INVESTIGATING FACTORS INFLUENCING THE DECISION MAKING PROCESS FOR ERP ADOPTION AND IMPLEMENTATION: AN EXPLORATORY CASE STUDY

Khaled Al-Fawaz, Information Systems Evaluation and Integration Network Group (ISEing) Brunel Business School, Brunel University, UK
khaled.al-fawaz@brunel.ac.uk

Tillal Eldabi, Information Systems Evaluation and Integration Network Group (ISEing) Brunel Business School, Brunel University, UK
tillal.eldabi@brunel.ac.uk

Muhammad Kamal, Information Systems Evaluation and Integration Network Group (ISEing) Brunel Business School, Brunel University, UK
muhammad.kamal@brunel.ac.uk

Abstract

The rapid developments in Information and Communication Technologies (ICT) have resulted into a borderless business environment along with an amplified market competition. Traversing through such a trend globally, organisations have significantly focused on adopting and implementing Enterprise Resource Planning (ERP) systems to automate their prime business processes, enhance organisational productivity with lower costs and prompt service delivery to fulfil consumer demands. Thus, ERP systems are considered as a principal source to provide imperative information vital for strategic decision making process. On the contrary, ERP systems adoption and implementation is also highly considered as a challenging and expensive process that not only requires rigorous efforts but also demands to have an exhaustive investigation of influential factors that are critical to the adoption and implementation of ERP systems. A plethora of research studies have been theorised exploring factors influencing the decision making process for ERP adoption and implementation; however, the authors claim that these studies are not filtered comprehensively in terms of the different perspectives. Notwithstanding, the implications of such research have yet to be assessed, leaving scope for timeliness and novel research. This paper thus focuses on the ERP critical success factors from five different perspectives such as: stakeholders; process; technology; organisation; and project based on the literature analysis. These perspectives comprise of 24 factors that are imperative for a successful ERP adoption and implementation, which are validated through a qualitative single case study based research. The empirical findings illustrate that these factor help realise significant benefits such as reducing costs and saving time or extra effort.

Keywords: ERP, Critical Success Factors (CSF), Perspectives, Adoption, Implementation

1 INTRODUCTION

Organisations globally have procured different commercial software packages, such as the ERP systems to automate their business processes in order to decrease costs, enhance efficiency and gain competitive position over their competitors (Nour and Mouakket, 2011; Gupta and Kohli, 2006). Moon (2007) however, argues that without the successful adoption and implementation of ERP systems, the projected benefits of improved productivity and competitive advantage would not be realised. This creates trade off for decision makers to find causes and to manage the consequences. ERP systems can benefit organisations in plethora of ways, including among others: (a) supporting all

variations of preeminent business practices, (b) facilitating the implementation of the business practices with the intend to achieve improvements in productivity, and (c) enabling organisations to transform the implemented business processes to fit their requirements (Change *et al.,* 2008). Nevertheless, to achieve such benefits the adoption and implementation of ERP systems depend upon various influential factors during the course of initiation to benefits realisation. The understanding of these factors is thus critical for success in an organisational environment. On the contrary, the high ERP systems failure rates suggest that thoroughly understanding and implementing ERP systems is a challenging task (Al-Mashari *et al.,* 2006). The best known case of ERP implementation failure that did not deliver the pledged functionality and jeopardising the future of the company is the ERP project undertaken by FoxMeyer, which allegedly led to the liquidation of the company along with the company claiming to have endured damages of $500 million because of the malfunction of the ERP system (Scott, 1999).

