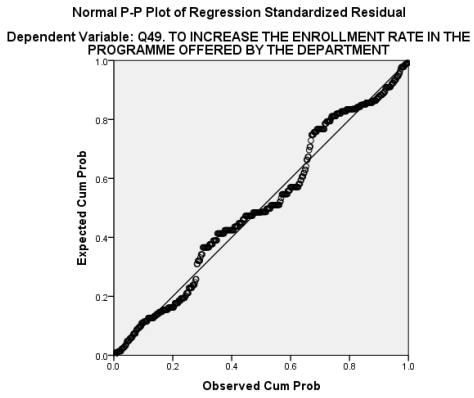


Appendix 5.8

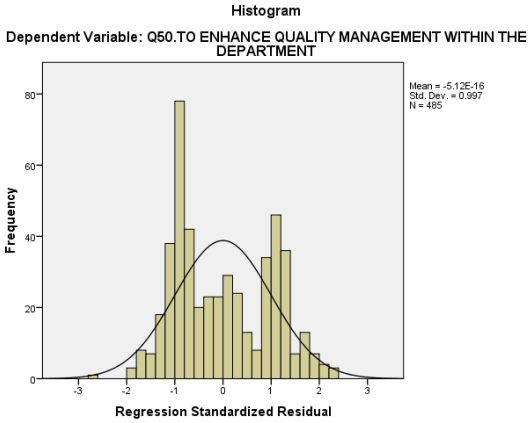
Normality test using residuals: Application of Normal P-P plot of regression standardized residual using SPSS (refer to Janssens et al. 2008) - Continued

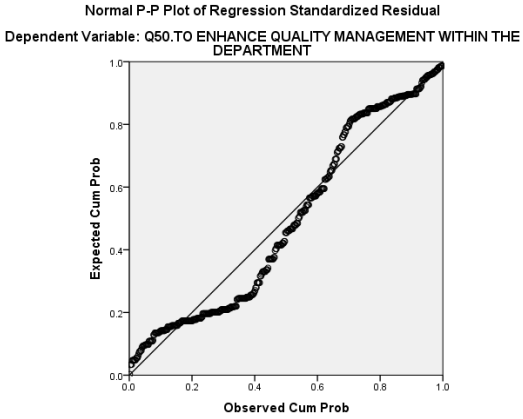
H. Normality test of residuals concerning equation 5.8 using Histogram and normal P-P plot of regression standardized residual.



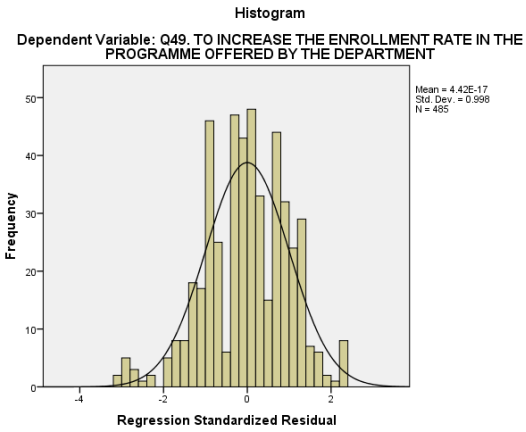


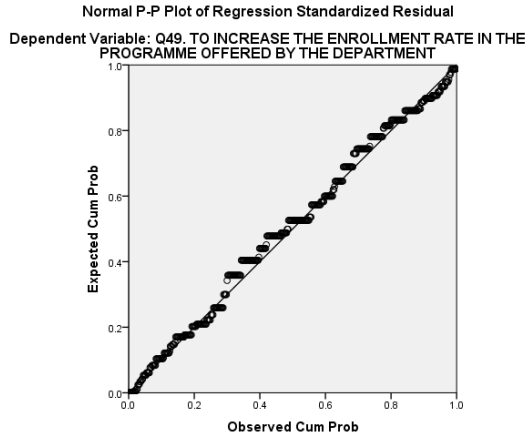
I. Normality test of residuals concerning equation 5.9 using Histogram and normal P-P plot of regression standardized residual.





J. Normality test of residuals concerning equation 5.10 using Histogram and normal P-P plot of regression standardized residual.

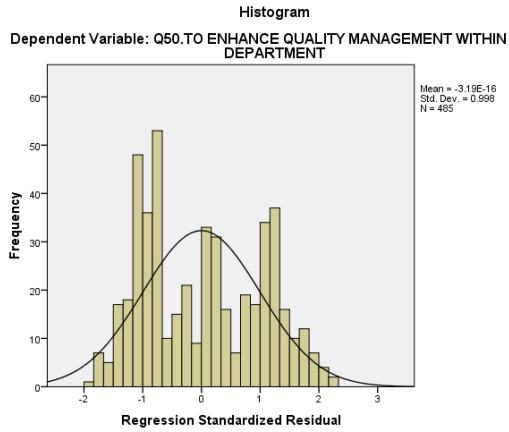


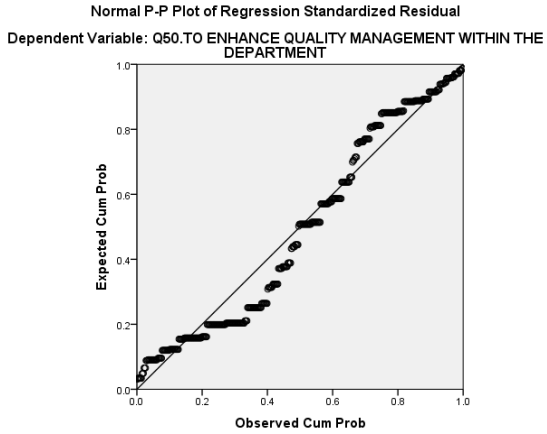


Appendix 5.8

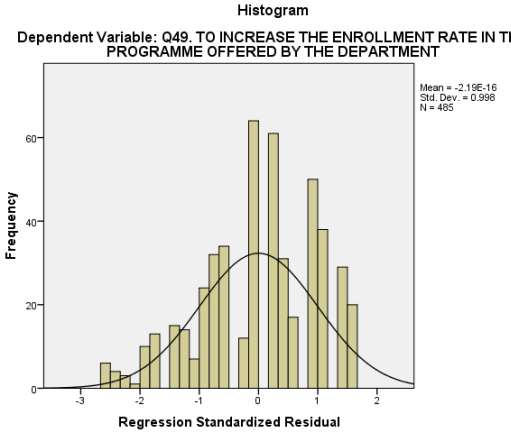
Normality test using residuals: Application of Normal P-P plot of regression standardized residual using SPSS (refer to Janssens et al. 2008) - Continued

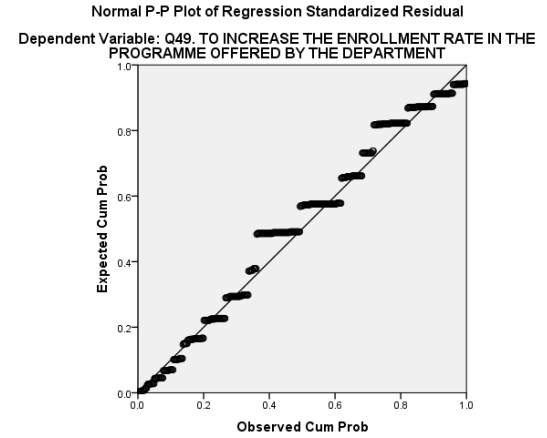
K. Normality test of residuals concerning equation 5.11 using Histogram and normal P-P plot of regression standardized residual.



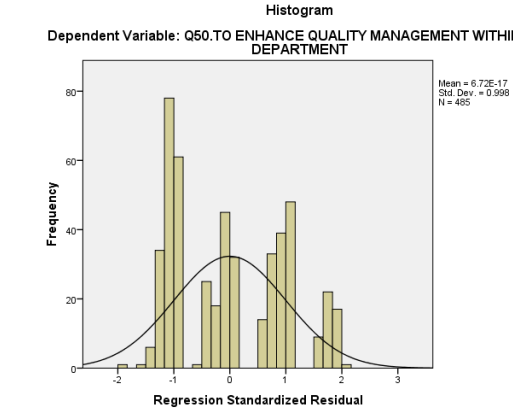


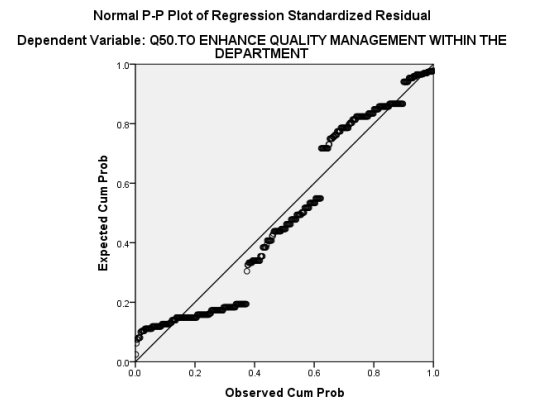
L. Normality test of residuals concerning equation 5.12 using Histogram and normal P-P plot of regression standardized residual.





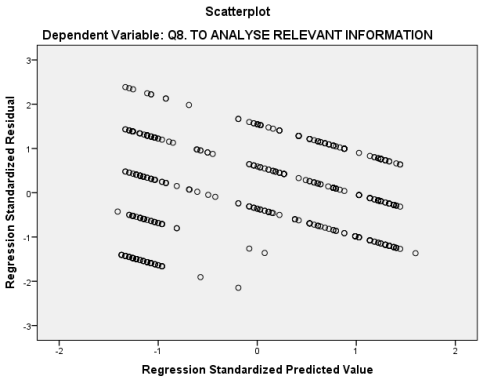
M. Normality test of residuals concerning equation 5.13 using Histogram and normal P-P plot of regression standardized residual.



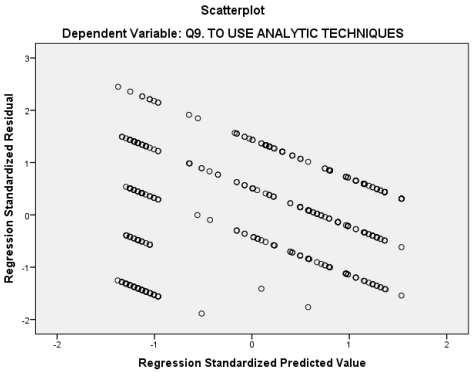


Appendix 5.9

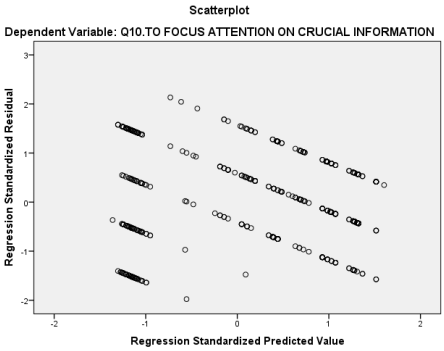
Homoscedasticity



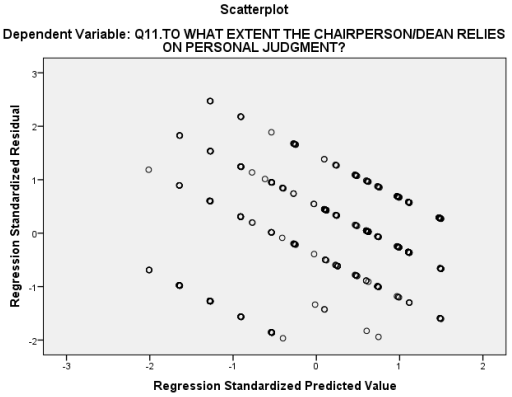
Equation 5.1



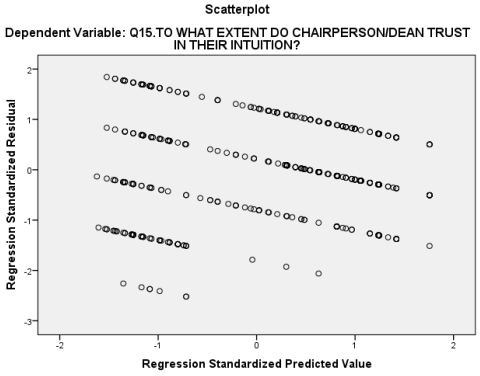
Equation 5.2



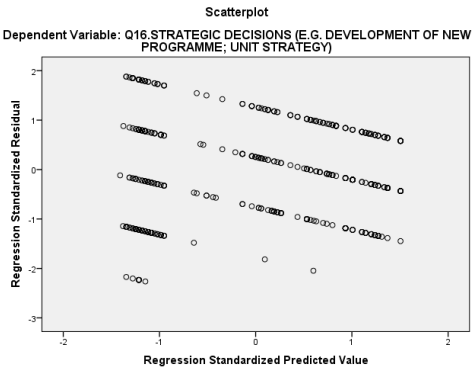
Equation 5.3



Equation 5.4



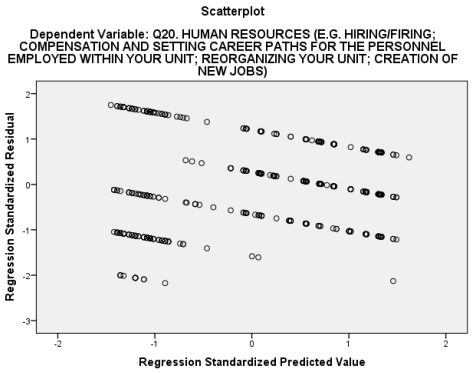
Equation 5.5



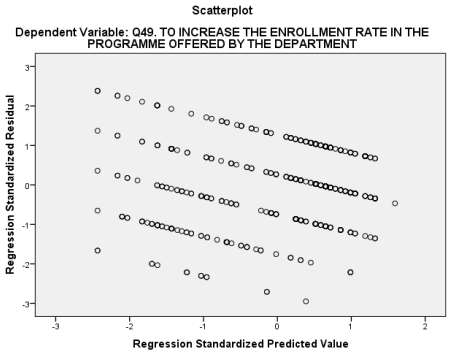
Equation 5.6

Appendix 5.9

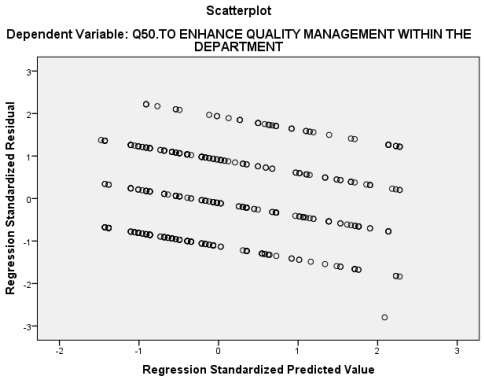
Homoscedasticity - Continued



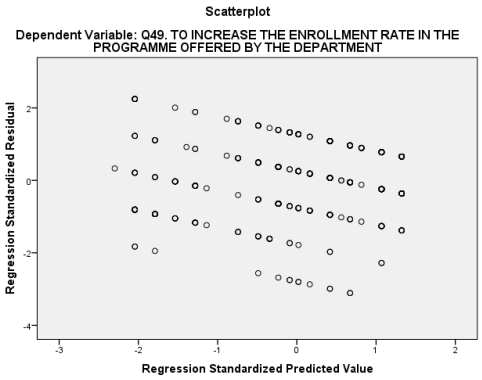
Equation 5.7



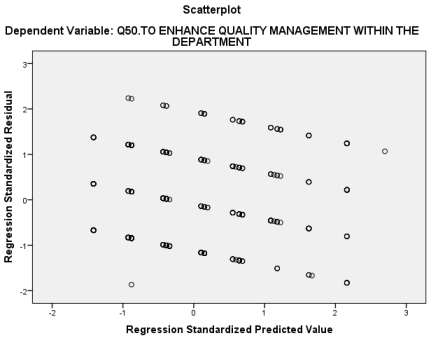
Equation 5.8



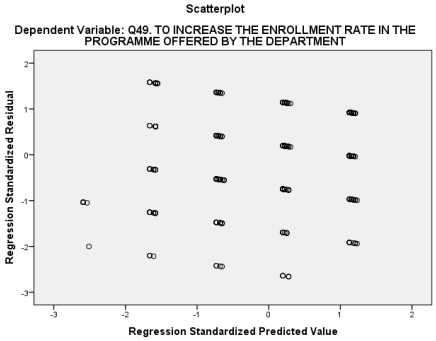
Equation 9



Equation 10



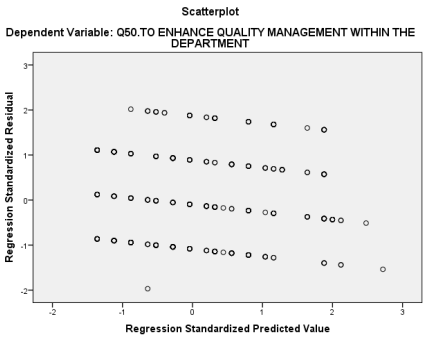
Equation 11



Equation 12

Appendix 5.9

Homoscedasticity - Continued



Equation 13

Appendix 5.10 Regression

Equation 5.1

Model Summary[b]										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.534[a]	.285	.281	1.04863	.285	63.972	3	481	.000	2.018
a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?										
b. Dependent Variable: Q8. TO ANALYSE RELEVANT INFORMATION										

Model summary for equation 5.1

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	211.033	3	70.344	63.972	.000[b]
	Residual	528.917	481	1.100		
	Total	739.951	484			
a. Dependent Variable: Q8. TO ANALYSE RELEVANT INFORMATION						
b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?						

ANOVA report for equation 5.1

Coefficients[a]										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2.383	.201		11.832	.000	1.987	2.779		
	Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?	.402	.031	.534	12.925	.000	.341	.463	.872	1.147
	Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?	-.073	.053	-.057	-1.374	.170	-.177	.031	.873	1.145
	Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?	.026	.018	.057	1.423	.155	-.010	.061	.916	1.092
a. Dependent Variable: Q8. TO ANALYSE RELEVANT INFORMATION										

Equation 5.2

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.594[a]	.352	.348	1.07975	.352	87.240	3	481	.000	1.882

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Dependent Variable: Q9. TO USE ANALYTIC TECHNIQUES

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	305.130	3	101.710	87.240	.000[b]
	Residual	560.779	481	1.166		
	Total	865.909	484			

a. Dependent Variable: Q9. TO USE ANALYTIC TECHNIQUES

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	1.737	.207		8.375	.000	1.329	2.144		
	Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?	.453	.032	.556	14.140	.000	.390	.516	.872	1.147
	Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?	.064	.055	.046	1.181	.238	-.043	.172	.873	1.145

	Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?	.034	.019	.070	1.837	.067	-.002	.071	.916	1.092
a. Dependent Variable: Q9. TO USE ANALYTIC TECHNIQUES										

Equation 5.3

Model Summary[b]										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.609[a]	.371	.367	1.00614	.371	94.482	3	481	.000	2.022
a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?										
b. Dependent Variable: Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION										

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	286.940	3	95.647	94.482	.000[b]
	Residual	486.928	481	1.012		
	Total	773.868	484			
a. Dependent Variable: Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION						
b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?						

Coefficients[a]										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2.039	.193		10.553	.000	1.659	2.419		
	Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?	.452	.030	.586	15.128	.000	.393	.510	.872	1.147
	Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?	-.034	.051	-.026	-.661	.509	-.134	.066	.873	1.145

	Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?	.045	.017	.099	2.620	.009	.011	.080	.916	1.092
a. Dependent Variable: Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION										

Equation 5.4

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.623[a]	.388	.385	1.06838	.388	101.787	3	481	.000	1.917

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Dependent Variable: Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	348.549	3	116.183	101.787	.000[b]
	Residual	549.027	481	1.141		
	Total	897.575	484			

a. Dependent Variable: Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	.985	.205		4.799	.000	.581	1.388		
	Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?	.428	.032	.515	13.493	.000	.366	.490	.872	1.147
	Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?	.313	.054	.221	5.790	.000	.207	.419	.873	1.145

	Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?	.002	.018	.005	.132	.895	-.034	.039	.916	1.092

a. Dependent Variable: Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?

Equation 5.5

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.379[a]	.144	.138	.99181	.144	26.906	3	481	.000	2.118

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Dependent Variable: Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	79.400	3	26.467	26.906	.000[b]
	Residual	473.149	481	.984		
	Total	552.548	484			

a. Dependent Variable: Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2.748	.190		14.425	.000	2.373	3.122		

	Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?	.208	.029	.319	7.058	.000	.150	.266	.872	1.147
	Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?	.075	.050	.067	1.491	.137	-.024	.173	.873	1.145
	Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?	.034	.017	.088	1.995	.047	.001	.068	.916	1.092
a. Dependent Variable: Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?										