ERP systems facilitate in creating, managing and maintaining the information backbone for top management decision making (Shehab *et al.,* 2004). Kroenke (2008) report that ERP as a discipline still has its hypothetical lineage in strategic management field where its perspectives suggest the demarcation strategy of improvement through quality and innovation. This can be transformed into the indispensable and non-imitable resources for the organisation. ERP systems as enterprise wide business process planning have many applications and usages such as information management technique, change agent and technology strategy tool. The existing literature offers more definitions and applications of ERP than the actual phases or components of this process perspective itself. This has led to ERP's worldwide acceptance as an enterprise-wide system designed to integrate and to optimise the business processes to achieve advantage over the competitors in the industry (Moon, 2007). Based on the application perspective, its roots are originally in the Manufacturing Resource Planning (MRP) process for inventories or material management since 1970s. This system has basic material flow logistics modules within it such as: master schedule, billing, inventory records and future requirements module. The next breakthrough innovation added to MRP was priority planning which allowed development of further tools such as sales, demand, production and capacity planning and scheduling. These changes successfully produced closed loop MRP. Addition of financial interface and simulation became version MRP-II and later on technological developments attracted industry's attention which led to ERP (Wallace and Kremzar, 2001).

Razmi *et al.,* (2009) offered a comprehensive definition explaining the concept of ERP. This definition provides the latest view from literature that how ERP is perceived and applied, such as "*ERP systems are integrated and corporate-wide systems that automate core activities such as manufacturing, human resources, finance and supply chain management. In such systems the fragmented information is integrated to support the decision making process*". This definition clearly illustrates the transformation of ERP – from historical position of tool to software to manage data that has evolved into an integrated system, a technology, an organisation wide business process application or a generic term like a paradigm which can bring significant changes and improvement at all levels in the organisation (Gupta and Kohli, 2006). ERP systems offer an attractive solution to involved industry executives to eliminate irreconcilable systems and incoherent policies. Among other benefits also reported as earlier, employing ERP systems can result in easier access to information in a fixed time interval, diminution in inventory levels and cycle times, reducing business process lengths and time, improvement in quality, supply chain management, high efficiency and low costs leading ultimately to competitiveness of the organisation (Razmi *et al.,* 2009).

The authors intent to critically review the normative literature to explore influential factors influencing the decision making process for ERP adoption and implementation based on different perspectives. Theoretical contribution of the paper is comprised of defining five major perspectives and prioritisation of influential factors in adoption and implementation of ERP. These factors are validated through an in-depth qualitative single case study based research. The structure of the remaining paper is as follows: Section 2 presents details of ERP benefits realised; Section 3 details the challenges with

ERP adoption and implementation. Section 4 identifies the most imperative ERP critical success factors identified in the literature and prioritised in relation to five different perspectives. This creates clearer understanding of factors influential for successful ERP implementation. Section 5 presents the research methodology through which the influential ERP critical success factors are validated. In Section 6, the authors present the case study data from a company that is part of the transport and aviation industry in Saudi Arabia and finally summarising the conclusions in Section 7.

2 ERP ADOPTION AND IMPLEMENTATION PROCESS – BENEFITS REALISATION

ERP systems are highly considered as extensive, integrated software systems that support IT infrastructure, business process and other internal operations of an organisation (Doom *et al.*, 2009). These systems have become a sought-after tool for multi-purpose improvement of organisational functions, its processes and final performance (Ross and Vitale, 2000). Rationale to adopt ERP systems have primarily been the substantial benefits that the organisations aspire to acquire, or insubstantial viewpoint to fortify the organisation's business structure (Nguyen, 2009). There are several internal conditions within an organisation and along with its core and non-core resources that play an equivalent part as compared to the competitive forces of the business environment (Boonstra, 2006). ERP adoption and implementation is not merely confined to one department but is an organisation wide issue and can be perceived as a modernisation and automation project, strategic change, an organisational system, software, business process improvement technique, or an IT integration of the firm (Macpherson *et al.*, 2003). These different perspectives exemplify different perspectives of employing ERP systems within an organisational setup, such as: stakeholders, business processes, technology and IT infrastructure, organisation and project.

ERP systems offer both types of benefits to organisations i.e. tangible and intangible.

- From tangible perspective, ERP systems can directly affect the bottom line of the business and from intangible perspective; ERP systems are less quantifiable and less measurable as an actual value (Poon and Yu, 2010).

- For instance, cost reduction and increase in operational efficiencies can be regarded as a tangible benefit (Mathrani and Viehland, 2010), whereas improved customer services by more smiling and happy faces in a retail store is intangible (Remenyi *et al.*, 2000).

- Murphy and Simson (2002) deduce from Remenyi *et al.*, (2000) that tangible and investigational benefits can have high and low degrees of being directly countable and effectual.

- Irani and Love (2001) add to the latter that corporate level strategic benefits might be generally intangible and non-quantitative where as tactical and operational benefits are in general, tangible and quantitative in nature.

- Nguyen (2009) also reports here that intangible benefits can be either ongoing or be realised at a future state in time.

Based on tangibility and measurability of the ERP benefits, they can be categorised into 5 dimensions such as *(a)* strategic, *(b)* managerial, *(c)* operational, *(d)* IT infrastructure and *(e)* organisational.

- For example, these benefits include cost reduction, cycle time reduction, building cost leadership, operational control, reduced inventories, better data analysis, empowering employees (Abdelghaffar and Azim, 2010; Shang and Seddon, 2000).

- Major benefits such as reducing the cost of manufacturing operations and staff overheads which can be finally converted into margin earning and suitable investment resources are the usual targets in adopting ERP. This could enhance over all business operating even if it is not the intended outcome (Nguyen, 2009).

- Based on the amount to be spent, these ERP systems are not just like any other monthly IT expenses but they are capital in nature and hence, need analysis and adoption appraisal of ERP become necessary before investing in the ERP (Ballantine and Stray 1998).

In spite of lot of efforts put into planning, selection and spending of financial resources, many projects do not reach to successful conclusion as it has been in past with many ERP projects failing to keep up to their pledged performances. Hence, the historical results of poor success rate makes managers vary of the new system implementation (Acar *et al.*, 2005; Shin, 2006).

3 ERP ADOPTION AND IMPLEMENTATION PROCESS – AN IMMENSE CHALLENGE

Over the past decade, the significant revolution and focus towards ERP adoption and implementation has forced top management to trade off for opting the system that is vital for their organisation in which their main aim is to generate the business value (as returns) from their huge investments (Abdelghaffar and Azim, 2010; Ross and Vitale, 2000). The authors argue that this would only be practicable when the need for ERP systems' infrastructure would arise internally within the organisation. Alternatively, external pressures would force in creating such circumstances where where customer focus or competition forces would require the organisation to adopt a system which can integrate the elements of its business. However, rationale for adopting and implementing new ERP systems can be different based on the contextual factors for every organisation. Also, post-selection factors which can affect implementation can be varied as per the internal conditions or external forces. There may be various reasons for such rejection or unsuccessful conclusion to ERP adoption and implementation as discussed below:

- Management may not be knowledgeable or obvious about the requirement of IT infrastructure such as ERP systems that what is reason for adopting and how they will proceed in this regard or whether such a capital investment is necessary for their organisation (Levy *et al.*, 2001; Oakey and Cooper, 1991).

- A divergence is formed as most of the times managers do not realise, or are not experienced and do not understand the integration between their core business and IT processes, and organisation's positioning; and more importantly, they may also not know about the role that IT can play to their organisation (Macpherson *et al.*, 2003).

- Management of the organisation may not know that these new ERP systems can bring manifold synergies or benefits to their organisation as a whole and individually in each department (Southern and Tilley, 2000).

- Organisations may not have the required resources such as accessibility, skills and expertise, competencies or dynamic capabilities to fabricate any substantial productivity from these ERP systems (Bhagwat and Sharma, 2007).

- Globally organisations deploy sole ERP solutions for all its internal operations and subsidiaries. It is often noted that this type of practice leads to problems in local subsidiaries such as over budgeting and time resources spending, lack of technical expertise and compromises in business process (Sethi *et al.*, 2008).