Equation 5.6

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.416[a]	.173	.168	.98705	.173	33.594	3	481	.000	2.101

a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

b. Dependent Variable: Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	98.188	3	32.729	33.594	.000[b]
	Residual	468.625	481	.974		
	Total	566.812	484			

a. Dependent Variable: Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)

b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF

1	(Constant)	2.769	.190		14.606	.000	2.396	3.141		
	Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?	.258	.029	.391	8.799	.000	.200	.315	.872	1.147
	Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?	.044	.050	.039	.877	.381	-.054	.142	.873	1.145
	Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?	.015	.017	.039	.894	.372	-.018	.049	.916	1.092
a. Dependent Variable: Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)										

Equation 5.7

Model Summary[b]										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.353[a]	.124	.119	1.07702	.124	22.787	3	481	.000	1.997
a. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?										
b. Dependent Variable: Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)										

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	79.298	3	26.433	22.787	.000[b]
	Residual	557.947	481	1.160		
	Total	637.245	484			
a. Dependent Variable: Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)						
b. Predictors: (Constant), Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?, Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?, Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?						

Coefficients[a]										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	3.163	.207		15.291	.000	2.756	3.569		
	Q1. HOW FAR DID YOU ANTICIPATE A DECISION TO CHANGE THINGS IN YOUR DEPARTMENT?	.250	.032	.358	7.826	.000	.187	.313	.872	1.147
	Q5. HOW IMPORTANT WAS THAT DECISION TO THE INSTITUTION?	-.062	.054	-.052	-1.143	.253	-.169	.045	.873	1.145
	Q6. HOW FAR AHEAD IN THE FUTURE DID YOU INITIALLY EXPECT THE DECISION TO SIGNIFICANTLY INFLUENCE THE WHOLE INSTITUTION?	.013	.019	.032	.713	.476	-.023	.050	.916	1.092
a. Dependent Variable: Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)										

Equation 5.8

Model Summary[b]										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.416[a]	.173	.168	.98867	.173	33.630	3	481	.000	2.106
a. Predictors: (Constant), Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION , Q8. TO ANALYSE RELEVANT INFORMATION, Q9. TO USE ANALYTIC TECHNIQUES										
b. Dependent Variable: Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT										

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	98.619	3	32.873	33.630	.000[b]
	Residual	470.165	481	.977		
	Total	568.784	484			
a. Dependent Variable: Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT						
b. Predictors: (Constant), Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION , Q8. TO ANALYSE RELEVANT INFORMATION, Q9. TO USE ANALYTIC TECHNIQUES						

Coefficients[a]										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2.189	.163		13.394	.000	1.868	2.511		
	Q8. TO ANALYSE RELEVANT INFORMATION	.122	.040	.139	3.031	.003	.043	.201	.816	1.226
	Q9. TO USE ANALYTIC TECHNIQUES	.182	.038	.225	4.756	.000	.107	.257	.770	1.299
	Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION	.150	.040	.175	3.744	.000	.071	.229	.785	1.274
a. Dependent Variable: Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT										

Equation 5.9

Model Summary[b]										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.300[a]	.090	.084	.98128	.090	15.814	3	481	.000	1.912
a. Predictors: (Constant), Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION, Q8. TO ANALYSE RELEVANT INFORMATION, Q9. TO USE ANALYTIC TECHNIQUES										
b. Dependent Variable: Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT										

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	45.682	3	15.227	15.814	.000[b]
	Residual	463.164	481	.963		
	Total	508.845	484			
a. Dependent Variable: Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT						
b. Predictors: (Constant), Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION , Q8. TO ANALYSE RELEVANT INFORMATION, Q9. TO USE ANALYTIC TECHNIQUES						

Coefficients[a]										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	4.091	.162		25.215	.000	3.772	4.410		
	Q8. TO ANALYSE RELEVANT INFORMATION	-.015	.040	-.017	-.363	.717	-.093	.064	.816	1.226
	Q9. TO USE ANALYTIC TECHNIQUES	-.114	.038	-.149	-3.011	.003	-.189	-.040	.770	1.299
	Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION	-.159	.040	-.196	-4.000	.000	-.237	-.081	.785	1.274
a. Dependent Variable: Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT										

Equation 5.10

Model Summary[b]										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.428[a]	.183	.180	.98189	.183	53.978	2	482	.000	1.967
a. Predictors: (Constant), Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?, Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?										
b. Dependent Variable: Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT										

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	104.081	2	52.041	53.978	.000[b]
	Residual	464.702	482	.964		
	Total	568.784	484			
a. Dependent Variable: Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT						
b. Predictors: (Constant), Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?, Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?						

Coefficients[a]										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2.256	.179		12.626	.000	1.905	2.608		
	Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?	.302	.034	.379	8.821	.000	.235	.369	.916	1.092
	Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?	.118	.044	.116	2.699	.007	.032	.204	.916	1.092
a. Dependent Variable: Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT										

Equation 5.11

Model Summary[b]										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.308[a]	.095	.091	.97745	.095	25.298	2	482	.000	1.906
a. Predictors: (Constant), Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?, Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?										
b. Dependent Variable: Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT										

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	48.340	2	24.170	25.298	.000[b]
	Residual	460.505	482	.955		
	Total	508.845	484			
a. Dependent Variable: Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT						

b. Predictors: (Constant), Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?, Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	4.281	.178		24.064	.000	3.931	4.631		
	Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?	-.155	.034	-.206	-4.557	.000	-.222	-.088	.916	1.092
	Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?	-.170	.043	-.177	-3.907	.000	-.255	-.084	.916	1.092

a. Dependent Variable: Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT

Equation 5.12

Correlations

		Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT	Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)	Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)
Pearson Correlation	Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT	1.000	.230	.038
	Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)	.230	1.000	.195
	Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)	.038	.195	1.000

Sig. (1-tailed)	Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT	.	.000	.202
	Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)	.000	.	.000
	Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)	.202	.000	.
N	Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT	485	485	485
	Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)	485	485	485
	Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)	485	485	485

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.230[a]	.053	.049	1.05705	.053	13.522	2	482	.000	1.796

a. Predictors: (Constant), Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS), Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)

b. Dependent Variable: Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30.218	2	15.109	13.522	.000[b]
	Residual	538.565	482	1.117		
	Total	568.784	484			

a. Dependent Variable: Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT

b. Predictors: (Constant), Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS), Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2.896	.214		13.554	.000	2.477	3.316		
	Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)	.232	.045	.232	5.129	.000	.143	.321	.962	1.039
	Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)	-.007	.043	-.007	-.158	.875	-.091	.077	.962	1.039

a. Dependent Variable: Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT

Equation 5.13

Correlations

		Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT	Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)	Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)
Pearson Correlation	Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT	1.000	-.157	-.074
	Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)	-.157	1.000	.195

	Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)	-.074	.195	1.000
Sig. (1-tailed)	Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT	.	.000	.052
	Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)	.000	.	.000
	Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)	.052	.000	.
N	Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT	485	485	485
	Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)	485	485	485
	Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)	485	485	485

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.163[a]	.027	.023	1.01365	.027	6.618	2	482	.001	1.832

a. Predictors: (Constant), Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS), Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)

b. Dependent Variable: Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.600	2	6.800	6.618	.001[b]
	Residual	495.246	482	1.027		
	Total	508.845	484			

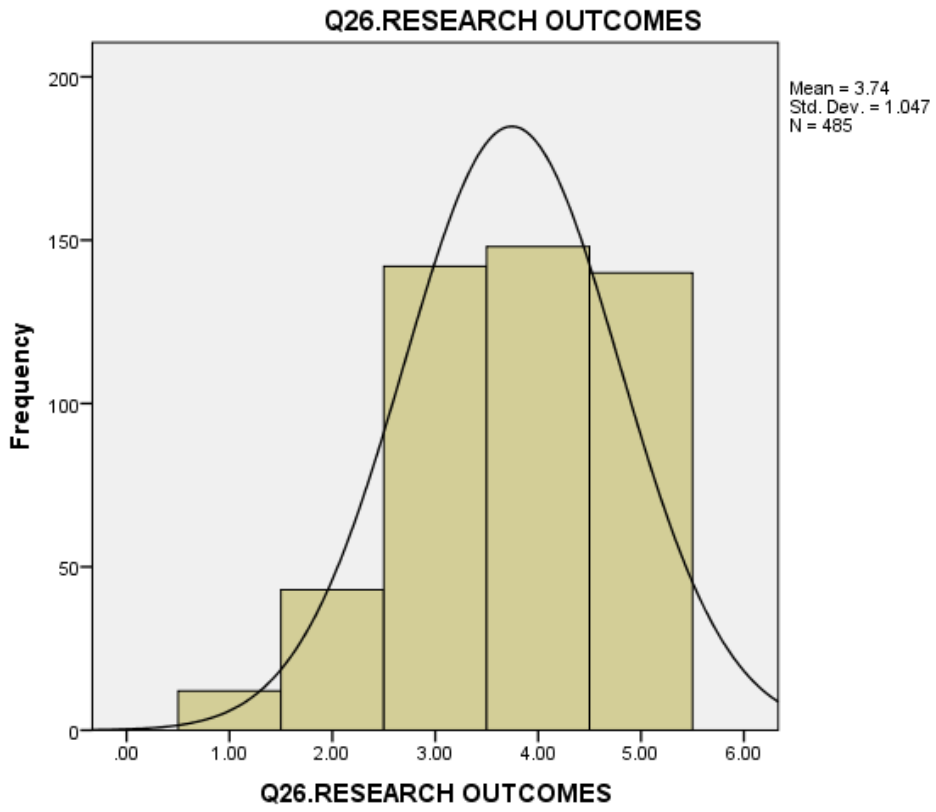
a. Dependent Variable: Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT

b. Predictors: (Constant), Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS), Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)

Coefficients[a]										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	3.780	.205		18.448	.000	3.378	4.183		
	Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)	-.141	.043	-.149	-3.244	.001	-.226	-.056	.962	1.039
	Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)	-.040	.041	-.045	-.984	.326	-.121	.040	.962	1.039
a. Dependent Variable: Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT										

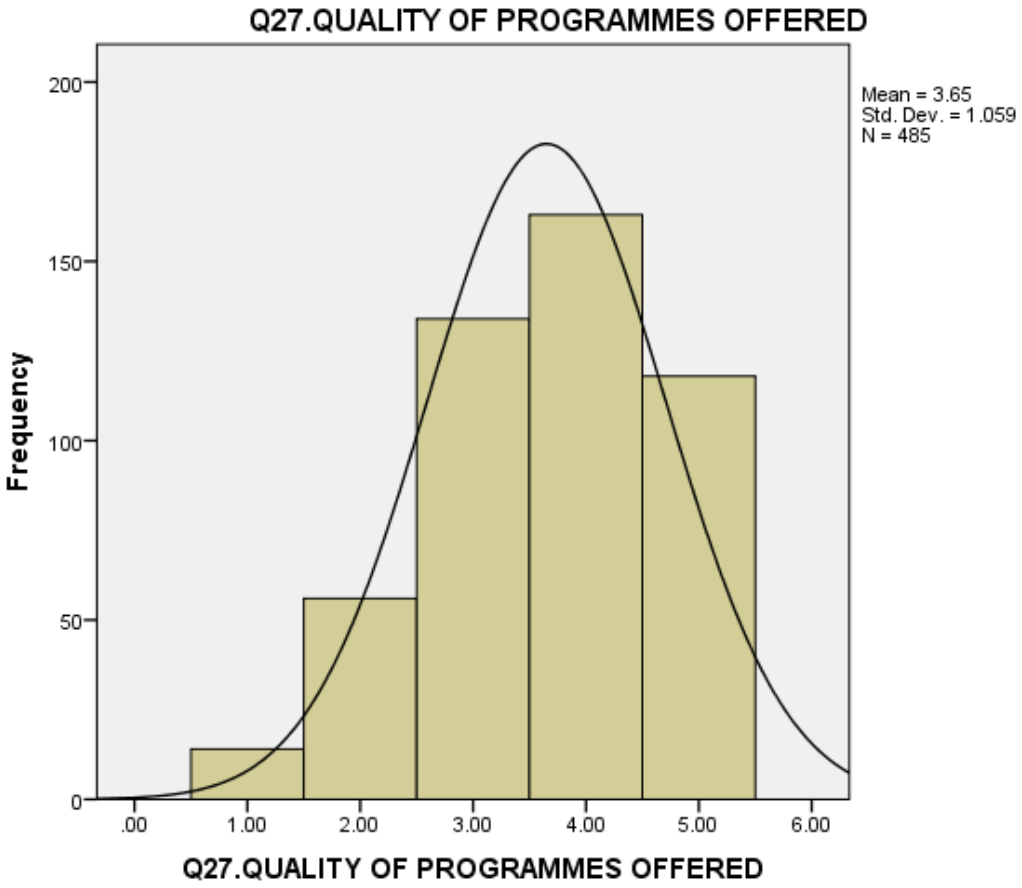
Appendix 5.11

Normality Test for Internal, External and Decision Effectiveness Items



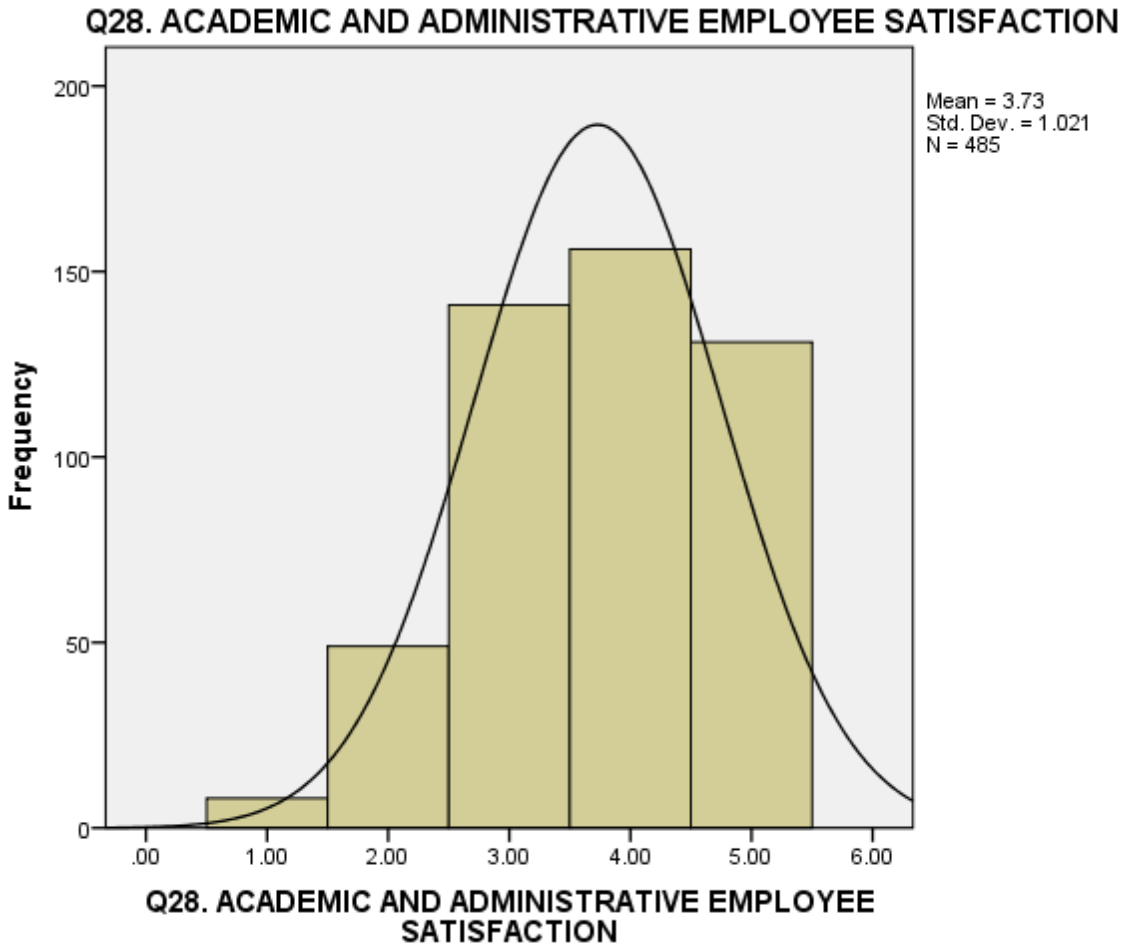
Appendix 5.11

Normality Test for Internal, External and Decision Effectiveness Items – Continued



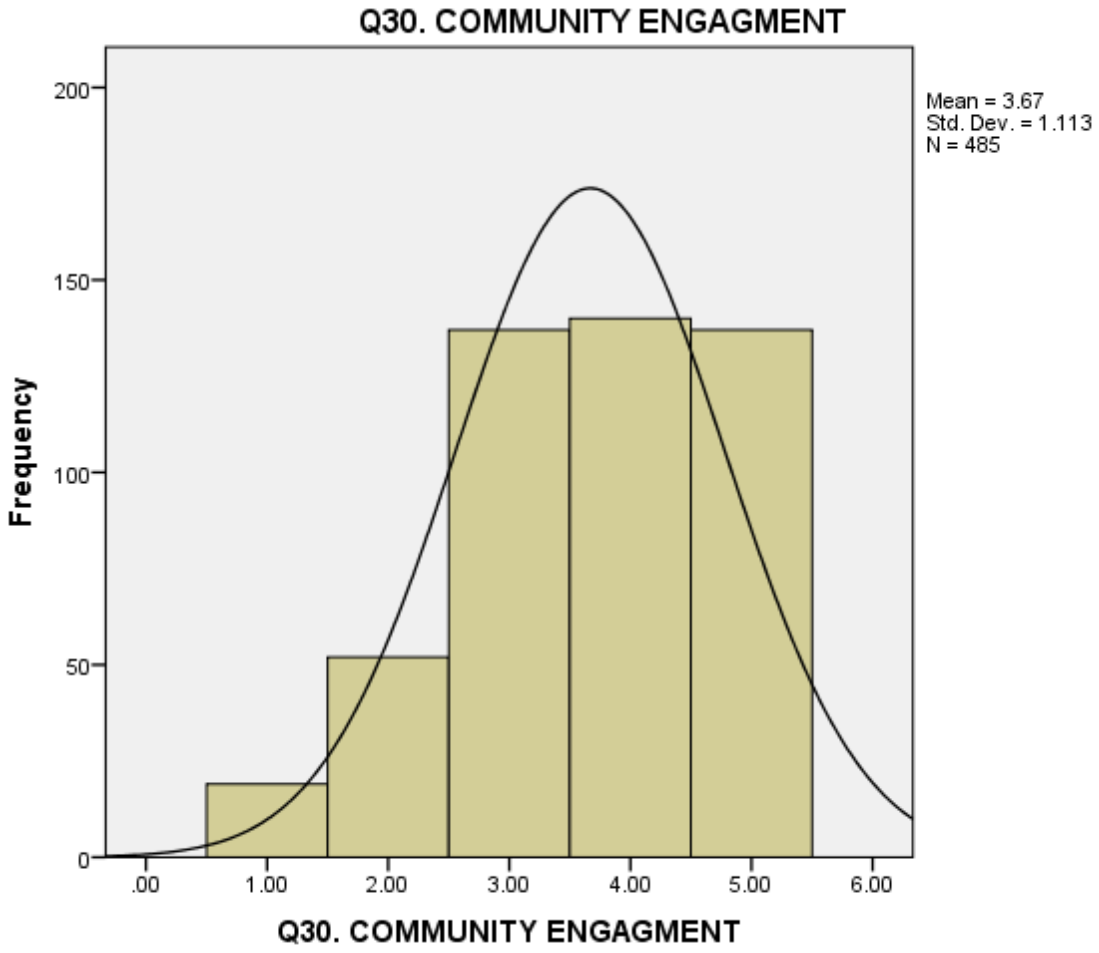
Appendix 5.11

Normality Test for Internal, External and Decision Effectiveness Items – Continued



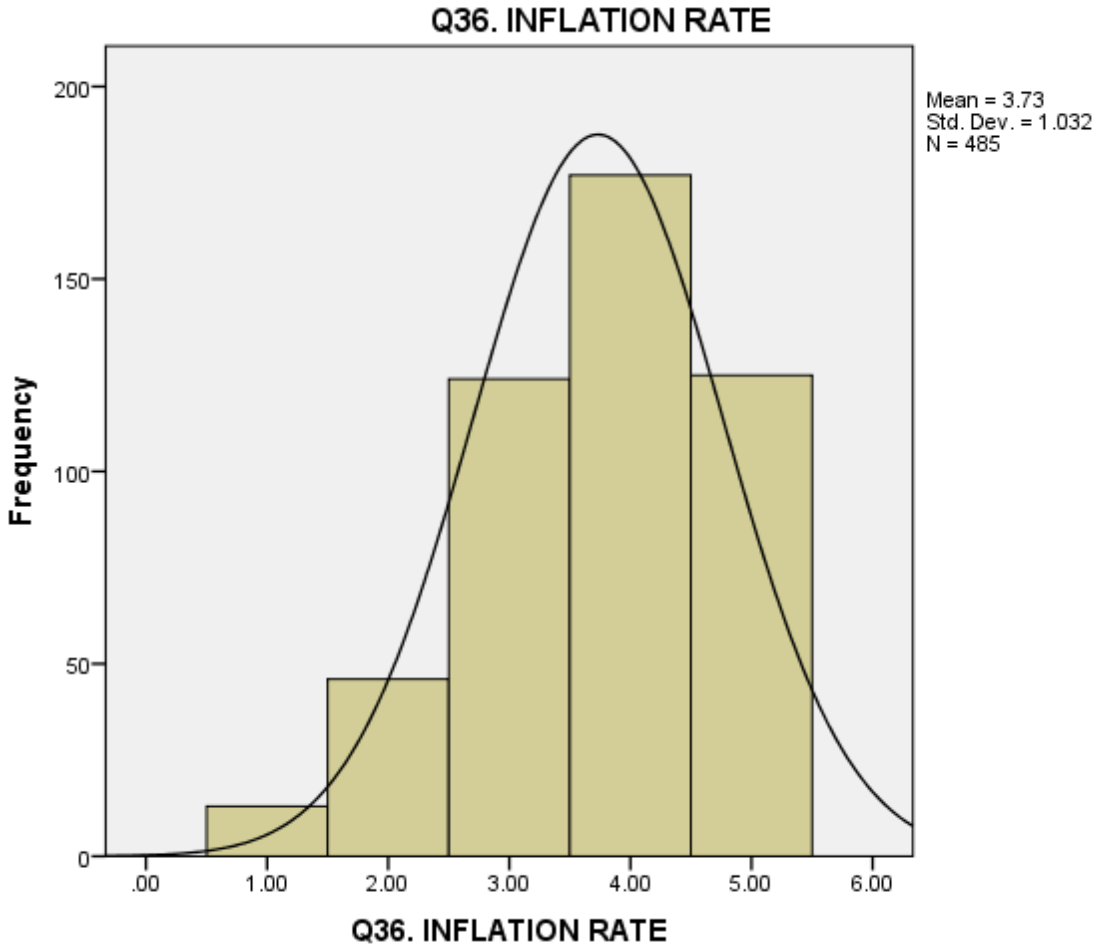
Appendix 5.11

Normality Test for Internal, External and Decision Effectiveness Items – Continued



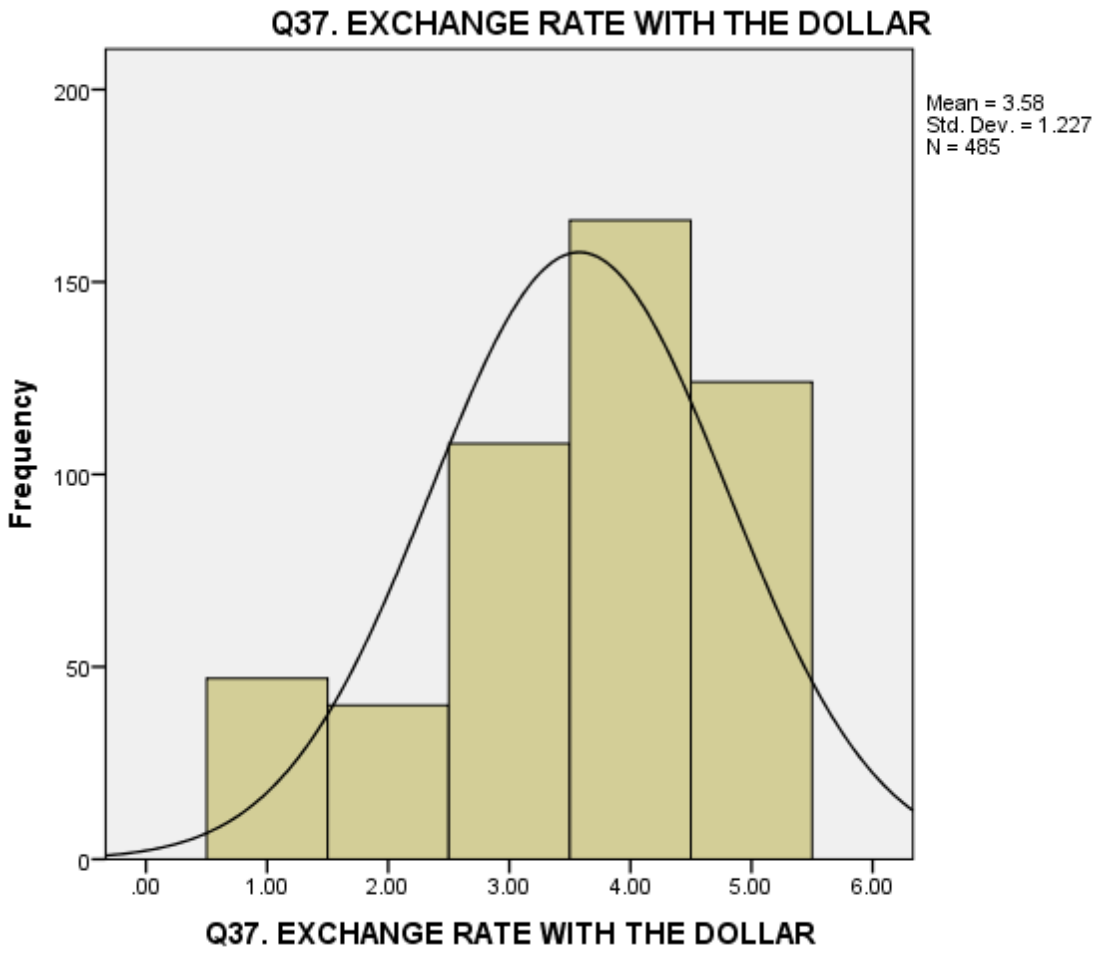
Appendix 5.11

Normality Test for Internal, External and Decision Effectiveness Items – Continued



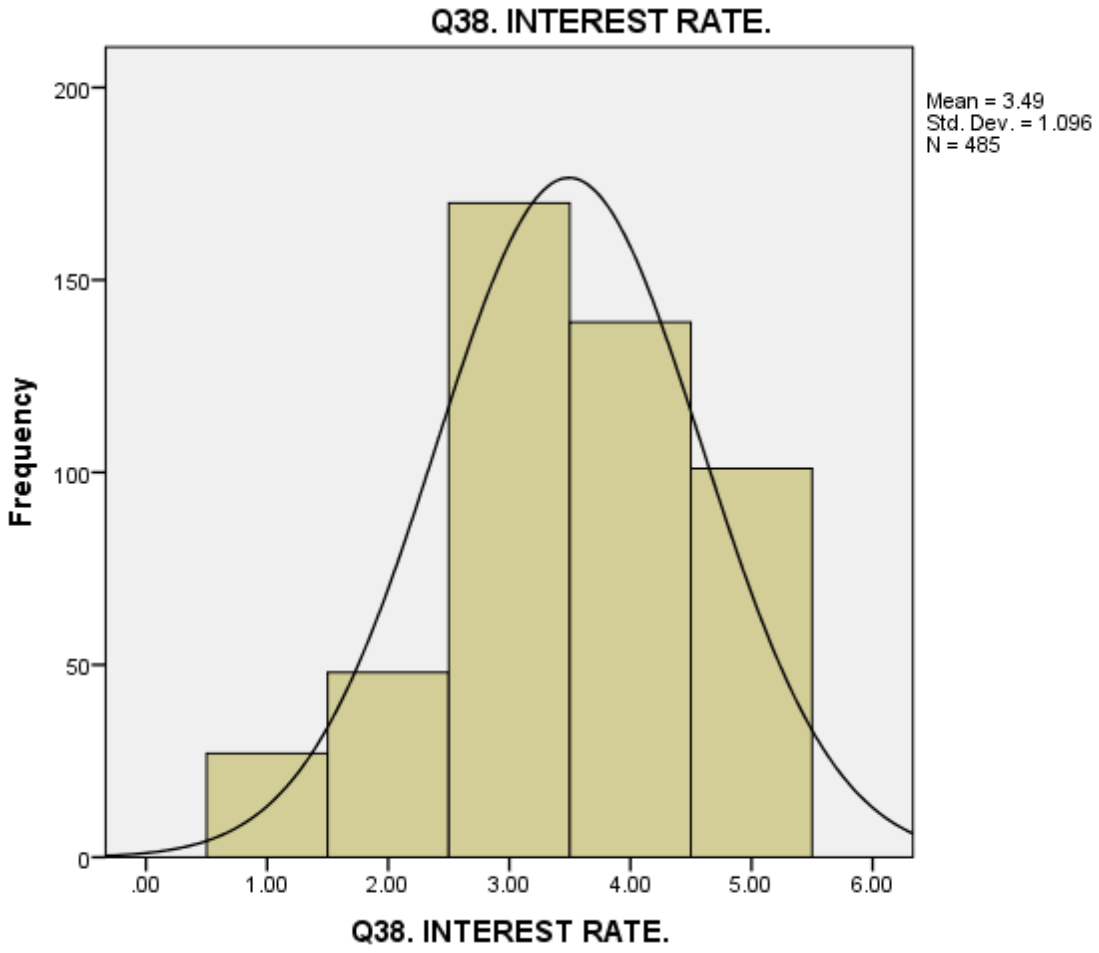
Appendix 5.11

Normality Test for Internal, External and Decision Effectiveness Items – Continued



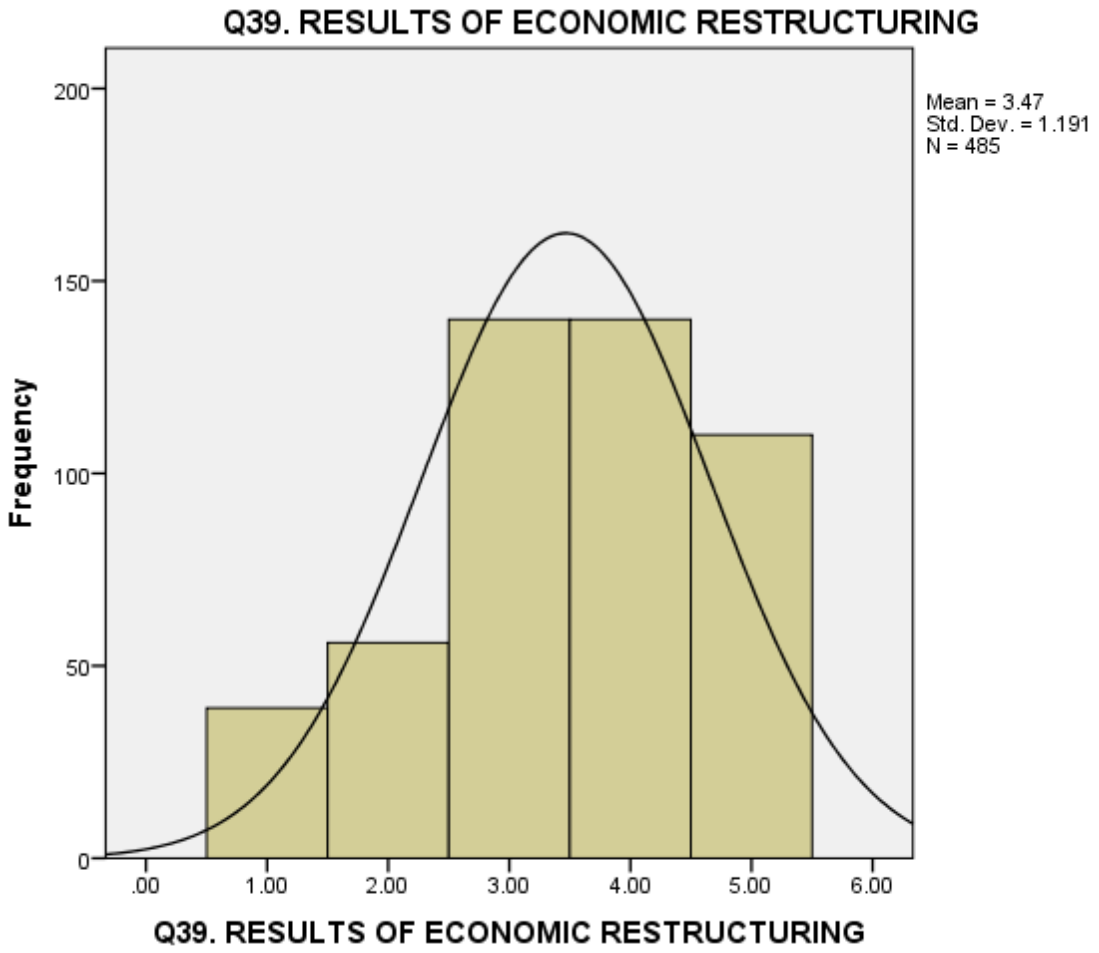
Appendix 5.11

Normality Test for Internal, External and Decision Effectiveness Items – Continued



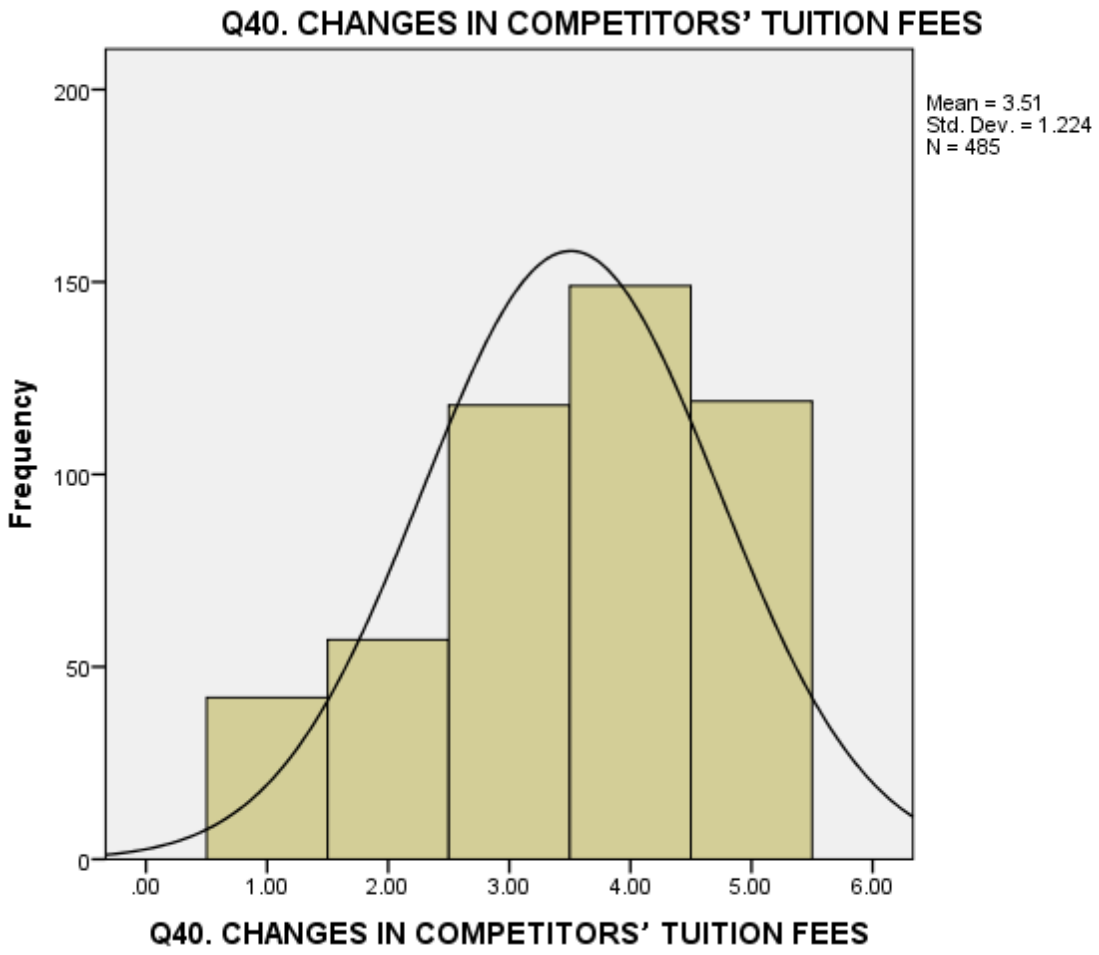
Appendix 5.11

Normality Test for Internal, External and Decision Effectiveness Items – Continued



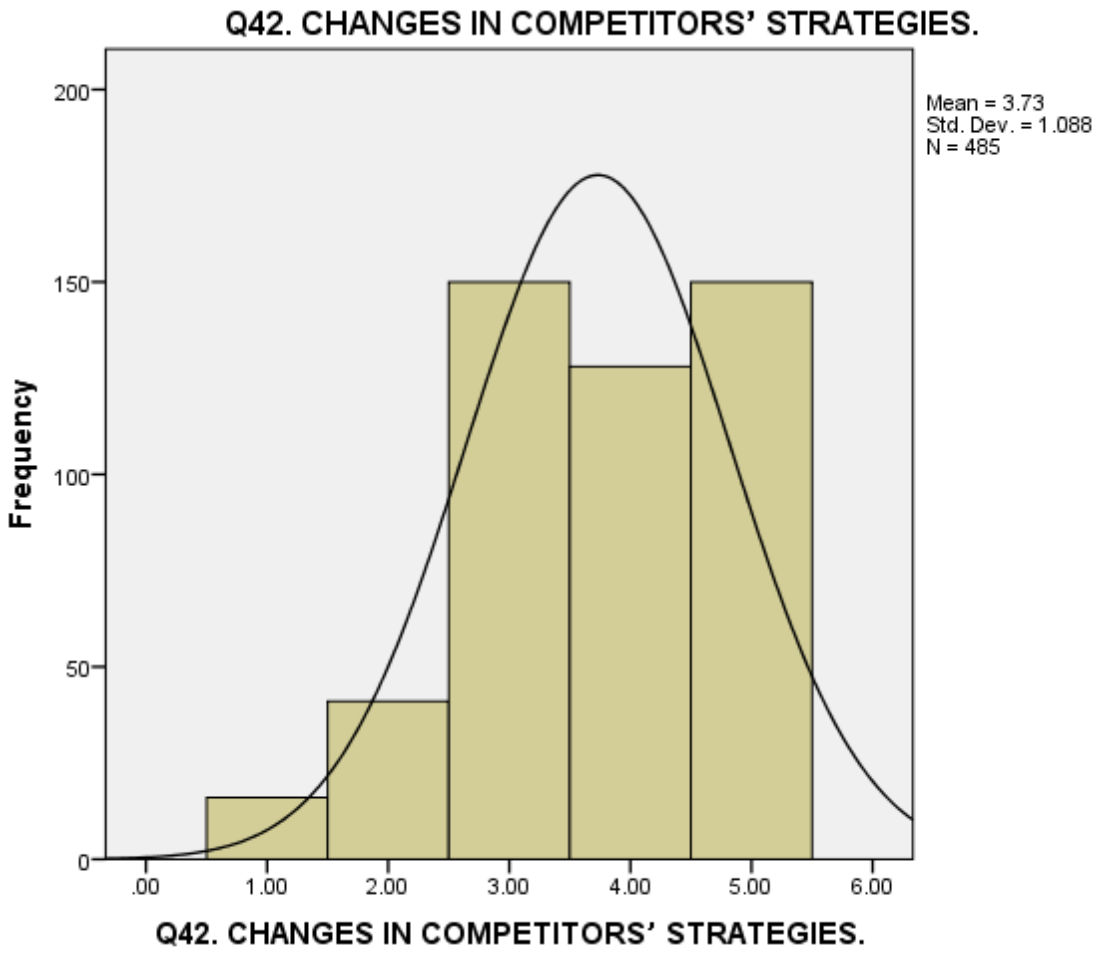
Appendix 5.11

Normality Test for Internal, External and Decision Effectiveness Items – Continued