- Several organisations are not capable in leveraging their existing ERP systems for take advantage of new business prospects surfacing with rapid market developments. Karimi *et al.*, (2009) argue that this behaviour establishes a fabrication of pretence with regards to ERP systems not being successful especially to the top management.

- It is often observed that the primary focus on ERP adoption and implementation often neglects post-implementation maintenance and support from an early stage after roll out in the life cycle (Law *et al.*, 2010).

The abovementioned grounds form the basis for taking decision for adoption (i.e. acceptance) or rejecting the huge investing in ERP systems infrastructure. On acceptance to invest in ERP systems, it is often observed that different organisations follow different approaches while adopting and implementing ERP systems' infrastructure. However, the prime challenge faced by many organisations is the fit of new ERP systems within their existing IT infrastructure. Differences between an organisation's processes and functions with ERP modules can be attributed to the compatibility issue. Here comes the factual trial of skills and expertise when the ERP team attempts to correlate and offer a practicable procedure between these two groups of business needs. It is simply comprehensible that right fit would make the implementation faster and easy with higher chances of success rate. This viewpoint is reverberated by many advocates and a manifestation for large organisations rolling out ERP for all subsidiaries (Boonstra, 2006; Sethi *et al.*, 2008). The implementation process is particularly complicated at this stage where all organisational functions are integrated into one central data system as per design requirements of ERP (Allen and Kern, 2001). This indicates that the implementation process is one of the most crucial stages in adopting and deriving benefits of ERP.

Based on these reasons of adoption, targeted results and other organisational issues, one can categorise different deployment strategies for each phase of implementation and factors influencing the implementation. For the reason aforementioned, there is need to investigate such factors that influence the decision making process for adopting and implementing ERP systems.

4 CRITICAL SUCCESS FACTORS INFLUENCING THE DECISION MAKING PROCESS FOR ERP ADOPTION AND IMPLEMENTATION

Understanding the CSFs in implementing ERP systems has been a challenging process for many organisations worldwide. In the context of this research, the theoretical base has already been discussed in previous by the authors (Al-Fawaz *et al.*, 2010); however, herein the authors merely highlight the importance of these CSFs based on the understanding and observation of the normative literature. The importance of factors illustrated in Table 1 thus should not be considered as conclusive evidence as these rankings are extracted from different sources and cannot be generalised to one specific case. The factors are validated through a case study based research in the subsequent section.

Table 1 presents 24 CSFs extracted from the normative literature (specifically focusing on IS and ERP literature). The CSFs highlighted in Table 1 are categorised based on their relevance to a specific category. For example, Top Management Commitment and Project Champion are individuals that are also stakeholders of an organisation, thus, these and other similar factors are categorised accordingly. These factors have been arranged in order of their importance (where *H – High*; *M – Medium*; *L – Low*) in relation to each of the category.

ERP Factors Category	Critical Success Factors	Importance
Stakeholders	Top Management Commitment	**H**
	Project Champion	**H**
	Execution Team	**H**
	Qualified IT Staff	**H**
	External Advisory Support	**M**
	Vendor Partnership	**L**
	Total End-User Involvement	**L**
Process	Business Process Reengineering	**H**
	Customisation Approach	**M**
	Performance Measurement and Control	**L**
Technology	IT Infrastructure	**H**
	Package Requirements and Selection	**M**
	System Testing	**L**
	System Quality	**H**
	Information Quality	**H**
Organisation	Appropriate Business and IT Legacy Systems	**M**
	Change Management	**H**
	Effective Communication	**H**
	Business Vision Goals and Objectives	**H**
	Training and Education	**M**
	Organisational Structure and Culture	**L**
Project	Project Management	**H**
	Budget – Cost Parameters	**L**
	Time	**L**