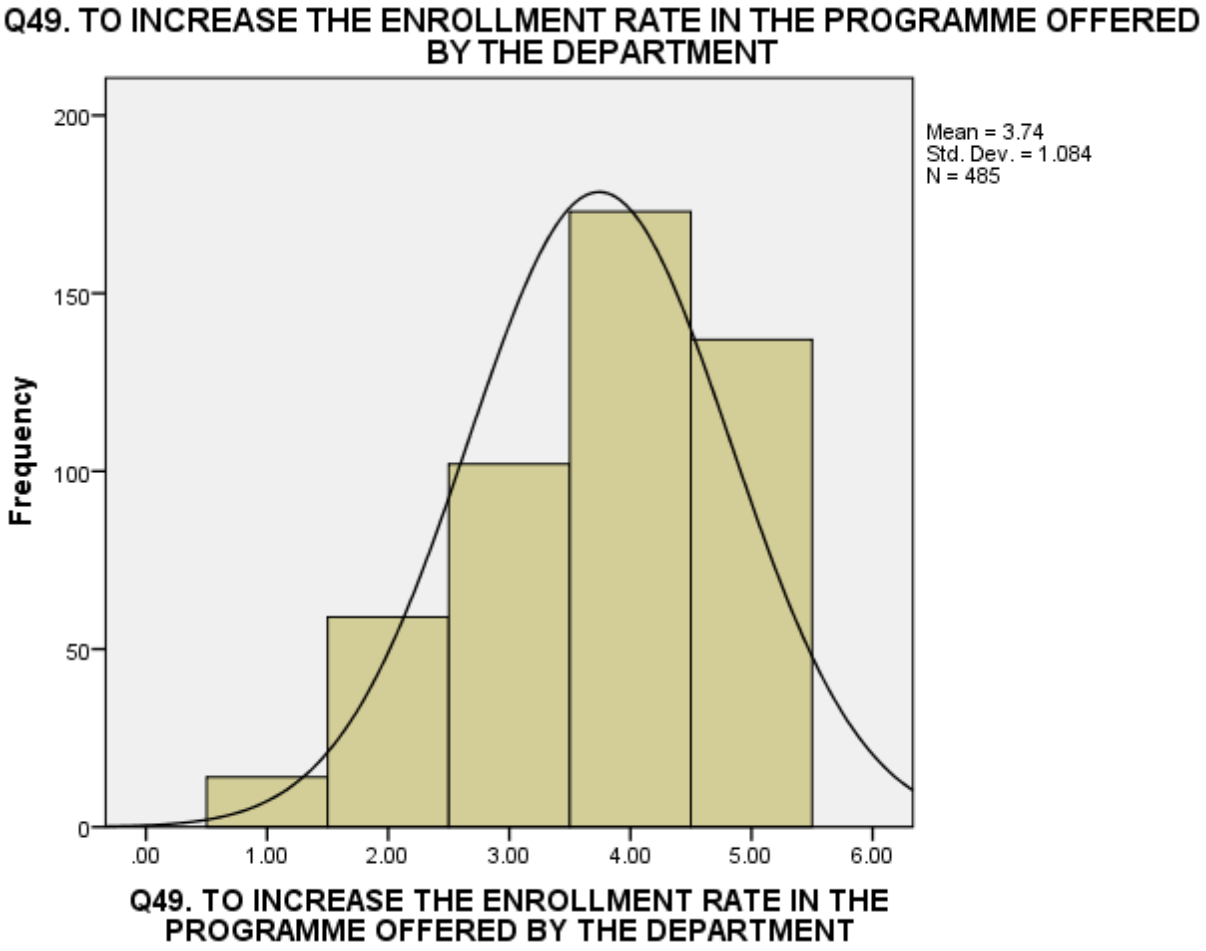
Appendix 5.11

Normality Test for Internal, External and Decision Effectiveness Items – Continued



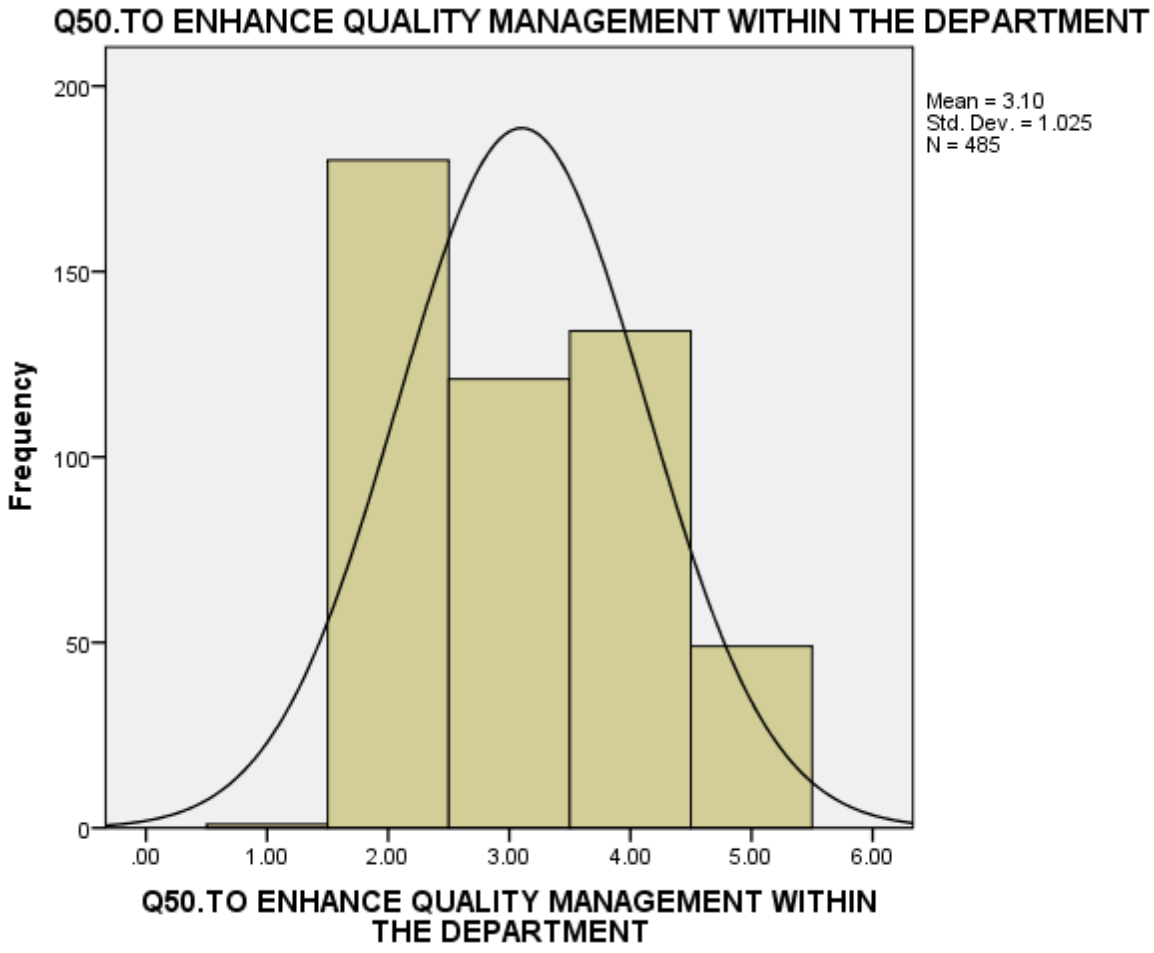
Appendix 5.11

Normality Test for Internal, External and Decision Effectiveness Items – Continued



Appendix 5.11

Normality Test for Internal, External and Decision Effectiveness Items – Continued



Appendix 5.12

Test of linearity of moderators

Internal context as moderator

Decision effectiveness = k_i + k_a Rationality in decision making + k_b internal context + k_{a1} [(Rationality in decision making) (internal context)] + e → (5.16)

There are two variables of decision effectiveness namely DEC.EFFECQ1 and DEC.EFFECQ2 which are found to be statistically significant (refer Section---). Therefore equation 5.16 needs to address DEC.EFFECQ1 and DEC.EFFECQ2 and equation 5.16 is rewritten as follows:

DEC.EFFECQ1 = k_i + k_a Rationality in decision making + k_b internal context + k_{a1} [(Rationality in decision making) (internal context)] + e_{m1} → (5.16a)

DEC.EFFECQ2 = k_{i1} + k_{aa1} Rationality in decision making + k_{bb} internal context + k_{a1} [(Rationality in decision making) (internal context)] + e_{m2} → (5.16b)

For the sake of brevity the constants of proportionality k_i and k_{i1} and the error components have been neglected in the analysis as the focus is to check whether moderation takes place or not although those components are retained in the basic equations.

Now rationality in decision making has three variables (RATIONALITYQ2, RATIONALITYQ3 and RATIONALITYQ4) and internal context has four variables (PERFORMANCEQ6, PERFORMANCEQ7, PERFORMANCEQ8 and PERFORMANCEQ10) that are statistically significant (see Section---).

Thus the moderator variables need to be defined and are as follows.

RATIONALITYQ2 x PERFORMANCEQ6 (coded as RAT2PERF6)

RATIONALITYQ2 x PERFORMANCEQ7 (coded as RAT2PERF7)

RATIONALITYQ2 x PERFORMANCEQ8 (coded as RAT2PERF8)

RATIONALITYQ2 x PERFORMANCEQ10 (coded as RAT2PERF10)

RATIONALITYQ3 x PERFORMANCEQ6 (coded as RAT3PERF6)

RATIONALITYQ3 x PERFORMANCEQ7 (coded as RAT3PERF7)

RATIONALITYQ3 x PERFORMANCEQ8 (coded as RAT3PERF8)

RATIONALITYQ3 x PERFORMANCEQ10 (coded as RAT3PERF10)

RATIONALITYQ4 x PERFORMANCEQ6 (coded as RAT4PERF6)

RATIONALITYQ4 x PERFORMANCEQ7 (coded as RAT4PERF7)

RATIONALITYQ4 x PERFORMANCEQ8 (coded as RAT4PERF8)

RATIONALITYQ4 x PERFORMANCEQ10 (coded as RAT4PERF10)

The coding of all the moderators that were used in this research and the corresponding regression equations (using equations 5.16a and 5.16b) are provided in the table below.

Rationality in decision making	Internal context	Moderator = (Rationality in decision making x Internal context)	Coding of the moderator	Regression equation with respect to dependent variable Decision effectiveness DEC.EFFECQ1
RAT2	PERFORMANCEQ6	(RAT2 X PERFORMANCEQ6)	RAT2PERF6	$DEC.EFFECQ1 = k_i + k_a\ RAT2 + k_b\ PERFORMANCEQ6 + k_{ab}\ (RAT2PERF6) + e_{m1}$
RAT3	PERFORMANCEQ6	(RAT2 X PERFORMANCEQ6)	RAT2PERF6	$DEC.EFFECQ1 = k_i + k_a\ RAT3 + k_b\ PERFORMANCEQ6 + k_{ab}\ (RAT3PERF6) + e_{m1}$
RAT4	PERFORMANCEQ6	(RAT2 X PERFORMANCEQ6)	RAT2PERF6	$DEC.EFFECQ1 = k_i + k_a\ RAT4 + k_b\ PERFORMANCEQ6 + k_{ab}\ (RAT4PERF6) + e_{m1}$
RAT2	PERFORMANCEQ7	(RAT2 X PERFORMANCEQ7)	RAT2PERF7	$DEC.EFFECQ1 = k_i + k_a\ RAT2 + k_b\ PERFORMANCEQ7 + k_{ab}\ (RAT2PERF7) + e_{m1}$
RAT3	PERFORMANCEQ7	(RAT2 X PERFORMANCEQ7)	RAT2PERF7	$DEC.EFFECQ1 = k_i + k_a\ RAT3 + k_b\ PERFORMANCEQ7 + k_{ab}\ (RAT3PERF7) + e_{m1}$
RAT4	PERFORMANCEQ7	(RAT2 X PERFORMANCEQ7)	RAT2PERF7	$DEC.EFFECQ1 = k_i + k_a\ RAT4 + k_b\ PERFORMANCEQ7 + k_{ab}\ (RAT4PERF7) + e_{m1}$
RAT2	PERFORMANCEQ8	(RAT2 X PERFORMANCEQ8)	RAT2PERF8	$DEC.EFFECQ1 = k_i + k_a\ RAT2 + k_b\ PERFORMANCEQ8 + k_{ab}\ (RAT2PERF8) + e_{m1}$
RAT3	PERFORMANCEQ8	(RAT2 X PERFORMANCEQ8)	RAT2PERF8	$DEC.EFFECQ1 = k_i + k_a\ RAT3 + k_b\ PERFORMANCEQ8 + k_{ab}\ (RAT3PERF8) + e_{m1}$
RAT4	PERFORMANCEQ8	(RAT2 X PERFORMANCEQ8)	RAT2PERF8	$DEC.EFFECQ1 = k_i + k_a\ RAT4 + k_b\ PERFORMANCEQ8 + k_{ab}\ (RAT4PERF8) + e_{m1}$
RAT2	PERFORMANCEQ10	(RAT2 X PERFORMANCEQ10)	RAT2PERF10	$DEC.EFFECQ1 = k_i + k_a\ RAT2 + k_b\ PERFORMANCEQ10 + k_{ab}\ (RAT2PERF10) + e_{m1}$
RAT3	PERFORMANCEQ10	(RAT2 X PERFORMANCEQ10)	RAT2PERF10	$DEC.EFFECQ1 = k_i + k_a\ RAT3 + k_b\ PERFORMANCEQ10 + k_{ab}\ (RAT3PERF10) + e_{m1}$
RAT4	PERFORMANCEQ10	(RAT2 X PERFORMANCEQ10)	RAT2PERF10	$DEC.EFFECQ1 = k_i + k_a\ RAT4 + k_b\ PERFORMANCEQ10 + k_{ab}\ (RAT4PERF10) + e_{m1}$

With respect to the dependent variable DEC.EFFECQ1 the regression equations in the table above could be simplified by grouping the variables of rationality in decision making (RAT2, RAT3 and RAT4), internal context (PERFORMANCEQ6 + PERFORMANCEQ7 + PERFORMANCEQ8 + PERFORMANCEQ10) and moderators of rationality in decision making (RAT2PERF6 + RAT3PERF6 + RAT4PERF6 + RAT2PERF7 + RAT3PERF7 + RAT4PERF7 + RAT2PERF8 + RAT3PERF8 + RAT4PERF8 + RAT2PERF10 + RAT3PERF10 + RAT4PERF10) as follows:

$$DEC.EFFECQ1 = k_i + k_a\,(RAT2 + RAT3 + RAT4) + k_b\,(PERFORMANCEQ6 + PERFORMANCEQ7 + PERFORMANCEQ8 + PERFORMANCEQ10) + k_{a1}\,(RAT2PERF6 + RAT3PERF6 + RAT4PERF6 + RAT2PERF7 + RAT3PERF7 + RAT4PERF7 + RAT2PERF8 + RAT3PERF8 + RAT4PERF8 + RAT2PERF10 + RAT3PERF10 + RAT4PERF10) + e_{m1} \rightarrow (5.M1)$$

Similarly, for the dependent variable DEC.EFFECQ2 using the above table the following equation can be written.

Appendix 5.12

Test of linearity of moderators – Continued

DEC.EFFECQ2 = k_i + k_a (RAT2 + RAT3 + RAT4) + k_b (PERFORMANCEQ6 + PERFORMANCEQ7 + PERFORMANCEQ8 + PERFORMANCEQ10) + k_{a1} (RAT2PERF6 + RAT3PERF6 + RAT4PERF6 + RAT2PERF7 + RAT3PERF7 + RAT4PERF7 + RAT2PERF8 + RAT3PERF8 + RAT4PERF8 + RAT2PERF10 + RAT3PERF10 + RAT4PERF10) + e_{m1} → (5.M2)

Repeating the same process for the independent variables Intuition and Decentralisation, the following table can be drawn.

Decision effectiveness = k_l + k_c Intuition + k_{d1} Internal context + k_{c1} [(Intuition)(Internal context)] → (5.19)

From equation 5.19

Intuition	Internal context	Moderator = (Intuition x Internal context)	Coding of the moderator	Regression equation with respect to dependent variable Decision effectiveness DEC.EFFECQ1
INTUTIONQ1	PERFORMANCEQ6	(INTUTIONQ1 X PERFORMANCEQ6)	INT1PERF6	DEC.EFFECQ1 = k_l + k_c INTUTIONQ1 + k_{d1} PERFORMANCEQ6+ k_{c1} (INT1PERF6) + e_{m2}
INTUTIONQ5	PERFORMANCEQ6	(INTUTIONQ5 X PERFORMANCEQ6)	INT5PERF6	DEC.EFFECQ1 = k_l + k_c INTUTIONQ5 + k_{d1} PERFORMANCEQ6+ k_{c1} (INT5PERF6) + e_{m2}
INTUTIONQ1	PERFORMANCEQ7	(INTUTIONQ1 X PERFORMANCEQ7)	INT1PERF7	DEC.EFFECQ1 = k_l + k_c INTUTIONQ1 + k_{d1} PERFORMANCEQ7+ k_{c1} (INT1PERF7) + e_{m2}
INTUTIONQ5	PERFORMANCEQ7	(INTUTIONQ5 X PERFORMANCEQ7)	INT5PERF7	DEC.EFFECQ1 = k_l + k_c INTUTIONQ5 + k_{d1} PERFORMANCEQ7+ k_{c1} (INT5PERF7) + e_{m2}
INTUTIONQ1	PERFORMANCEQ8	(INTUTIONQ1 X PERFORMANCEQ8)	INT1PERF8	DEC.EFFECQ1 = k_l + k_c INTUTIONQ1 + k_{d1} PERFORMANCEQ8+ k_{c1} (INT1PERF8) + e_{m2}
INTUTIONQ5	PERFORMANCEQ8	(INTUTIONQ5 X PERFORMANCEQ8)	INT5PERF8	DEC.EFFECQ1 = k_l + k_c INTUTIONQ5 + k_{d1} PERFORMANCEQ8+ k_{c1} (INT5PERF8) + e_{m2}
INTUTIONQ1	PERFORMANCEQ10	(INTUTIONQ1 X PERFORMANCEQ10)	INT1PERF10	DEC.EFFECQ1 = k_l + k_c INTUTIONQ1 + k_{d1} PERFORMANCEQ10+ k_{c1} (INT1PERF10) + e_{m2}
INTUTIONQ5	PERFORMANCEQ10	(INTUTIONQ5 X PERFORMANCEQ10)	INT5PERF10	DEC.EFFECQ1 = k_l + k_c INTUTIONQ5 + k_{d1} PERFORMANCEQ10+ k_{c1} (INT5PERF10) + e_{m2}

DEC.EFFECQ1 = k_l + k_c (INTUTIONQ1 + INTUTIONQ5) + k_{d1} (PERFORMANCEQ6 + PERFORMANCEQ7 + PERFORMANCEQ8 + PERFORMANCEQ10) + k_{a1} (INT1PERF6 + INT5PERF6 + INT1PERF7 + INT5PERF7 + INT1PERF8 + INT5PERF8 + INT1PERF10 + INT5PERF10) + e_{m2} → (5.M3)

For the dependent variable DEC.EFFECQ2 equation 5.M3 can be written as:

DEC.EFFECQ5 = k_l + k_c (INTUTIONQ1 + INTUTIONQ5) + k_{d1} (PERFORMANCEQ6 + PERFORMANCEQ7 + PERFORMANCEQ8 + PERFORMANCEQ10) + k_{a1} (INT1PERF6 + INT5PERF6 + INT1PERF7 + INT5PERF7 + INT1PERF8 + INT5PERF8 + INT1PERF10 + INT5PERF10) + e_{m2} → (5.M4)

Repeating the above steps for the independent variable decentralization the following table can be drawn.