Table 1: *ERP Critical Success Factors*

5 RESEARCH METHODOLOGY

The authors followed an interpretive, qualitative case study based approach to conduct this research and validate the CSFs related to ERP as presented in Table 1. Researchers exemplify that interpretivism refers to the knowledge of realism that can be gained only through communal constructions such as awareness and perception, collective meanings, language, documents, tools and other artefacts (Saunders *et al.*, 2000). This indicates that an interpretivism viewpoint enables the researchers to steer through and better explain a specific observable fact. It is also expected that as the communal world cannot be condensed to secluded variables, such as space and mass, it must be observed in its entirety. Hence, the authors highlight that, there is a need for a research approach that may allow a specific organisation (in this context – an airline company in Saudi Arabia) to be viewed in their entirety and permits the authors to get close to participants (i.e. the interviewees), penetrate their realities, and interpret their perceptions. Hence, the authors consider interpretivism as more appropriate for the research reported herein.

Having justified the use interpretive research approach, the authors describe the nature of qualitative research approach in order to justify its relevance to the research presented in this paper. Qualitative research is multi-method in focus, involving an interpretive, naturalistic approach to its subject matter (Denzin and Lincoln, 1994). This implies that the qualitative researchers study things in their natural environment, and they comprehend events in terms of meanings that people bring to them. The qualitative paradigm recommends that researchers observe human behaviour and action as it occurs in mundane everyday life (Schutz, 1967). Thus, the authors suggest that in the context of this research a qualitative approach is more appropriate as such approach can be used to: *(a)* examine the in-depth complexities and processes, *(c)* examine the phenomenon in its natural setting, (d) provide considerable flexibility during interviews and observations and *(c)* learn from practice.

A case study examines a phenomenon in its natural setting, employing multiple methods of data collection to gather information from one or a few entities e.g. people, groups, or organisations (Yin, 1994). In the context of this paper, a single case study was conducted at a Saudi Arabia Airline company. Case studies enable the researchers to investigate a phenomenon in depth, getting close to the phenomenon, providing rich primary data and revealing its deep structure within the organisational context (Cavaye, 1996). Data was collected via interviews, observation, and documentation based on a detailed questionnaire. Interviews are regarded as the main tool of qualitative research for data collection process. In this research, interviews constituted the main data source in the case organisations. Ten participants from the case organisations were interviewed using structured interviews. Structured interviews were based on the interview agenda. Using the interview agenda, the interviewees replied in specific questions regarding ERP adoption and implementation. Semi-structure interviews also took place to clarify some issues that derived from this research. All the structure or semi-structured interviews took place at interviewees' office. The interviews were tape recorded and transcripts prepared as soon as possible after each individual interview. Tape recording supported in collecting accurate data and interpreting without time pressures.

6 CASE DATA

The authors agreed to maintain the confidentiality of the respondents and their organisation. Henceforth, the Case Company I which is part of the transport and aviation industry in Saudi Arabia will be termed as Case Company I or airline herein. Case Company I is one of the leading airlines in the Middle-East region and a market leader in the Saudi Arabia. Apart from major function of passenger traffic, the airline has other six business divisions: cargo, catering, ground handling, training, marketing and information technology. The airline employs more than 25000 employees worldwide and operates from 1990s. It has fleet of more than 150 airplanes comprising the latest versions of Boeing and Airbus. It has more than 50 offices around the globe in EMEAA (Europe, Middle East, Asia and America). The airline offers tour planning, ticketing and all required functions online on its corporate portal. It moves more than 20 million passengers and more than 225,000 metric tons of operational cargo annually. It has partnerships with variety of other service providers such as transporters, cargo, holiday operators, hotels, car rentals and restaurants.

6.1 Secondary Data

The Government of the Kingdom of Saudi Arabia is intending to privatise the Case Company I as part of an overall economic reform program. The privatisation process for this Case Company I was kicked off in 2000, and in January 2004, the privatisation strategy was defined and calls for restructuring the company into 10 strategic business units (SBUs). Airline deploys the front line technology in the form of SAP modules for ERP, SRM and CRM with more than 250 loops and thousands of employees in the IT division. Furthermore, Case Company I needs to manage the external market forces, such as competition in the local (Saudi), regional (GCC) and global market new low cost companies and services are being launched and established with announcements of aggressive expansion plans. For this, Case Company I is intending to segment its target market into four segments: low cost domestic, regional /international flag segment, religious charter segment and a royal/VIP segment.