Decision effectiveness = k_n + k_e Decentralisation in decision making + k_f Internal context + k_{e1} [(Decentralisation in decision making) (Internal context)] → (5.21)

Decentralisation in decision making	Internal context	Moderator = (Decentralisation in decision making x Internal context)	Coding of the moderator	Regression equation with respect to dependent variable Decision effectiveness DEC.EFFECQ1
DECENTRALIZATIONQ1	PERFORMANCEQ6	(DECENTRALIZATIONQ1 X PERFORMANCEQ6)	DECENT1PERF6	DEC.EFFECQ1 = k_n + k_e DECENTRALIZATIONQ1 + k_f PERFORMANCEQ6+ k_{e1} (DECENT1PERF6) + e_{m3}
DECENTRALIZATIONQ5	PERFORMANCEQ6	(DECENTRALIZATIONQ5 X PERFORMANCEQ6)	DECENT5PERF6	DEC.EFFECQ1 = k_n + k_e DECENTRALIZATIONQ5 + k_f PERFORMANCEQ6+ k_{e1} (DECENT1PERF6) + e_{m3}
DECENTRALIZATIONQ1	PERFORMANCEQ7	(DECENTRALIZATIONQ1 X PERFORMANCEQ7)	DECENT1PERF7	DEC.EFFECQ1 = k_n + k_e DECENTRALIZATIONQ1 + k_f PERFORMANCEQ7+ k_{e1} (DECENT1PERF7) + e_{m3}
DECENTRALIZATIONQ5	PERFORMANCEQ7	(DECENTRALIZATIONQ5 X PERFORMANCEQ7)	DECENT5PERF7	DEC.EFFECQ1 = k_n + k_e DECENTRALIZATIONQ5 + k_f PERFORMANCEQ7+ k_{e1} (DECENT1PERF7) + e_{m3}
DECENTRALIZATIONQ1	PERFORMANCEQ8	(DECENTRALIZATIONQ1 X PERFORMANCEQ8)	DECENT1PERF8	DEC.EFFECQ1 = k_n + k_e DECENTRALIZATIONQ1 + k_f PERFORMANCEQ8+ k_{e1} (DECENT1PERF8) + e_{m3}
DECENTRALIZATIONQ5	PERFORMANCEQ8	(DECENTRALIZATIONQ5 X PERFORMANCEQ8)	DECENT5PERF6	DEC.EFFECQ1 = k_n + k_e DECENTRALIZATIONQ5 + k_f PERFORMANCEQ8+ k_{e1} (DECENT1PERF8) + e_{m3}
DECENTRALIZATIONQ1	PERFORMANCEQ10	(DECENTRALIZATIONQ1 X PERFORMANCEQ10)	DECENT1PERF10	DEC.EFFECQ1 = k_n + k_e DECENTRALIZATIONQ1 + k_f PERFORMANCEQ10+ k_{e1} (DECENT1PERF10) + e_{m3}
DECENTRALIZATIONQ5	PERFORMANCEQ10	(DECENTRALIZATIONQ5 X PERFORMANCEQ10)	DECENT5PERF10	DEC.EFFECQ1 = k_n + k_e DECENTRALIZATIONQ5 + k_f PERFORMANCEQ10+ k_{e1} (DECENT1PERF10) + e_{m3}

DEC.EFFECQ1 = k_l + k_c (DECENTRALIZATIONQ1 + DECENTRALIZATIONQ5) + k_{d1} (PERFORMANCEQ6 + PERFORMANCEQ7 + PERFORMANCEQ8 + PERFORMANCEQ10) + k_{a1} (DECENT1PERF6 + DECENT5PERF6 + DECENT1PERF7 + DECENT5PERF7 + DECENT1PERF8 + DECENT5PERF8 + DECENT1PERF10 + DECENT5PERF10) + e_{m3} → (5.M5)

For the independent variable DEC.EFFECQ2 equation 5.M5 can be written as

DEC.EFFECQ2 = k_l + k_c (DECENTRALIZATIONQ1 + DECENTRALIZATIONQ5) + k_{d1} (PERFORMANCEQ6 + PERFORMANCEQ7 + PERFORMANCEQ8 + PERFORMANCEQ10) + k_{a1} (DECENT1PERF6 + DECENT5PERF6 + DECENT1PERF7 + DECENT5PERF7 + DECENT1PERF8 + DECENT5PERF8 + DECENT1PERF10 + DECENT5PERF10) + e_{m3} → (5.M6)

Extending the above arguments to the external environment moderators the following analyses was conducted.

Decision effectiveness = k_i + k_a Rationality in decision making + k_g External environment + k_{a1} [(Rationality in decision making) (External environment)] → (5.23)

Equation 5.23 is applied to each item of rationality and the following table is drawn

Rationality in decision making	External environment	Moderator = (Rationality in decision making x External Environment)	Coding of the moderator	Regression equation with respect to dependent variable Decision effectiveness DEC.EFFECQ1
RAT2	ENVIROMENT.ECONQ6	(RAT2 x ENVIROMENT.ECONQ6)	RAT2EE6	DEC.EFFECQ1 = k_i + k_a RAT2 + k_b ENVIROMENT.ECONQ6 + k_{a1} (RAT2EE6) + e_{m4}
RAT3	ENVIROMENT.ECONQ6	(RAT3 x ENVIROMENT.ECONQ6)	RAT3EE6	DEC.EFFECQ1 = k_i + k_a RAT3 + k_b ENVIROMENT.ECONQ6 + k_{a1} (RAT3EE6) + e_{m4}
RAT4	ENVIROMENT.ECONQ6	(RAT4 x ENVIROMENT.ECONQ6)	RAT4EE6	DEC.EFFECQ1 = k_i + k_a RAT4 + k_b ENVIROMENT.ECONQ6 + k_{a1} (RAT4EE6) + e_{m4}
RAT2	ENVIROMENT.ECONQ7	(RAT2 x ENVIROMENT.ECONQ7)	RAT2EE7	DEC.EFFECQ1 = k_i + k_a RAT2 + k_b ENVIROMENT.ECONQ7+ k_{a1} (RAT2EE7) + e_{m4}
RAT3	ENVIROMENT.ECONQ7	(RAT3 x ENVIROMENT.ECONQ7)	RAT3EE7	DEC.EFFECQ1 = k_i + k_a RAT3 + k_b ENVIROMENT.ECONQ7+ k_{a1} (RAT3EE7) + e_{m4}
RAT4	ENVIROMENT.ECONQ7	(RAT4 x ENVIROMENT.ECONQ7)	RAT4EE7	DEC.EFFECQ1 = k_i + k_a RAT4 + k_b ENVIROMENT.ECONQ7+ k_{a1} (RAT4EE7) + e_{m4}
RAT2	ENVIROMENT.ECONQ8	(RAT2 x ENVIROMENT.ECONQ8)	RAT2EE8	DEC.EFFECQ1 = k_i + k_a RAT2 + k_b ENVIROMENT.ECONQ8+ k_{a1} (RAT4EE8) + e_{m4}
RAT3	ENVIROMENT.ECONQ8	(RAT3 x ENVIROMENT.ECONQ8)	RAT3EE8	DEC.EFFECQ1 = k_i + k_a RAT3 + k_b ENVIROMENT.ECONQ8+ k_{a1} (RAT4EE8) + e_{m4}
RAT4	ENVIROMENT.ECONQ8	(RAT4 x ENVIROMENT.ECONQ8)	RAT4EE8	DEC.EFFECQ1 = k_i + k_a RAT4 + k_b ENVIROMENT.ECONQ8+ k_{a1} (RAT4EE8) + e_{m4}
RAT2	ENVIROMENT.ECONQ9	(RAT2 x ENVIROMENT.ECONQ9)	RAT2EE9	DEC.EFFECQ1 = k_i + k_a RAT2 + k_b ENVIROMENT.ECONQ9+ k_{a1} (RAT4EE9) + e_{m4}
RAT3	ENVIROMENT.ECONQ9	(RAT3 x ENVIROMENT.ECONQ9)	RAT3EE9	DEC.EFFECQ1 = k_i + k_a RAT3 + k_b ENVIROMENT.ECONQ9+ k_{a1} (RAT4EE9) + e_{m4}
RAT4	ENVIROMENT.ECONQ9	(RAT4 x ENVIROMENT.ECONQ9)	RAT4EE9	DEC.EFFECQ1 = k_i + k_a RAT4 + k_b ENVIROMENT.ECONQ9+ k_{a1} (RAT4EE9) + e_{m4}
RAT2	ENVIROMENT.COMPQ10	(RAT2 x ENVIROMENT.COMPQ10)	RAT2EC10	DEC.EFFECQ1 = k_i + k_a RAT2 + k_b ENVIROMENT.COMPQ10+ k_{a1} (RAT2EC10) + e_{m4}
RAT3	ENVIROMENT.COMPQ10	(RAT3 x ENVIROMENT.COMPQ10)	RAT3EC10	DEC.EFFECQ1 = k_i + k_a RAT3 + k_b ENVIROMENT. COMPQ10+ k_{a1} (RAT3EC10) + e_{m4}
RAT4	ENVIROMENT.COMPQ10	(RAT4 x ENVIROMENT.COMPQ12)	RAT4EC10	DEC.EFFECQ1 = k_i + k_a RAT4 + k_b ENVIROMENT. COMPQ10+ k_{a1} (RAT4EC10) + e_{m4}
RAT2	ENVIROMENT.COMPQ12	(RAT2 x ENVIROMENT.COMPQ12)	RAT2EC12	DEC.EFFECQ1 = k_i + k_a RAT2 + k_b ENVIROMENT. COMPQ12+ k_{a1} (RAT2EC12) + e_{m4}
RAT3	ENVIROMENT.COMPQ12	(RAT3 x ENVIROMENT.COMPQ12)	RAT3EC12	DEC.EFFECQ1 = k_i + k_a RAT3 + k_b ENVIROMENT. COMPQ12+ k_{a1} (RAT3EC12) + e_{m4}
RAT4	ENVIROMENT.COMPQ12	(RAT4 x ENVIROMENT.COMPQ10)	RAT4EC12	DEC.EFFECQ1 = k_i + k_a RAT4 + k_b ENVIROMENT. COMPQ12+ k_{a1} (RAT4EC12) + e_{m4}

Taking into account the arguments given before in this Appendix equation 5.23 can be rewritten with respect to DEC.EFFECQ1 as follows:

$$DEC.EFFECQ1 = k_i + k_a\ (RAT2 + RAT3 + RAT4) + k_b\ (ENVIROMENT.ECONQ6 + ENVIROMENT.ECONQ7 + ENVIROMENT.ECONQ8 + ENVIROMENT.ECONQ9 + ENVIROMENT.COMPQ10 + ENVIROMENT.COMPQ12) + k_{a1}\ (RAT2EE6 + RAT2EE7 + RAT2EE8 + RAT2EE9 + RAT2EC10 + RAT2EC12 + RAT3EE6 + RAT3EE7 + RAT3EE8 + RAT3EE9 + RAT3EC10 + RAT3EC12 + RAT4EE6 + RAT4EE7 + RAT4EE8 + RAT4EE9 + RAT4EC10 + RAT4EC12) + e_{m4} \rightarrow (5.M7)$$

Similarly equation 5.23 can be rewritten with respect to DEC.EFFECQ2 as follows:

$$DEC.EFFECQ2 = k_i + k_a\ (RAT2 + RAT3 + RAT4) + k_b\ (ENVIROMENT.ECONQ6 + ENVIROMENT.ECONQ7 + ENVIROMENT.ECONQ8 + ENVIROMENT.ECONQ9 + ENVIROMENT.COMPQ10 + ENVIROMENT.COMPQ12) + k_{a1}\ (RAT2EE6 + RAT2EE7 + RAT2EE8 + RAT2EE9 + RAT2EC10 + RAT2EC12 + RAT3EE6 + RAT3EE7 + RAT3EE8 + RAT3EE9 + RAT3EC10 + RAT3EC12 + RAT4EE6 + RAT4EE7 + RAT4EE8 + RAT4EE9 + RAT4EC10 + RAT4EC12) + e_{m4} \rightarrow (5.M8)$$

Analysis of equation 5.25

Decision effectiveness = $k_l + k_c$ Intuition + k_h External environment + k_{c1} [(Intuition) (External environment)] → (5.25)

Intuition	External environment	Moderator = (Intuition x External Environment)	Coding of the moderator	Regression equation with respect to dependent variable Decision effectiveness DEC.EFFECQ1
INTUTIONQ1	ENVIROMENT.ECONQ6	(INTUTIONQ1 x ENVIROMENT.ECONQ6)	INT1EE6	DEC.EFFECQ1 = k_i + k_a INTUTIONQ1 + k_b ENVIROMENT.ECONQ6 + k_{a1} (INT1EE6) + e_{m5}
INTUTIONQ5	ENVIROMENT.ECONQ6	(INTUTIONQ5 x ENVIROMENT.ECONQ6)	INT5EE6	DEC.EFFECQ1 = k_i + k_a INTUTIONQ5 + k_b ENVIROMENT.ECONQ6 + k_{a1} (INT55EE6) + e_{m5}
INTUTIONQ1	ENVIROMENT.ECONQ7	(INTUTIONQ1 x ENVIROMENT.ECONQ7)	INT1EE7	DEC.EFFECQ1 = k_i + k_a INTUTIONQ1 + k_b ENVIROMENT.ECONQ7+ k_{a1} (INT1EE7) + e_{m5}
INTUTIONQ5	ENVIROMENT.ECONQ7	(INTUTIONQ5 x ENVIROMENT.ECONQ7)	INT5EE7	DEC.EFFECQ1 = k_i + k_a INTUTIONQ5 + k_b ENVIROMENT.ECONQ7+ k_{a1} (INT5EE7) + e_{m5}
INTUTIONQ1	ENVIROMENT.ECONQ8	(INTUTIONQ1 x ENVIROMENT.ECONQ8)	INT1EE8	DEC.EFFECQ1 = k_i + k_a INTUTIONQ1 + k_b ENVIROMENT.ECONQ8+ k_{a1} (INT1EE8) + e_{m5}
INTUTIONQ5	ENVIROMENT.ECONQ8	(INTUTIONQ5 x ENVIROMENT.ECONQ8)	INT5EE8	DEC.EFFECQ1 = k_i + k_a INTUTIONQ5 + k_b ENVIROMENT.ECONQ8+ k_{a1} (INT5EE8) + e_{m5}
INTUTIONQ1	ENVIROMENT.ECONQ9	(INTUTIONQ1 x ENVIROMENT.ECONQ9)	INT1EE9	DEC.EFFECQ1 = k_i + k_a INTUTIONQ1 + k_b ENVIROMENT.ECONQ9+ k_{a1} (INT1EE9) + e_{m5}
INTUTIONQ5	ENVIROMENT.ECONQ9	(INTUTIONQ5 x ENVIROMENT.ECONQ9)	INT5EE9	DEC.EFFECQ1 = k_i + k_a INTUTIONQ5 + k_b ENVIROMENT.ECONQ9+ k_{a1} (INT5EE9) + e_{m5}
INTUTIONQ1	ENVIROMENT.COMPQ10	(INTUTIONQ1 x ENVIROMENT.COMPQ10)	INT1EC10	DEC.EFFECQ1 = k_i + k_a INTUTIONQ1 + k_b ENVIROMENT.COMPQ10+ k_{a1} (INT1EC10) + e_{m5}
INTUTIONQ5	ENVIROMENT.COMPQ10	(INTUTIONQ5 x ENVIROMENT.COMPQ10)	INT5EC10	DEC.EFFECQ1 = k_i + k_a INTUTIONQ5 + k_b ENVIROMENT. COMPQ10+ k_{a1} (INT5EC10) + e_{m5}
INTUTIONQ1	ENVIROMENT.COMPQ12	(INTUTIONQ1 x ENVIROMENT.COMPQ12)	INT1EC12	DEC.EFFECQ1 = k_i + k_a INTUTIONQ1 + k_b ENVIROMENT. COMPQ12+ k_{a1} (INT1EC12) + e_{m5}
INTUTIONQ5	ENVIROMENT.COMPQ12	(INTUTIONQ5 x ENVIROMENT.COMPQ12)	INT5EC12	DEC.EFFECQ1 = k_i + k_a INTUTIONQ5 + k_b ENVIROMENT. COMPQ12+ k_{a1} (INT5EC12) + e_{m5}

Using the above table equation 5.23 can be rewritten as:

DEC.EFFECQ1 = k_i + k_a (INTUTIONQ1+ INTUTIONQ5) + k_b (ENVIROMENT.ECONQ6 + ENVIROMENT.ECONQ7 + ENVIROMENT.ECONQ8 + ENVIROMENT.ECONQ9 + ENVIROMENT.COMPQ10 + ENVIROMENT.COMPQ12) + k_{a1} (INT1EE6 + INT1EE7 + INT1EE8 + INT1EE9 + INT1EC10 + INT1EC12 + INT5EE6 + INT5EE7 + INT5EE8 + INT5EE9 + INT5EC10 + INT5EC12) + e_{m5} → (5.M9)

Similarly equation 5.23 can be rewritten with respect to DEC.EFFECQ2 as

DEC.EFFECQ2 = k_i + k_a (INTUTIONQ1+ INTUTIONQ5) + k_b (ENVIROMENT.ECONQ6 + ENVIROMENT.ECONQ7 + ENVIROMENT.ECONQ8 + ENVIROMENT.ECONQ9 + ENVIROMENT.COMPQ10 + ENVIROMENT.COMPQ12) + k_{a1} (INT1EE6 + INT1EE7 + INT1EE8 + INT1EE9 + INT1EC10 + INT1EC12 + INT5EE6 + INT5EE7 + INT5EE8 + INT5EE9 + INT5EC10 + INT5EC12) + e_{m5} → (5.M10)

Analysis of equation 5.27

Decision effectiveness = k_n + k_e Decentralisation in decision making + k_{aa} External environment + k_{e1} [(Decentralisation in decision making)(External environment)] → (5.27)

Decentralisation in decision making	External environment	Moderator = (Decentralisation in decision x External Environment)	Coding of the moderator	Regression equation with respect to dependent variable Decision effectiveness DEC.EFFECQ1
DECENTRALIZATIONQ1	ENVIROMENT.ECONQ6	(DECENTRALIZATIONQ1 x ENVIROMENT.ECONQ6)	DECENT1EE6	DEC.EFFECQ1 = k_i + k_a DECENTRALIZATIONQ1 + k_b ENVIROMENT.ECONQ6 + k_{ab} (DECENT1EE6) + e_{m6}
DECENTRALIZATIONQ5	ENVIROMENT.ECONQ6	(DECENTRALIZATIONQ5 x ENVIROMENT.ECONQ6)	DECENT5EE6	DEC.EFFECQ1 = k_i + k_a DECENTRALIZATIONQ5 + k_b ENVIROMENT.ECONQ6 + k_{ab} (DECENT5EE6) + e_{m6}
DECENTRALIZATIONQ1	ENVIROMENT.ECONQ7	(DECENTRALIZATIONQ1 x ENVIROMENT.ECONQ7)	DECENT1EE7	DEC.EFFECQ1 = k_i + k_a DECENTRALIZATIONQ1 + k_b ENVIROMENT.ECONQ7+ k_{ab} (DECENT1EE7) + e_{m6}
DECENTRALIZATIONQ5	ENVIROMENT.ECONQ7	(DECENTRALIZATIONQ5 x ENVIROMENT.ECONQ7)	DECENT5EE7	DEC.EFFECQ1 = k_i + k_a DECENTRALIZATIONQ5 + k_b ENVIROMENT.ECONQ7+ k_{ab} (DECENT5EE7) + e_{m6}
DECENTRALIZATIONQ1	ENVIROMENT.ECONQ8	(DECENTRALIZATIONQ1 x ENVIROMENT.ECONQ8)	DECENT1EE8	DEC.EFFECQ1 = k_i + k_a DECENTRALIZATIONQ1 + k_b ENVIROMENT.ECONQ8+ k_{ab} (DECENT1EE8) + e_{m6}
DECENTRALIZATIONQ5	ENVIROMENT.ECONQ8	(DECENTRALIZATIONQ5 x ENVIROMENT.ECONQ8)	DECENT5EE8	DEC.EFFECQ1 = k_i + k_a DECENTRALIZATIONQ5 + k_b ENVIROMENT.ECONQ8+ k_{ab} (DECENT5EE8) + e_{m6}
DECENTRALIZATIONQ1	ENVIROMENT.ECONQ9	(DECENTRALIZATIONQ1 x ENVIROMENT.ECONQ9)	DECENT1EE9	DEC.EFFECQ1 = k_i + k_a DECENTRALIZATIONQ1 + k_b ENVIROMENT.ECONQ9+ k_{ab} (DECENT1EE9) + e_{m6}
DECENTRALIZATIONQ5	ENVIROMENT.ECONQ9	(DECENTRALIZATIONQ5 x ENVIROMENT.ECONQ9)	DECENT5EE9	DEC.EFFECQ1 = k_i + k_a DECENTRALIZATIONQ5+ k_b ENVIROMENT.ECONQ9+ k_{ab} (DECENT5EE9) + e_{m6}
DECENTRALIZATIONQ1	ENVIROMENT.COMPQ10	(DECENTRALIZATIONQ1 x ENVIROMENT.COMPQ10)	DECENT1EC10	DEC.EFFECQ1 = k_i + k_a DECENTRALIZATIONQ1 + k_b ENVIROMENT.COMPQ10+ k_{ab} (DECENT1EC10) + e_{m6}
DECENTRALIZATIONQ5	ENVIROMENT.COMPQ10	(DECENTRALIZATIONQ5 x ENVIROMENT.COMPQ10)	DECENT5EC10	DEC.EFFECQ1 = k_i + k_a DECENTRALIZATIONQ5 + k_b ENVIROMENT. COMPQ10+ k_{ab} (DECENT5EC10) + e_{m6}
DECENTRALIZATIONQ1	ENVIROMENT.COMPQ12	(DECENTRALIZATIONQ1 x ENVIROMENT.COMPQ12)	DECENT1EC12	DEC.EFFECQ1 = k_i + k_a DECENTRALIZATIONQ1 + k_b ENVIROMENT. COMPQ12+ k_{ab} (DECENT1EC12) + e_{m6}
DECENTRALIZATIONQ5	ENVIROMENT.COMPQ12	(DECENTRALIZATIONQ5 x ENVIROMENT.COMPQ12)	DECENT5EC12	DEC.EFFECQ1 = k_i + k_a DECENTRALIZATIONQ5 + k_b ENVIROMENT. COMPQ12+ k_{ab} (DECENT5EC12) + e_{m6}

Using the above table equation 5.27 can be rewritten as:

$DEC.EFFECQ1 = k_i + k_a$ (DECENTRALIZATIONQ1 + DECENTRALIZATIONQ5) + k_b (ENVIROMENT.ECONQ6 + ENVIROMENT.ECONQ7 + ENVIROMENT.ECONQ8 + ENVIROMENT.ECONQ9 + ENVIROMENT.COMPQ10 + ENVIROMENT.COMPQ12) + k_{a1} (DECENT1EE6 + DECENT1EE7 + DECENT1EE8 + DECENT1EE9 + DECENT1EC10 + DECENT5EC10 + DECENT1EE6 + DECENT1EE7 + DECENT1EE8 + DECENT1EE9 + DECENT1EC10 + DECENT5EC10) + e_{m6} → (5.M11)

Similarly equation 5.27 can be rewritten with respect to DEC.EFFECQ2 as

$DEC.EFFECQ2 = k_i + k_a$ (DECENTRALIZATIONQ1 + DECENTRALIZATIONQ5) + k_b (ENVIROMENT.ECONQ6 + ENVIROMENT.ECONQ7 + ENVIROMENT.ECONQ8 + ENVIROMENT.ECONQ9 + ENVIROMENT.COMPQ10 + ENVIROMENT.COMPQ12) + k_{a1} (DECENT1EE6 + DECENT1EE7 + DECENT1EE8 + DECENT1EE9 + DECENT1EC10 + DECENT5EC10 + DECENT1EE6 + DECENT1EE7 + DECENT1EE8 + DECENT1EE9 + DECENT1EC10 + DECENT5EC10) + e_{m6} → (5.M12)

Appendix 5.13

Moderator regression analysis

Refer to Appendix 5.11

Table 1

Coefficients[a]											
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	2.759	.853		3.235	.001					
	Q8. TO ANALYSE RELEVANT INFORMATION	-.156	.236	-.178	-.663	.508	.284	-.031	-.027	.023	43.395
	Q9. TO USE ANALYTIC TECHNIQUES	.537	.230	.663	2.340	.020	.349	.108	.096	.021	48.065
	Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION	-.414	.248	-.483	-1.669	.096	.317	-.077	-.068	.020	50.121
	Q26.RESEARCH OUTCOMES	.157	.148	.152	1.062	.289	.135	.049	.043	.082	12.196
	Q27.QUALITY OF PROGRAMMES OFFERED	-.049	.156	-.048	-.315	.753	.161	-.015	-.013	.072	13.866
	Q28. ACADEMIC AND ADMINISTRATIVE EMPLOYEE SATISFACTION	-.111	.165	-.104	-.672	.502	.235	-.031	-.027	.069	14.466
	Q30. COMMUNITY ENGAGMENT	-.101	.142	-.104	-.713	.476	.234	-.033	-.029	.079	12.734
	RAT2PERF6	.032	.039	.180	.820	.413	.285	.038	.034	.035	28.836
	RAT2PERF7	-.012	.044	-.074	-.283	.778	.278	-.013	-.012	.024	41.540
	RAT2PERF8	.063	.042	.350	1.508	.132	.342	.070	.062	.031	32.209
	RAT2PERF10	-.007	.040	-.042	-.182	.856	.326	-.008	-.007	.031	32.233
	RAT3PERF6	-.106	.037	-.652	-2.878	.004	.308	-.132	-.118	.032	30.785
	RAT3PERF7	-.007	.034	-.040	-.196	.844	.346	-.009	-.008	.040	25.262
	RAT3PERF8	.019	.036	.118	.528	.598	.366	.024	.022	.033	30.086
	RAT3PERF10	-.015	.037	-.100	-.414	.679	.364	-.019	-.017	.029	34.669
	RAT4PERF6	.022	.037	.126	.591	.555	.306	.027	.024	.037	27.145
	RAT4PERF7	.052	.042	.308	1.225	.221	.321	.057	.050	.026	37.873
	RAT4PERF8	-.014	.038	-.080	-.361	.718	.353	-.017	-.015	.034	29.504
	RAT4PERF10	.089	.039	.536	2.270	.024	.363	.105	.093	.030	33.349
a. Dependent Variable: Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT											

Table 2

Coefficients[a]											
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1.334	.848		1.573	.116					
	Q8. TO ANALYSE RELEVANT INFORMATION	-.063	.235	-.076	-.269	.788	-.142	-.012	-.012	.023	43.395
	Q9. TO USE ANALYTIC TECHNIQUES	.176	.228	.230	.773	.440	-.237	.036	.033	.021	48.065
	Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION	.477	.247	.588	1.934	.054	-.264	.089	.083	.020	50.121
	Q26.RESEARCH OUTCOMES	-.072	.147	-.073	-.488	.626	-.143	-.023	-.021	.082	12.196
	Q27.QUALITY OF PROGRAMMES OFFERED	.198	.155	.205	1.279	.201	-.062	.059	.055	.072	13.866
	Q28. ACADEMIC AND ADMINISTRATIVE EMPLOYEE SATISFACTION	.393	.164	.391	2.394	.017	-.062	.110	.103	.069	14.466
	Q30. COMMUNITY ENGAGMENT	.284	.141	.308	2.009	.045	-.131	.093	.086	.079	12.734
	RAT2PERF6	.020	.039	.121	.525	.600	-.179	.024	.023	.035	28.836
	RAT2PERF7	.067	.043	.426	1.540	.124	-.128	.071	.066	.024	41.540
	RAT2PERF8	-.058	.042	-.338	-1.385	.167	-.158	-.064	-.059	.031	32.209
	RAT2PERF10	-.021	.039	-.132	-.542	.588	-.189	-.025	-.023	.031	32.233
	RAT3PERF6	-.008	.037	-.054	-.227	.820	-.255	-.011	-.010	.032	30.785
	RAT3PERF7	-.030	.034	-.188	-.872	.383	-.228	-.040	-.037	.040	25.262
	RAT3PERF8	.033	.036	.214	.907	.365	-.211	.042	.039	.033	30.086
	RAT3PERF10	-.078	.037	-.534	-2.113	.035	-.259	-.098	-.091	.029	34.669
	RAT4PERF6	-.003	.036	-.018	-.079	.937	-.274	-.004	-.003	.037	27.145
	RAT4PERF7	-.083	.042	-.522	-1.976	.049	-.238	-.091	-.085	.026	37.873
	RAT4PERF8	-.087	.038	-.536	-2.296	.022	-.242	-.106	-.099	.034	29.504
	RAT4PERF10	.002	.039	.011	.043	.966	-.270	.002	.002	.030	33.349

a. Dependent Variable: Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT

Table 3

Coefficients[a]											
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.879	.936		4.144	.000					
	Q26.RESEARCH OUTCOMES	.147	.157	.142	.936	.350	.135	.043	.038	.071	14.156
	Q27.QUALITY OF PROGRAMMES OFFERED	-.170	.152	-.166	-1.119	.264	.161	-.052	-.045	.073	13.699
	Q28. ACADEMIC AND ADMINISTRATIVE EMPLOYEE SATISFACTION	-.269	.157	-.253	-1.711	.088	.235	-.079	-.069	.074	13.562
	Q30. COMMUNITY ENGAGMENT	-.098	.153	-.101	-.639	.523	.234	-.029	-.026	.065	15.359
	Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?	.316	.194	.397	1.633	.103	.413	.075	.066	.027	36.684
	Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?	-.651	.238	-.642	-2.740	.006	.226	-.125	-.110	.029	33.997
	INT1PERF6	.007	.031	.040	.214	.830	.385	.010	.009	.047	21.333
	INT1PERF7	.036	.032	.214	1.137	.256	.406	.052	.046	.046	21.896
	INT1PERF8	-.054	.033	-.328	-1.629	.104	.410	-.075	-.065	.040	25.130
	INT1PERF10	-.007	.030	-.044	-.221	.825	.395	-.010	-.009	.040	24.776
	INT5PERF6	-.038	.041	-.204	-.920	.358	.231	-.042	-.037	.033	30.448
	INT5PERF7	.042	.041	.218	1.015	.311	.266	.047	.041	.035	28.559
	INT5PERF8	.153	.041	.866	3.736	.000	.309	.170	.150	.030	33.283
	INT5PERF10	.047	.043	.271	1.114	.266	.308	.051	.045	.027	36.701

a. Dependent Variable: Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT

Table 4

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.132	.951		3.295	.001					
	Q26.RESEARCH OUTCOMES	-.174	.159	-.178	-1.096	.274	-.143	-.050	-.047	.071	14.156
	Q27.QUALITY OF PROGRAMMES OFFERED	-.018	.155	-.019	-.116	.907	-.062	-.005	-.005	.073	13.699
	Q28. ACADEMIC AND ADMINISTRATIVE EMPLOYEE SATISFACTION	.243	.160	.242	1.523	.128	-.062	.070	.066	.074	13.562
	Q30. COMMUNITY ENGAGMENT	.271	.156	.294	1.738	.083	-.131	.080	.075	.065	15.359
	Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?	-.085	.197	-.113	-.433	.666	-.258	-.020	-.019	.027	36.684
	Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?	.114	.241	.119	.472	.637	-.237	.022	.020	.029	33.997
	INT1PERF6	.009	.031	.060	.300	.764	-.263	.014	.013	.047	21.333
	INT1PERF7	-.022	.032	-.136	-.674	.500	-.232	-.031	-.029	.046	21.896
	INT1PERF8	.039	.033	.251	1.160	.247	-.217	.053	.050	.040	25.130
	INT1PERF10	-.049	.031	-.342	-1.594	.112	-.262	-.073	-.069	.040	24.776
	INT5PERF6	.021	.042	.122	.511	.609	-.239	.024	.022	.033	30.448
	INT5PERF7	.029	.042	.159	.688	.492	-.186	.032	.030	.035	28.559
	INT5PERF8	-.090	.042	-.536	-2.153	.032	-.203	-.099	-.093	.030	33.283
	INT5PERF10	-.033	.043	-.202	-.772	.441	-.246	-.036	-.033	.027	36.701

a. Dependent Variable: Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT

Table 5

Coefficients[a]											
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	6.179	1.146		5.390	.000					
	Q26.RESEARCH OUTCOMES	.321	.205	.310	1.568	.118	.135	.072	.064	.042	23.728
	Q27.QUALITY OF PROGRAMMES OFFERED	-.422	.185	-.412	-2.281	.023	.161	-.105	-.093	.051	19.718
	Q28. ACADEMIC AND ADMINISTRATIVE EMPLOYEE SATISFACTION	-.260	.181	-.245	-1.437	.151	.235	-.066	-.058	.057	17.538
	Q30. COMMUNITY ENGAGMENT	-.463	.195	-.476	-2.374	.018	.234	-.109	-.096	.041	24.318
	Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)	-.106	.255	-.105	-.415	.679	.230	-.019	-.017	.026	39.161
	Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)	-1.171	.219	-1.239	-5.355	.000	.038	-.240	-.218	.031	32.421
	DECENT1PERF6	-.054	.041	-.300	-1.310	.191	.238	-.060	-.053	.032	31.658
	DECENT1PERF7	.067	.042	.377	1.577	.116	.261	.073	.064	.029	34.679
	DECENT1PERF8	.062	.042	.325	1.483	.139	.314	.068	.060	.034	29.144
	DECENT1PERF10	-.011	.036	-.060	-.293	.769	.282	-.014	-.012	.039	25.600
	DECENT5PERF6	-.019	.035	-.104	-.533	.595	.110	-.025	-.022	.043	23.305
	DECENT5PERF7	.079	.034	.452	2.351	.019	.150	.108	.096	.045	22.393
	DECENT5PERF8	.076	.038	.424	1.990	.047	.191	.091	.081	.036	27.550
	DECENT5PERF10	.183	.036	1.031	5.144	.000	.231	.231	.209	.041	24.307
a. Dependent Variable: Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT											

Table 6

Coefficients[a]											
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.532	1.185		2.980	.003					
	Q26.RESEARCH OUTCOMES	-.200	.212	-.204	-.943	.346	-.143	-.043	-.042	.042	23.728
	Q27.QUALITY OF PROGRAMMES OFFERED	-.160	.191	-.165	-.836	.404	-.062	-.039	-.037	.051	19.718
	Q28. ACADEMIC AND ADMINISTRATIVE EMPLOYEE SATISFACTION	.287	.187	.286	1.535	.125	-.062	.071	.068	.057	17.538
	Q30. COMMUNITY ENGAGMENT	.104	.202	.113	.517	.605	-.131	.024	.023	.041	24.318
	Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)	-.056	.263	-.059	-.213	.831	-.157	-.010	-.009	.026	39.161
	Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)	.170	.226	.191	.754	.451	-.074	.035	.034	.031	32.421
	DECENT1PERF6	.053	.043	.313	1.253	.211	-.186	.058	.056	.032	31.658
	DECENT1PERF7	.048	.044	.284	1.084	.279	-.128	.050	.048	.029	34.679
	DECENT1PERF8	-.122	.043	-.679	-2.831	.005	-.168	-.130	-.126	.034	29.144
	DECENT1PERF10	.007	.037	.044	.194	.846	-.186	.009	.009	.039	25.600
	DECENT5PERF6	-.028	.036	-.165	-.768	.443	-.144	-.035	-.034	.043	23.305
	DECENT5PERF7	-.005	.035	-.029	-.137	.891	-.085	-.006	-.006	.045	22.393
	DECENT5PERF8	.035	.040	.204	.873	.383	-.089	.040	.039	.036	27.550
	DECENT5PERF10	-.058	.037	-.345	-1.574	.116	-.148	-.072	-.070	.041	24.307
a. Dependent Variable: Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT											

Table 7

Coefficients[a]											
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.462	.776		4.462	.000					
	Q8. TO ANALYSE RELEVANT INFORMATION	-.535	.201	-.610	-2.654	.008	.284	-.122	-.100	.027	37.110
	Q9. TO USE ANALYTIC TECHNIQUES	.117	.173	.145	.677	.499	.349	.031	.026	.031	32.131
	Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION	.102	.043	.119	2.401	.017	.317	.111	.091	.577	1.734
	Q36. INFLATION RATE	.094	.147	.089	.638	.524	.296	.030	.024	.073	13.712
	Q37. EXCHANGE RATE WITH THE DOLLAR	-.657	.125	-.744	-5.265	.000	.294	-.238	-.199	.071	14.027
	Q38. INTEREST RATE.	.020	.135	.020	.146	.884	.218	.007	.006	.076	13.141
	Q39. RESULTS OF ECONOMIC RESTRUCTURING	.070	.130	.077	.538	.591	.320	.025	.020	.069	14.392
	Q40. CHANGES IN COMPETITORS' TUITION FEES	.190	.124	.215	1.537	.125	.345	.071	.058	.073	13.745
	Q42. CHANGES IN COMPETITORS' STRATEGIES.	.011	.122	.011	.091	.927	.225	.004	.003	.095	10.475
	RAT2EE6	.072	.038	.405	1.886	.060	.412	.087	.071	.031	32.351
	RAT2EE7	.168	.034	1.083	4.891	.000	.404	.222	.185	.029	34.474
	RAT2EE8	-.019	.038	-.112	-.509	.611	.315	-.024	-.019	.029	34.271
	RAT2EE9	.017	.037	.107	.459	.646	.371	.021	.017	.026	38.171
	RAT2EC10	-.104	.031	-.629	-3.307	.001	.376	-.152	-.125	.039	25.412
	RAT2EC12	.037	.036	.212	1.030	.303	.355	.048	.039	.034	29.688
	RAT4EE6	-.061	.036	-.377	-1.716	.087	.402	-.079	-.065	.030	33.886
	RAT4EE7	.044	.032	.289	1.368	.172	.413	.063	.052	.032	31.434
	RAT4EE8	.006	.036	.038	.173	.863	.339	.008	.007	.030	33.360
	RAT4EE9	-.024	.031	-.152	-.758	.449	.396	-.035	-.029	.035	28.358
	RAT4EC10	.073	.027	.490	2.680	.008	.427	.124	.101	.043	23.499
	RAT4EC12	-.029	.035	-.183	-.831	.406	.358	-.039	-.031	.029	34.017

a. Dependent Variable: Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT

Table 8

Coefficients[a]											
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	4.268	.832		5.128	.000					
	Q8. TO ANALYSE RELEVANT INFORMATION	-.097	.216	-.117	-.450	.653	-.142	-.021	-.019	.027	37.110
	Q9. TO USE ANALYTIC TECHNIQUES	.176	.186	.229	.944	.346	-.237	.044	.040	.031	32.131
	Q10.TO FOCUS ATTENTION ON CRUCIAL INFORMATION	-.103	.046	-.127	-2.247	.025	-.264	-.104	-.096	.577	1.734
	Q36. INFLATION RATE	-.188	.157	-.189	-1.191	.234	-.214	-.055	-.051	.073	13.712
	Q37. EXCHANGE RATE WITH THE DOLLAR	-.223	.134	-.267	-1.667	.096	-.241	-.077	-.071	.071	14.027
	Q38. INTEREST RATE.	-.110	.145	-.118	-.760	.448	-.205	-.035	-.033	.076	13.141
	Q39. RESULTS OF ECONOMIC RESTRUCTURING	-.099	.140	-.115	-.711	.477	-.205	-.033	-.030	.069	14.392
	Q40. CHANGES IN COMPETITORS' TUITION FEES	.369	.133	.441	2.777	.006	-.150	.128	.119	.073	13.745
	Q42. CHANGES IN COMPETITORS' STRATEGIES.	.101	.130	.107	.773	.440	-.196	.036	.033	.095	10.475
	RAT2EE6	-.011	.041	-.066	-.272	.786	-.223	-.013	-.012	.031	32.351
	RAT2EE7	.035	.037	.240	.956	.339	-.213	.044	.041	.029	34.474
	RAT2EE8	.065	.040	.405	1.618	.106	-.194	.075	.069	.029	34.271
	RAT2EE9	.014	.040	.094	.355	.723	-.209	.016	.015	.026	38.171
	RAT2EC10	-.049	.034	-.314	-1.454	.147	-.200	-.067	-.062	.039	25.412
	RAT2EC12	-.020	.039	-.122	-.522	.602	-.218	-.024	-.022	.034	29.688
	RAT4EE6	.044	.038	.283	1.137	.256	-.279	.053	.049	.030	33.886
	RAT4EE7	.023	.035	.157	.656	.512	-.289	.030	.028	.032	31.434
	RAT4EE8	-.046	.038	-.300	-1.215	.225	-.277	-.056	-.052	.030	33.360
	RAT4EE9	-.004	.034	-.030	-.133	.895	-.279	-.006	-.006	.035	28.358
	RAT4EC10	-.063	.029	-.447	-2.154	.032	-.259	-.100	-.092	.043	23.499
	RAT4EC12	-.028	.037	-.189	-.759	.448	-.281	-.035	-.032	.029	34.017
a. Dependent Variable: Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT											

Table 9

Coefficients[a]											
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1.482	.847		1.749	.081					
	Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?	.187	.172	.236	1.092	.275	.413	.051	.042	.032	31.183
	Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?	-.004	.217	-.004	-.018	.986	.226	-.001	-.001	.033	30.757
	Q36. INFLATION RATE	.536	.186	.510	2.884	.004	.296	.133	.111	.048	20.995
	Q37. EXCHANGE RATE WITH THE DOLLAR	-.667	.156	-.755	-4.261	.000	.294	-.194	-.165	.048	21.040
	Q38. INTEREST RATE.	.349	.169	.353	2.067	.039	.218	.096	.080	.051	19.556
	Q39. RESULTS OF ECONOMIC RESTRUCTURING	.406	.153	.446	2.663	.008	.320	.123	.103	.053	18.860
	Q40. CHANGES IN COMPETITORS' TUITION FEES	.241	.139	.272	1.741	.082	.345	.081	.067	.061	16.427
	Q42. CHANGES IN COMPETITORS' STRATEGIES.	-.430	.163	-.432	-2.634	.009	.225	-.121	-.102	.055	18.032
	INT1EE6	-.072	.033	-.468	-2.175	.030	.422	-.100	-.084	.032	31.118
	INT1EE7	.060	.030	.405	1.995	.047	.435	.092	.077	.036	27.636
	INT1EE8	.039	.036	.242	1.106	.269	.399	.051	.043	.031	32.053
	INT1EE9	-.032	.034	-.202	-.937	.349	.444	-.043	-.036	.032	31.251
	INT1EC10	-.010	.030	-.066	-.335	.737	.465	-.016	-.013	.038	26.124
	INT1EC12	.016	.032	.104	.506	.613	.411	.023	.020	.035	28.383
	INT5EE6	-.048	.045	-.270	-1.074	.283	.330	-.050	-.041	.024	42.471
	INT5EE7	.136	.039	.824	3.518	.000	.341	.161	.136	.027	36.818
	INT5EE8	-.131	.049	-.736	-2.652	.008	.256	-.122	-.102	.019	51.736
	INT5EE9	-.048	.041	-.277	-1.169	.243	.338	-.054	-.045	.027	37.618
	INT5EC10	-.014	.035	-.086	-.404	.686	.360	-.019	-.016	.033	30.658
	INT5EC12	.109	.039	.612	2.760	.006	.309	.127	.107	.030	33.028

a. Dependent Variable: Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT

Table 10

Coefficients[a]											
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	4.259	.889		4.792	.000					
	Q11.TO WHAT EXTENT THE CHAIRPERSON/DEAN RELIES ON PERSONAL JUDGMENT?	.180	.180	.239	1.000	.318	-.258	.046	.043	.032	31.183
	Q15.TO WHAT EXTENT DO CHAIRPERSON/DEAN TRUST IN THEIR INTUITION?	-.200	.228	-.208	-.878	.381	-.237	-.041	-.038	.033	30.757
	Q36. INFLATION RATE	.029	.195	.029	.149	.882	-.214	.007	.006	.048	20.995
	Q37. EXCHANGE RATE WITH THE DOLLAR	-.128	.164	-.153	-.778	.437	-.241	-.036	-.033	.048	21.040
	Q38. INTEREST RATE.	-.002	.177	-.002	-.011	.991	-.205	-.001	.000	.051	19.556
	Q39. RESULTS OF ECONOMIC RESTRUCTURING	-.010	.160	-.012	-.062	.950	-.205	-.003	-.003	.053	18.860
	Q40. CHANGES IN COMPETITORS' TUITION FEES	-.022	.145	-.027	-.153	.878	-.150	-.007	-.007	.061	16.427
	Q42. CHANGES IN COMPETITORS' STRATEGIES.	.039	.171	.042	.228	.820	-.196	.011	.010	.055	18.032
	INT1EE6	-.012	.035	-.079	-.331	.741	-.293	-.015	-.014	.032	31.118
	INT1EE7	.048	.032	.344	1.526	.128	-.284	.071	.065	.036	27.636
	INT1EE8	-.045	.037	-.292	-1.203	.230	-.287	-.056	-.052	.031	32.053
	INT1EE9	-.010	.035	-.071	-.295	.768	-.289	-.014	-.013	.032	31.251
	INT1EC10	.032	.031	.225	1.030	.304	-.250	.048	.044	.038	26.124
	INT1EC12	-.088	.034	-.595	-2.606	.009	-.309	-.120	-.112	.035	28.383
	INT5EE6	-.015	.047	-.091	-.328	.743	-.276	-.015	-.014	.024	42.471
	INT5EE7	-.018	.040	-.117	-.449	.653	-.285	-.021	-.019	.027	36.818
	INT5EE8	.030	.052	.181	.588	.557	-.260	.027	.025	.019	51.736
	INT5EE9	-.009	.044	-.056	-.212	.832	-.271	-.010	-.009	.027	37.618
	INT5EC10	-.013	.036	-.087	-.366	.714	-.233	-.017	-.016	.033	30.658
	INT5EC12	.045	.041	.268	1.089	.277	-.270	.051	.047	.030	33.028

a. Dependent Variable: Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT

Table 11

Coefficients[a]											
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.494	.981		3.561	.000					
	Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)	-.017	.223	-.017	-.077	.938	.230	-.004	-.003	.029	34.086
	Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)	-.550	.184	-.582	-2.984	.003	.038	-.137	-.114	.038	26.225
	Q36. INFLATION RATE	.182	.194	.174	.941	.347	.296	.044	.036	.043	23.412
	Q37. EXCHANGE RATE WITH THE DOLLAR	-.754	.186	-.853	-4.048	.000	.294	-.185	-.154	.033	30.596
	Q38. INTEREST RATE.	.442	.213	.447	2.074	.039	.218	.096	.079	.031	32.016
	Q39. RESULTS OF ECONOMIC RESTRUCTURING	-.181	.177	-.199	-1.024	.306	.320	-.047	-.039	.039	25.965
	Q40. CHANGES IN COMPETITORS' TUITION FEES	.501	.161	.565	3.116	.002	.345	.143	.119	.044	22.673
	Q42. CHANGES IN COMPETITORS' STRATEGIES.	-.155	.159	-.155	-.973	.331	.225	-.045	-.037	.057	17.576
	DECENT1EE6	.034	.047	.183	.726	.468	.373	.034	.028	.023	43.972
	DECENT1EE7	.154	.038	.969	4.072	.000	.362	.186	.155	.026	38.987
	DECENT1EE8	-.129	.041	-.723	-3.163	.002	.273	-.145	-.121	.028	35.936
	DECENT1EE9	-.033	.039	-.199	-.837	.403	.341	-.039	-.032	.026	38.844
	DECENT1EC10	-.089	.037	-.532	-2.386	.017	.368	-.110	-.091	.029	34.271
	DECENT1EC12	.077	.040	.424	1.909	.057	.314	.088	.073	.029	33.914
	DECENT5EE6	-.030	.037	-.172	-.813	.417	.207	-.038	-.031	.032	30.940
	DECENT5EE7	.087	.034	.529	2.510	.012	.260	.116	.096	.033	30.642
	DECENT5EE8	.018	.040	.097	.442	.658	.197	.021	.017	.030	33.425
	DECENT5EE9	.109	.032	.654	3.388	.001	.286	.155	.129	.039	25.631
	DECENT5EC10	-.011	.032	-.062	-.334	.738	.285	-.016	-.013	.042	23.959
	DECENT5EC12	-.025	.035	-.136	-.710	.478	.179	-.033	-.027	.039	25.469

a. Dependent Variable: Q49. TO INCREASE THE ENROLLMENT RATE IN THE PROGRAMME OFFERED BY THE DEPARTMENT

Table 12

Coefficients[a]											
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	4.238	1.032		4.107	.000					
	Q16.STRATEGIC DECISIONS (E.G. DEVELOPMENT OF NEW PROGRAMME; UNIT STRATEGY)	-.189	.234	-.199	-.806	.421	-.157	-.037	-.034	.029	34.086
	Q20. HUMAN RESOURCES (E.G. HIRING/FIRING; COMPENSATION AND SETTING CAREER PATHS FOR THE PERSONNEL EMPLOYED WITHIN YOUR UNIT; REORGANIZING YOUR UNIT; CREATION OF NEW JOBS)	.272	.194	.304	1.403	.161	-.074	.065	.059	.038	26.225
	Q36. INFLATION RATE	-.205	.204	-.206	-1.004	.316	-.214	-.047	-.043	.043	23.412
	Q37. EXCHANGE RATE WITH THE DOLLAR	-.392	.196	-.469	-2.001	.046	-.241	-.092	-.085	.033	30.596
	Q38. INTEREST RATE.	-.295	.224	-.316	-1.317	.188	-.205	-.061	-.056	.031	32.016
	Q39. RESULTS OF ECONOMIC RESTRUCTURING	.221	.186	.257	1.191	.234	-.205	.055	.050	.039	25.965
	Q40. CHANGES IN COMPETITORS' TUITION FEES	.423	.169	.505	2.501	.013	-.150	.115	.106	.044	22.673
	Q42. CHANGES IN COMPETITORS' STRATEGIES.	-.003	.167	-.004	-.021	.983	-.196	-.001	-.001	.057	17.576
	DECENT1EE6	-.025	.049	-.144	-.514	.608	-.245	-.024	-.022	.023	43.972
	DECENT1EE7	.058	.040	.383	1.448	.148	-.238	.067	.061	.026	38.987
	DECENT1EE8	.074	.043	.435	1.714	.087	-.214	.079	.073	.028	35.936
	DECENT1EE9	.021	.042	.134	.508	.612	-.225	.024	.022	.026	38.844
	DECENT1EC10	-.129	.039	-.811	-3.272	.001	-.222	-.150	-.139	.029	34.271
	DECENT1EC12	.037	.043	.214	.867	.386	-.229	.040	.037	.029	33.914
	DECENT5EE6	.050	.039	.305	1.293	.197	-.164	.060	.055	.032	30.940
	DECENT5EE7	.033	.036	.213	.908	.364	-.200	.042	.038	.033	30.642
	DECENT5EE8	-.009	.042	-.054	-.219	.827	-.183	-.010	-.009	.030	33.425
	DECENT5EE9	-.104	.034	-.655	-3.054	.002	-.220	-.140	-.129	.039	25.631
	DECENT5EC10	.009	.033	.055	.268	.789	-.168	.012	.011	.042	23.959
	DECENT5EC12	-.054	.037	-.317	-1.483	.139	-.189	-.069	-.063	.039	25.469
a. Dependent Variable: Q50.TO ENHANCE QUALITY MANAGEMENT WITHIN THE DEPARTMENT											

Appendix 5.14 Sample correlations and standardized residual covariance before path analysis

Sample Correlations (Group number 1)

	DIMPORTANCEQ5	DIMPORTANCEQ6	DIMPORTANCEQ1	DECENTRALIZATIONQ1	RATIONALITYQ4	RATIONALITYQ3	RATIONALITYQ2	INTUTIONQ5	INTUTIONQ1	DECENTRALIZATIONQ5	DEC.EFFECQ2	DEC.EFFECQ1
DIMPORTANCEQ5	1.000											
DIMPORTANCEQ6	.233	1.000										
DIMPORTANCEQ1	.317	.237	1.000									
DECENTRALIZATIONQ1	.172	.140	.412	1.000								
RATIONALITYQ4	.183	.232	.601	.337	1.000							
RATIONALITYQ3	.239	.213	.587	.264	.414	1.000						
RATIONALITYQ2	.126	.171	.529	.452	.349	.372	1.000					
INTUTIONQ5	.189	.179	.361	.158	.383	.247	.152	1.000				
INTUTIONQ1	.385	.179	.587	.282	.427	.481	.410	.290	1.000			
DECENTRALIZATIONQ5	.068	.104	.349	.195	.262	.212	.341	.207	.269	1.000		
DEC.EFFECQ2	-.114	-.119	-.341	-.157	-.264	-.237	-.142	-.237	-.258	-.074	1.000	
DEC.EFFECQ1	.309	.271	.438	.230	.317	.349	.284	.226	.413	.038	-.238	1.000

Condition number = 14.738

Eigenvalues

4.258 1.200 .992 .910 .843 .741 .714 .610 .533 .482 .429 .289

Appendix 5.14 – Continued

Standardized Residual Covariances (Group number 1 - Default model)

	DIMPORTANCEQ5	DIMPORTANCEQ6	DIMPORTANCEQ1	DECENTRALIZATIONQ1	RATIONALITYQ4	RATIONALITYQ3	RATIONALITYQ2	INTUTIONQ5	INTUTIONQ1	DECENTRALIZATIONQ5	DEC.EFFECQ2	DEC.EFFECQ1
DIMPORTANCEQ5	.000											
DIMPORTANCEQ6	.000	.000										
DIMPORTANCEQ1	.000	.000	.000									
DECENTRALIZATIONQ1	.897	.935	.000	.000								
RATIONALITYQ4	-.481	.000	.000	1.908	.000							
RATIONALITYQ3	1.143	1.608	.000	.475	1.255	.000						
RATIONALITYQ2	-.910	.985	.000	5.022	.633	1.295	.000					
INTUTIONQ5	.000	.000	.000	.203	3.368	.745	-.837	.000				
INTUTIONQ1	4.168	.000	.000	.867	1.460	2.846	2.094	1.589	.000			
DECENTRALIZATIONQ5	-.917	.477	.000	1.112	1.126	.156	3.390	1.765	1.393	.000		
DEC.EFFECQ2	-.481	-.697	-1.863	-.396	-.820	-.610	-.158	-.647	-.688	.320	.240	
DEC.EFFECQ1	4.138	3.582	1.624	.806	.933	.996	.994	.757	.810	-1.938	-2.299	.435

Appendix 5.15 Sample correlations and standardized residual covariance after path analysis

Sample Correlations (Group number 1)

	DIMPORTANCEQ1	RATIONALITYQ4	RATIONALITYQ3	RATIONALITYQ2	INTUTIONQ1	DEC.EFFECQ1
DIMPORTANCEQ1	1.000					
RATIONALITYQ4	.601	1.000				
RATIONALITYQ3	.587	.414	1.000			
RATIONALITYQ2	.529	.349	.372	1.000		
INTUTIONQ1	.587	.427	.481	.410	1.000	
DEC.EFFECQ1	.438	.317	.349	.284	.413	1.000

Condition number = 10.680

Eigenvalues

3.219 .732 .657 .588 .503 .301

Standardized Residual Covariances (Group number 1 - Default model)

	DIMPORTANCEQ1	RATIONALITYQ4	RATIONALITYQ3	RATIONALITYQ2	INTUTIONQ1	DEC.EFFECQ1
DIMPORTANCEQ1	.000					
RATIONALITYQ4	.000	.000				
RATIONALITYQ3	.000	1.255	.000			
RATIONALITYQ2	.000	.633	1.295	.000		
INTUTIONQ1	.000	1.540	2.846	2.094	.000	
DEC.EFFECQ1	1.810	.653	1.015	.828	.765	.369

Appendix 5.16

Path analysis

According to Janssens et al. (2013) path analysis was conducted to assess the causal relationship between the variables. To determine the causal relationship the model in Figure 5.K1 was tested using AMOS. This model was derived from Table 5.XVI.

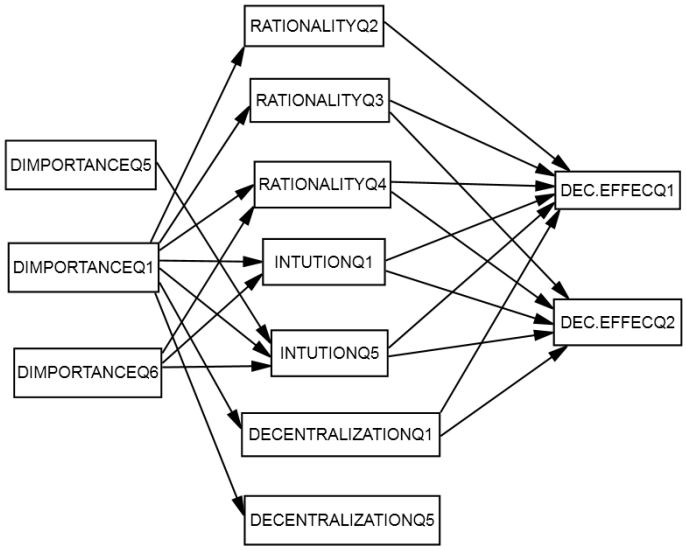


Figure 5.K1, Model to test the causal relationship between the independent and dependent variable

The AMOS output for this model is given in Figure 5.K2.

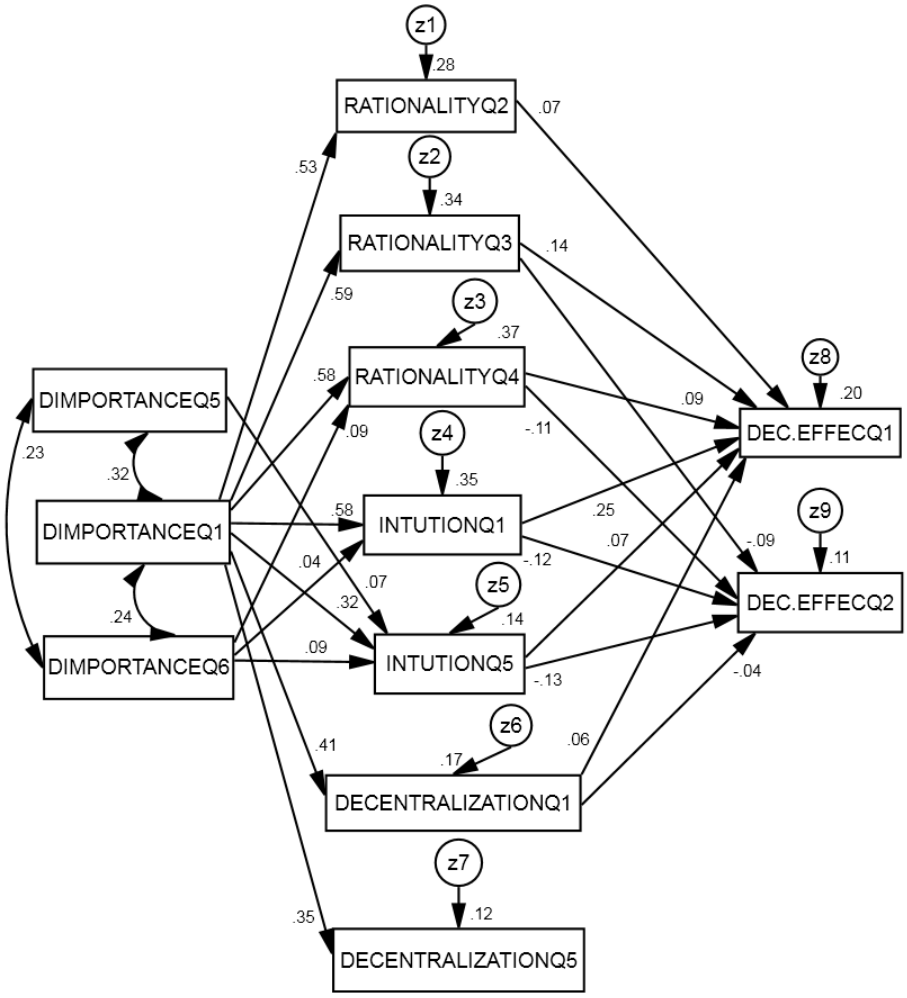


Figure 5.K2, Path analysis of the model in Figure 5.K1

The parameters given in Figure 5.K2 were produced by AMOS using the method of Maximum Likelihood. The coefficients were rounded off to two decimal places. The estimates generated by AMOS are produced in Table 5.XVII. S.E. refers to the standard error component, p refers to the probability value of significance of the path and C.R. refers to the critical ratio. As mentioned in Section--- the p-value of significance should be higher than 0.05 for accepting a regressed relationship to be accepted as valid. Similarly, the C.R. value should greater than or equal to ±1.96. Considering these aspects the regressed relationships were evaluated and the tick mark in the column "Significant path" in Table 5.VII indicates the valid paths. The column "Estimate" provides the standardized regression coefficient generated by AMOS and gives an estimate of the strength

and direction of the effect of one variable on the other taking into account the direction of the arrows depicted in Figure 5.K1.