6.1.1 Case Company's I "IT Master Plan Approach"

The Case Company I has availed the services of seven companies' consortium to implement this plan. The major supplier selected for these services is SAP Arabia which will support the overall business process and IT transformation program in close cooperation with employees. SAP Arabia will provide the SAP business suite covering the ERP implementation and Maintenance, Repair and Overhaul (MRO) solution to meet the needs of the enterprise systems platform and the MRO platform.

6.1.2 Objectives of ERP Adoption

The abovementioned IT master plan is aimed by Case Company I to achieve multiple objectives, e.g.:

- Overall technical project management and coordination, including quality assurance, risk management, monitoring and control.
- Implementation of all the software components licensed acquired under the state of work agreement in a phased approach.
- Coordination of business process design and restructuring management.
- Installation/configuration of all infrastructure hardware acquired under this agreement.
- Overall interface design, implementation of interim and final implementation of the integration architecture using the SAP integration layer and airlines' integration platform.
- Data extraction, cleansing and migration into the new enterprise resource planning platform

However, to manage all phases of ERP implementation, following project process was adopted.

6.1.3 ERP Project Process at Case Company I

The worldwide increased competition, open market policies by governments of many countries and technological innovations have developed the airline industry into a complex and dynamic business environment where end-to-end planning has to be comprehensive and decision making within a short timeframe. This needs integration between various components of its business processes backed up by adequate resource allocations and organisational infrastructure to sustain the competitive position and business advantages. The engagement between information systems and strategic planning process becomes a crucial link in such a scenario. Also, there is lack of comprehensive view of IT as every section tries to receive help from IT department for various issues on the already installed modules. This increases downtime and costs of the business. This leads to further difficulties in budgeting, resource allocation, strategy planning and overall business transactions processing. Solutions to such a problem has been sought in designing and implementing ERP modules which requires the complete understanding of issues such as benefits, requirements and drivers of strategic information systems or new technology adoption. The presence of ERP creates the right environment for integrated strategic planning with attention it technology as a backbone in the system. To strengthen the business functions, decision making, governing information and mapping functionality to service, this company started to avail services from SAP modules (ERP, SRM, CRM) in the business intelligence segment.

6.1.4 Scope of ERP at Case Company I

The scope of ERP covers the analytical reports which can highlight the activities, timelines and the performance through visualisation. Deliverable by the service provider shall include the planning – design – installation, documents and ERP training to airline employees. The blueprint shall detail how the benefits will be realised and cost – profitability analysis of the whole project across the time plan. The major audience for ERP is senior management, executives, directors and other important stakeholders who take decisions based on the information generated by ERP implementation. Training by SAP as a service provider consists of important aspects such as broadcasting, drill-down, drill-across, slice and dice concepts, exception reporting, filtering and conditional reporting.

6.1.5 Implementation Approach and Methodology

The contractor developed an integrated methodology known as P2M to manage the delivery of large and small programs to achieve significant benefits. This methodology was applied parallel with the specific SAP solution manager methodology employed in the implementation project. P2M is a pragmatic and focused application of PRINCE2 and includes start up templates, clear guidelines and

forms for the fundamental initiation, governance, specification, milestone planning, reporting control and communications processes which are best practice within PRINCE2. This P2M technique ensures that planning is realistic in terms of deliverables and milestones. P2M has specific focused path to initiation, scoping, phased control, hierarchy and severity level 1-2-3 planning, stakeholder management, change controls, risk management, dependency planning, communications and business case review. Although, there is fixed structure and methodical approach for implementation and project management, the overall style of adopting ERP in the airline is same as organisational culture and ethics of participative and communicative approach. Such a style helped to build the collaborative, team motivation, skills application and accepted leadership during ERP project.