Causal relationship between variables			Estimate	S.E.	C.R.	P	Label	Significant path
INTUTIONQ1	<---	DIMPORTANCEQ1	.479	.031	15.235	***	par_1	√
INTUTIONQ5	<---	DIMPORTANCEQ6	.034	.017	2.002	.045	par_2	√
RATIONALITYQ2	<---	DIMPORTANCEQ1	.399	.029	13.727	***	par_11	√
RATIONALITYQ3	<---	DIMPORTANCEQ1	.479	.030	15.957	***	par_12	√
INTUTIONQ5	<---	DIMPORTANCEQ1	.208	.029	7.080	***	par_14	√
DECENTRALIZATIONQ1	<---	DIMPORTANCEQ1	.272	.027	9.956	***	par_15	√
RATIONALITYQ4	<---	DIMPORTANCEQ1	.446	.029	15.593	***	par_16	√
RATIONALITYQ4	<---	DIMPORTANCEQ6	.043	.017	2.551	.011	par_21	√
INTUTIONQ5	<---	DIMPORTANCEQ5	.075	.050	1.495	.135	par_22	
INTUTIONQ1	<---	DIMPORTANCEQ6	.021	.019	1.107	.268	par_23	
DEC.EFFECQ1	<---	RATIONALITYQ2	.058	.039	1.483	.138	par_3	
DEC.EFFECQ1	<---	RATIONALITYQ3	.112	.037	3.051	.002	par_4	√
DEC.EFFECQ1	<---	RATIONALITYQ4	.074	.039	1.882	.060	par_5	
DEC.EFFECQ1	<---	INTUTIONQ1	.197	.036	5.444	***	par_6	√
DEC.EFFECQ2	<---	DECENTRALIZATIONQ1	-.040	.043	-.925	.355	par_7	
DECENTRALIZATIONQ5	<---	DIMPORTANCEQ1	.244	.030	8.184	***	par_13	√
DEC.EFFECQ2	<---	RATIONALITYQ3	-.070	.037	-1.913	.056	par_17	
DEC.EFFECQ2	<---	RATIONALITYQ4	-.092	.039	-2.344	.019	par_18	√
DEC.EFFECQ2	<---	INTUTIONQ1	-.087	.036	-2.417	.016	par_19	√
DEC.EFFECQ1	<---	DECENTRALIZATIONQ1	.054	.043	1.275	.202	par_20	
DEC.EFFECQ1	<---	INTUTIONQ5	.070	.043	1.631	.103	par_24	
DEC.EFFECQ2	<---	INTUTIONQ5	-.125	.043	-2.927	.003	par_25	√

Table 5.XVII, Estimates of the significant paths

Table 5.XVII is depicted in Figure 5.K3

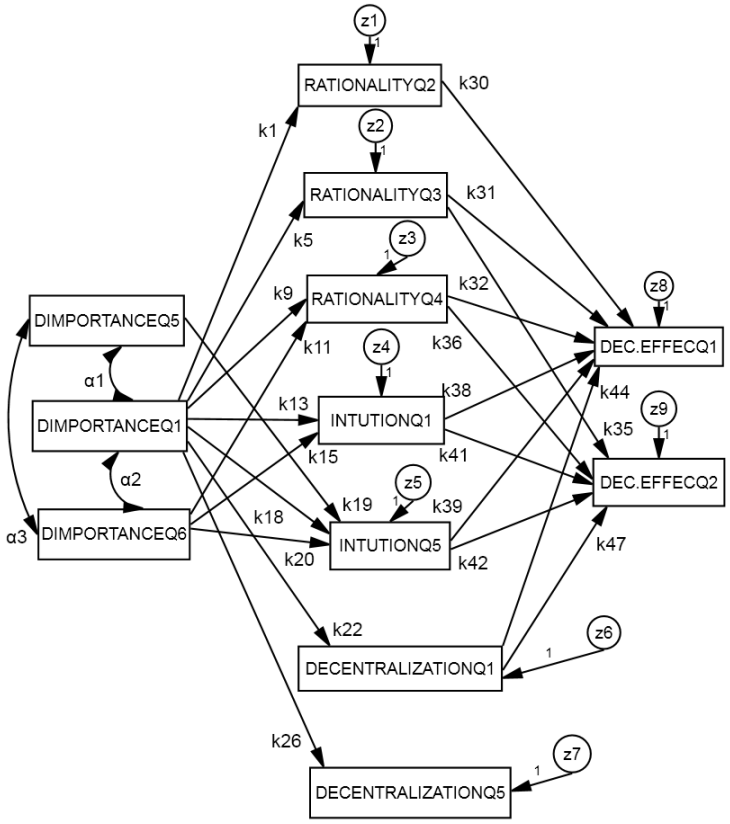


Figure 5.K3, The regression model generated by AMOS (to relate the coefficients of regression refer to equations 5.1 to 5.13)

The new regression equations that emerge after taking into account the significant paths in Table 5.XVII are (the basis for these equations is the regression equations 5.1 to 5.13 as these are the equations that have been depicted in the diagram as different paths by AMOS in Figure 5.K3):

RATIONALITYQ2 = $k_0 + k_1$ DIMPORTANCEQ1 + e_1 → (5.1.1)

RATIONALITYQ3 = $k_4 + k_5$ DIMPORTANCEQ1 + e_2 → (5.2.1)

RATIONALITYQ4 = $k_8 + k_9$ DIMPORTANCEQ1 + k_{11} DIMPORTANCEQ6 + e_3 → (5.3.1)

INTUTIONQ1 = $k_{12} + k_{13}$ DIMPORTANCEQ1 + k_{15} DIMPORTANCEQ6 + e_4 → (5.4.1)

INTUTIONQ5 = k_{17} + k_{18} DIMPORTANCEQ1 + k_{19} DIMPORTANCEQ5 + k_{20} DIMPORTANCEQ6 + e_5 → (5.5.1)

DECENTRALIZATIONQ1 = k_{21} + k_{22} DIMPORTANCEQ1 + e_6 → (5.6.1)

DECENTRALIZATIONQ5 = k_{25} + k_{26} DIMPORTANCEQ1 + e_7 → (5.7.1)

DEC.EFFECQ1 = k_{29} + k_{30} RATIONALITYQ2 + k_{31} RATIONALITYQ3 + k_{32} RATIONALITYQ4 + e_8 → (5.8.1)

DEC.EFFECQ2 = k_{33} + k_{35} RATIONALITYQ3 + k_{36} RATIONALITYQ4 + e_9 → (5.9.1)

DEC.EFFECQ1 = k_{37} + k_{38} INTUTIONQ1 + k_{39} INTUTIONQ5 + e_{10} → (5.10.1)

DEC.EFFECQ2 = k_{40} + k_{41} INTUTIONQ1 + k_{42} INTUTIONQ5 + e_{11} → (5.11.1)

DEC.EFFECQ1 = k_{43} + k_{44} DECENTRALIZATIONQ1 + e_{12} → (5.12.1)

DEC.EFFECQ2 = k_{46} + k_{47} DECENTRALIZATIONQ1 + e_{13} → (5.13,1)

α1, α2 and α3 represent the covariance between the independent variables DIMPORTANCEQ1, DIMPORTANCEQ5 and DIMPORTANCEQ6.

The statistically significant regression equations that emerge are

RATIONALITYQ2 = k_0 + k_1 DIMPORTANCEQ1 + e_1 → (5.1.1)

RATIONALITYQ3 = k_4 + k_5 DIMPORTANCEQ1 + e_2 → (5.2.1)

RATIONALITYQ4 = k_8 + k_9 DIMPORTANCEQ1 + k_{11} DIMPORTANCEQ6 + e_3 → (5.3.1)

INTUTIONQ1 = k_{12} + k_{13} DIMPORTANCEQ1 + e_4 → (5.4.1)

INTUTIONQ5 = k_{17} + k_{18} DIMPORTANCEQ1 + k_{20} DIMPORTANCEQ6 + e_5 → (5.5.1)

DECENTRALIZATIONQ1 = k_{21} + k_{22} DIMPORTANCEQ1 + e_6 → (5.6.1)

DECENTRALIZATIONQ5 = k_{25} + k_{26} DIMPORTANCEQ1 + e_7 → (5.7.1)

DEC.EFFECQ1 = k_{29} + k_{31} RATIONALITYQ3 + e_8 → (5.8.1)

DEC.EFFECQ2 = k_{33} + k_{36} RATIONALITYQ4 + e_9 → (5.9.1)

DEC.EFFECQ1 = k_{37} + k_{38} INTUTIONQ1 + e_{10} → (5.10.1)

DEC.EFFECQ2 = k_{40} + k_{41} INTUTIONQ1 + k_{42} INTUTIONQ5 + e_{11} → (5.11.1)

Rearrangement of equations 5.8.1, 5.9.1, 5.10.1 and 5.11.1 based on the paths in Figure 5.K3 leads to combining the paths

- RATIONALITYQ3 → DEC.EFFECQ1 and INTUTIONQ1→ DEC.EFFECQ1
- RATIONALITYQ4 → DEC.EFFECQ2, INTUTIONQ1 → DEC.EFFECQ2 and INTUTIONQ5 → DEC.EFFECQ2

The resulting equations can be rewritten as:

DEC.EFFECQ1 = K1 + k_{31} RATIONALITYQ3 + k_{38} INTUTIONQ1 + E1 → (5.8.2)

DEC.EFFECQ2 = K2 + k_{36} RATIONALITYQ4 +k_{41} INTUTIONQ1 + k_{42} INTUTIONQ5 + E2→ (5.9.2)

The regression coefficients generated by AMOS are provided in Table 5.XVIII

			Coefficient	Estimate
INTUTIONQ1	<---	DIMPORTANCEQ1	k13	.577
INTUTIONQ5	<---	DIMPORTANCEQ6	k20	.088
RATIONALITYQ2	<---	DIMPORTANCEQ1	k1	.529
RATIONALITYQ3	<---	DIMPORTANCEQ1	k5	.587
INTUTIONQ5	<---	DIMPORTANCEQ1	k18	.319
DECENTRALIZATIONQ1	<---	DIMPORTANCEQ1	k22	.412
RATIONALITYQ4	<---	DIMPORTANCEQ1	k9	.579
RATIONALITYQ4	<---	DIMPORTANCEQ6	k11	.095
INTUTIONQ5	<---	DIMPORTANCEQ5	k19	.067
INTUTIONQ1	<---	DIMPORTANCEQ6	k15	.042
DEC.EFFECQ1	<---	RATIONALITYQ2	k30	.067
DEC.EFFECQ1	<---	RATIONALITYQ3	k31	.140
DEC.EFFECQ1	<---	RATIONALITYQ4	k32	.087
DEC.EFFECQ1	<---	INTUTIONQ1	k38	.251
DEC.EFFECQ2	<---	DECENTRALIZATIONQ1	k44	-.042
DECENTRALIZATIONQ5	<---	DIMPORTANCEQ1	k26	.349
DEC.EFFECQ2	<---	RATIONALITYQ3	k35	-.092
DEC.EFFECQ2	<---	RATIONALITYQ4	k36	-.114
DEC.EFFECQ2	<---	INTUTIONQ1	k41	-.117
DEC.EFFECQ1	<---	DECENTRALIZATIONQ1	k44	.055
DEC.EFFECQ1	<---	INTUTIONQ5	k39	.069
DEC.EFFECQ2	<---	INTUTIONQ5	k42	-.132

Table 5.XVIII, Regression coefficients of equations 5.1 to 5.13

Substituting the values of the coefficients in equations 5.1.1, 5.2.1, 5.3.1, 5.4.1, 5.5.1, 5.6.1, 5.7.1, 5.8.2 and 5.9.2 (see Table 5.XVIII) leads to:

$RATIONALITYQ2 = k_0 + 0.529\ DIMPORTANCEQ1 + e_1 \rightarrow (5.1.1)$

$RATIONALITYQ3 = k_4 + 0.587\ DIMPORTANCEQ1 + e_2 \rightarrow (5.2.1)$

$RATIONALITYQ4 = k_8 + 0.579\ DIMPORTANCEQ1 + 0.95\ DIMPORTANCEQ6 + e_3 \rightarrow (5.3.1)$

INTUTIONQ1 = k_{12} + 0.577 DIMPORTANCEQ1 + e_4 → (5.4.1)

INTUTIONQ5 = k_{17} + 0.319 DIMPORTANCEQ1 + 0.088 DIMPORTANCEQ6 + e_5 → (5.5.1)

DECENTRALIZATIONQ1 = k_{21} + 0.412 DIMPORTANCEQ1 + e_6 → (5.6.1)

DECENTRALIZATIONQ5 = k_{25} + 0.349 DIMPORTANCEQ1 + e_7 → (5.7.1)

DEC.EFFECQ1 = K1 + 0.14 RATIONALITYQ3 + 0.251 INTUTIONQ1 + E1 → (5.8.2)

DEC.EFFECQ2 = K2 – 0.114RATIONALITYQ4 – 0.117 INTUTIONQ1 0.132 INTUTIONQ5 + E2→ (5.9.2)

Further, the covariance between the three independent variables were analysed to know the significance in the association between them. The report generated by AMOS is provided in Table 5. XIX.

Covariance amongst the independent variables							
			Estimate	S.E.	C.R.	P	Label
DIMPORTANCEQ1	<-->	DIMPORTANCEQ5	.499	.075	6.642	***	par_8
DIMPORTANCEQ1	<-->	DIMPORTANCEQ6	1.069	.211	5.075	***	par_9
DIMPORTANCEQ6	<-->	DIMPORTANCEQ5	.617	.123	4.994	***	par_10

Table 5.XIX, Covariance data

The covariance data shows statistically significant paths between the three independent variables with p-values of significance well below the 0.05 level.

Lastly in order to determine the strengths of the association between the three independent variables the correlation between the variables was checked and the report generated by AMOS is given in Table 5.XX.

Correlation amongst the independent variables				
			Estimate	Coefficients
DIMPORTANCEQ1	<-->	DIMPORTANCEQ5	.317	α1
DIMPORTANCEQ1	<-->	DIMPORTANCEQ6	.237	α2
DIMPORTANCEQ6	<-->	DIMPORTANCEQ5	.233	α3

Table 5.XX

Appendix 5.17

Model estimation and evaluation

Model specification includes expressing hypothesized relationships amongst a set of variables diagrammatically or mathematically (see Figure 5.2) including those variables as mediators and moderators. Figure 5.2 shows that the model is represented diagrammatically. Next a model is said to be theoretically identified if there is a unique solution possible for it and for its parameters (Kline, 1998; Ullman, 2001). One way of checking whether a model is identified or not is to check its recursive property. Recursive models are said to be identified (Kline, 1998). Amos produces a report to check whether the model is recursive or not. When checked using AMOS the model in Figure 5.2 was found to be recursive and hence the model in the figure was concluded to be identified. Measure selection involved measuring the reliability and validity of the model that demonstrates good psychometric properties. These have been discussed already under Section 4.5. Data collection, cleaning and preparation have been discussed under Sections 4.10 to 4.12. Model analysis (model estimation) and evaluation (model fit) has been provided next.

1. Model analysis (model estimation)

Model analysis involves using Maximum Likelihood method, a method widely used to estimate models (Lefcheck, 2015; Abramson et al. 2005). According to Kline (1998) model estimation involves estimation of parameters that are unanlysed associations between independent variables, direct relationship between independent and dependent variables, variance and error variance of all variables. Prior to estimation of the model, sample correlations and standardized residual covariances were examined to check the validity of the data that fits the model. Acceptable correlation values 8 are expected to be less than 0.8 while standardized residual covariances values are expected to be less than 2.0. From Appendix 5.12 it can be seen that sample correlations are less than 0.8 whereas standardized residual covariance values in some cases exceeded 2.0. Items contributing to this situation were deleted which include DIMPORTANCEQ5,

Appendix 5.17

Model estimation and evaluation - Continued

DIMPORTANCEQ6, INTUTIONQ5, DECENTRALIZATIONQ1, DECENTRALIZATIONQ5 and DEC.EFFECQ2. After deleting these items, the resulting sample correlation and standardized covariance values produced by AMOS was given in Appendix 5.13 which shows that except for one value all other values are either approximately equal to 2 or less than 2. Considering the fact the correlation values were well within acceptable levels, the researcher retained the remaining components. The resulting model is provided in Figure 5.3.

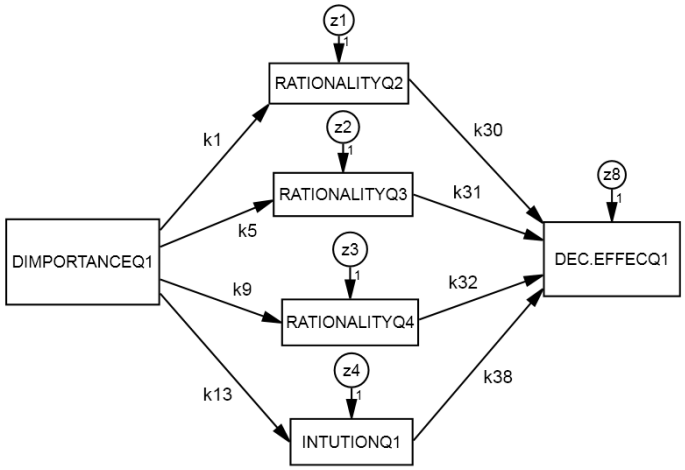


Figure 5. 3 Resulting model after checking standardized residual covariance

The regression weights of the newly derived model were checked next and are provided in Table 5. K5.

			Estimate	S.E.	C.R.	P	Label
INTUTIONQ1	<---	DIMPORTANCEQ1	.487	.031	15.933	***	k13
RATIONALITYQ2	<---	DIMPORTANCEQ1	.399	.029	13.727	***	k1
RATIONALITYQ3	<---	DIMPORTANCEQ1	.479	.030	15.957	***	k5
RATIONALITYQ4	<---	DIMPORTANCEQ1	.464	.028	16.563	***	k9
DEC.EFFECQ1	<---	RATIONALITYQ2	.072	.039	1.871	.061	k30
DEC.EFFECQ1	<---	RATIONALITYQ3	.117	.037	3.214	.001	k31
DEC.EFFECQ1	<---	RATIONALITYQ4	.100	.039	2.583	.010	k32
DEC.EFFECQ1	<---	INTUTIONQ1	.207	.036	5.754	***	k38

Table 5.XXI, Regression weights of the model in Figure 5. 3

It can be seen that all regressed relationships except RATIONALITYQ2 → DEC.EFFECQ1 are statistically significant. This aspect will be discussed later in this section. Next the squared multiple correlations were checked and it was found that all values are either equal to 0.2 or above 0.2 and are considered acceptable (Hopper et al. 2008) (Table 5.XXII).

	Estimate
RATIONALITYQ4	.362
RATIONALITYQ3	.345
RATIONALITYQ2	.280
INTUTIONQ1	.344
DEC.EFFECQ1	.200

Table 5.XXII, SMC values

The estimates in Table 5.XXII indicate that the variable decision importance accounts for:

36.2% of variance in RATIONALITYQ4

34.5% of variance in RATIONALITYQ3

28% of variance in RATIONALITYQ2

34.4% of variance in INTUTIONQ1

20% of variance in DEC.EFFECQ1

Further inference can be made as follows:

- Decision importance influences rationality in decision making and intuition. Hypotheses H1and H2 are accepted.
- Rationality in decision making influences decision effectiveness. Hypothesis H4 is accepted.
- Intuition influences decision effectiveness. Hypothesis H5 is accepte

From Table 5.XXI it can be argued that all the paths namely DIMPORTANCEQ1→ RATIONALITYQ2, DIMPORTANCEQ1→ RATIONALITYQ3 and DIMPORTANCEQ1→ RATIONALITYQ4 are seen to be significant and strong which is indicated by the strength of the regression coefficients (0.399) (0.479) and (0.464) respectively. Similarly the path DIMPORTANCEQ1 → INTUTIONQ1 is seen to be significant and strong with a regression coefficient of 0.487. Further the relationships RATIONALITYQ3 → DEC.EFFECQ1, RATIONALITYQ4 → DEC.EFFECQ1and INTUTIONQ1 → DEC.EFFECQ1 were found to be significant and seen to have regression coefficients that indicate small effect (see Section 4.12.2) that is 0.117, 0.1 and 0.207 respectively. The relationship RATIONALITYQ3 → DEC.EFFECQ2 is seen to be statistically insignificant.

The explanation that could be given here is that the importance of decisions in the decision making process of HEIs is having a significant influence on the rationality in decision making and intuition of the decision makers. Similarly rationality in decision making and intuition are influencing the decision making effectiveness. Overall the model analysis shows that decision importance is having an indirect influence on decision effectiveness. The main inference that can be made is that two conflicting concepts namely rationality in decision making and intuition have significant influence in the decision effectiveness, a finding that clearly picturizes the reality that exists in the HEIs. It appears both rationality in decision making and intuition as concepts although conflicting, need to coexist in the decision making process in HEIs although it remains to be seen how one can reconcile the two contradicting aspects in all situations. After estimating the model the next step taken was evaluating the model by checking its fitness to data. Model fitness given in the next section enabled the researcher to verify whether the re-specified model provided in Figure 5.2 fits the data.

Model fit (model evaluations)

According to Arbuckle (2005) evaluating the model involves testing or measuring the parsimony, minimum sample discrepancy function, population discrepancy, comparison to baseline models and goodness of fit. Parsimony or how simple a model is measured by using the Parsimony Goodness-of-fit Index (PGI) (Hooper

et al. 2008). A model is said to be parsimonious if PGI is within 0.5 (Schumacker & Lomax, 2016). This was checked on the model in Figure 5.2 using PGFI report generated by AMOS (see Table 5.XXIII).

Model	RMR	GFI	AGFI	PGFI
Default model	.089	.960	.880	.320
Saturated model	.000	1.000		
Independence model	.709	.499	.299	.357

Table 5.XXIII, PGFI report of AMOS for the model in Figure 5.2

It can be seen from Table 5.K5 that the PGFI value reported by AMOS is 0.32 which is less than the recommended value of around 0.5. The minimum sample discrepancy function was measured using CFI. According to Suhr (2008) CFI values exceeding 0.9 indicate that the model is fit to the population under study and is independent of the sample. AMOS reported CFI values as 0.95 indicating a good fit of the model to the population (see Table 5.XXIV).

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.943	.878	.950	.892	.950
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Table 5.XXIV, Baseline Comparison report of AMOS for the model in Figure 5.2

Population discrepancy function is a measure of the unbiased estimate of model fit to population values and relieves the measurements of sample size effects (Curran et al. 2002). RMSEA is used to measure this function. While there is no agreement on what is the cut-off value that must be used to test this fitness index (Crucke & Decramer, 2016), it is suggested that values closer to zero are considered to be acceptable. From Table 5.XXV it is seen that RMSEA is reported as 0.12 which not far from zero (see da Rocha et al. 2012 who considered RMSEA measured as 0.11 is acceptable fit).

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.118	.090	.149	.000
Independence model	.361	.341	.380	.000

Table 5.XXV, RMSEA report of AMOS for the model in Figure 5.2

Next comparison to baseline models and measurement of goodness-of-fit were carried out using RMR, GFI, NFI and CFI indices which provided the fitness of the default model (Figure 5.K53) to an independent model generated by AMOS. Thus the report generated by AMOS as provided in Table 5.XXIV indicates that the model is fit to the widely accepted values (RMR < 0.1 and GFI, NFI and CFI ≥ 0.9, NFI).