6.2 Primary Data

6.2.1 Factors Influencing ERP – Identifying the Importance

Table 2 provides the ranking of the factors based on the views from the interviewees (sample of 10 airline managers) using Miles and Huberman (1994) scale of less important (○), medium important (◉) and most important (●) and where the interviewees did not respond, the researcher uses "×" symbol to illustrate as no response. The results depict that most of the factors have high importance while taking decisions for ERP adoption and implementation.

		Interviewees and their Responses									
	Factors Influencing ERP	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Stakeholders	Top Management Commitment	●	●	●	●	●	●	●	●	●	●
	Project Champion	●	◉	●	●	●	◉	◉	○	●	○
	Execution Team	●	◉	●	●	●	●	●	●	●	◉
	Qualified IT Staff	●	◉	●	●	●	●	●	●	●	◉
	External Advisory Support	●	●	●	◉	◉	●	◉	◉	◉	○
	Vendor Partnership	●	●	●	◉	●	●	●	●	●	○
	Total End-User Involvement	●	●	●	◉	●	●	●	◉	●	●
Process	Business Process Reengineering	●	●	●	●	●	●	◉	●	●	◉
	Customisation Approach	×	○	◉	◉	●	◉	○	●	◉	○
	Performance Measurement and Control	●	◉	●	◉	●	◉	◉	◉	◉	◉
Technology	IT Infrastructure	●	●	●	●	●	●	●	●	●	◉
	Package Requirements and Selection	◉	●	●	○	●	●	●	●	◉	○
	System Testing	●	●	●	◉	●	●	●	●	●	◉
	System Quality	●	◉	●	●	●	●	●	●	●	○
	Information Quality	●	●	●	●	●	●	●	●	●	◉
Organisation	Appropriate Business and IT Legacy Systems	○	●	◉	○	◉	◉	○	●	◉	○
	Change Management	●	●	●	●	●	●	◉	◉	●	◉
	Effective Communication	●	●	●	●	●	◉	●	●	●	◉
	Business Vision Goals and Objectives	◉	●	●	●	●	●	●	●	●	●
	Training and Education	●	●	●	●	●	●	●	◉	●	◉
	Organisational Structure and Culture	◉	◉	●	●	●	◉	●	●	●	●
Project	Project Management	●	●	●	●	●	●	●	●	●	◉
	Budget – Cost Parameters	●	●	●	●	●	●	◉	◉	●	◉
	Time	●	●	●	◉	●	◉	●	◉	●	◉

Table 2: *Validation of Factors Influencing ERP Adoption and Implementation at Case Company I*

The following Table 3 further presents an extended version of the above table. In this table where interviewees have not responded, authors have termed it as not applicable in the coding of responses. Average shows the final rank for each factor derived based on all the ten responses. In this table, the

authors provide their own judgment irrespective of average obtained. This is not to add the authors' bias but have valid rationale evident from the literature, secondary data of Case Company I and observations made in the Case Company I when interviewing managers.

	Factors Influencing ERP	High	Medium	Low	N/A	Average of responses
		Frequency of H, M, L from 10 Responses				
Stakeholders	Top Management Commitment	**10**	–	–	–	**H**
	Project Champion	**5**	**3**	**2**	–	**M**
	Execution Team	**8**	**2**	–	–	**H**
	Qualified IT Staff	**8**	**2**	–	–	**H**
	External Advisory Support	**4**	**5**	**1**	–	**M**
	Vendor Partnership	**8**	**1**	**1**	–	**H**
	Total End-User Involvement	**8**	**2**	–	–	**H**
Process	Business Process Reengineering	**8**	**2**	–	–	**H**
	Customisation Approach	**2**	**4**	**3**	**1**	**L**
	Performance Measurement and Control	**3**	**7**	–	–	**M**
Technology	IT Infrastructure	**9**	**1**	–	–	**H**
	Package Requirements and Selection	**6**	**2**	**2**	–	**H**
	System Testing	**8**	**2**	–	–	**H**
	System Quality	**8**	**1**	**1**	–	**H**
	Information Quality	**9**	**1**	–	–	**H**
Organisation	Appropriate Business and IT Legacy Systems	**2**	**4**	**4**	–	**L**
	Change Management	**7**	**3**	–	–	**H**
	Effective Communication	**8**	**2**	–	–	**H**
	Business Vision Goals and Objectives	**9**	**1**	–	–	**H**
	Training And Education	**8**	**2**	–	–	**H**
	Organisational Structure and Culture	**7**	**3**	–	–	**H**
Project	Project Management	**9**	**1**	–	–	**H**
	Budget – Cost Parameters	**7**	**3**	–	–	**H**
	Time	**6**	**4**	–	–	**M**

Table 3: *Analysis of Factors Influencing ERP Adoption and Implementation at Case Company I*

The findings from the primary data and authors' interpretation show that most of the factors are considered having high importance in the ERP adoption and implementation. This confirms each factors influence in the decision making and equal importance of the different organisational perspectives which are fundamental to the existence of these factors. Authors' interpretation stands as validation check to findings as this is based on the experience, inferences from literature – secondary data of company and observations made in the field work. In comparing the importance identified from the literature and empirical findings, the authors assert that out of the 24 CSFs, results of 12 CSFs correlate with findings of the literature, whereas, 7 CSFs indicate different results. It can be deduced from these findings that majority of the CSFs presented accentuate higher importance in almost all sector organisations including the case organisation presented herein. Nevertheless, the authors argue that the results generated should not considered final as they are based on a single case. Thus, in increasing the number of cases and validating the set of factors presented, it will provide more harmonised results, allowing better analysis and decision-making for ERP adoption and implementation.

		LITERATURE FINDINGS	EMPIRICAL FINDINGS
ERP Factors Category	**Critical Success Factors**	**Importance**	**Importance**
Stakeholders	Top Management Commitment	**H**	**H**
	Project Champion	**H**	**M**
	Execution Team	**H**	**H**
	Qualified IT Staff	**H**	**H**
	External Advisory Support	**M**	**M**
	Vendor Partnership	**L**	**H**
	Total End-User Involvement	**L**	**H**
Process	Business Process Reengineering	**H**	**H**
	Customisation Approach	**M**	**L**
	Performance Measurement and Control	**L**	**M**
Technology	IT Infrastructure	**H**	**H**
	Package Requirements and Selection	**M**	**H**
	System Testing	**L**	**H**
	System Quality	**H**	**H**
	Information Quality	**H**	**H**
Organisation	Appropriate Business and IT Legacy Systems	**M**	**L**
	Change Management	**H**	**H**
	Effective Communication	**H**	**H**
	Business Vision Goals and Objectives	**H**	**H**
	Training and Education	**M**	**H**
	Organisational Structure and Culture	**L**	**H**
Project	Project Management	**H**	**H**
	Budget – Cost Parameters	**L**	**H**
	Time	**L**	**M**

Table 4: *Comparing Literature and Empirical Findings*

7 CONCLUSION, LIMITATIONS AND RECOMMENDATIONS

There are many critical issues within the context of ERP adoption and implementation. Certain factors are imperative to a successful ERP system whereas few others are ignored or are not known in the literature. Hence, this paper attempts first step towards identifying these factors. On the other hand, these factors are found influential in the literature to a level where they can have positive or negative impacts on adoption and implementation of ERP. The criterion considered to select these factors are their necessity in adopting and implementing ERP apart from different business perspectives linked to them as an overarching organisational domain of selecting each of them. The authors propose a novel approach of filtering these factors based on five different perspectives (as highlighted in tables). Major factors found are: business process design, package requirement and selection, change and project management. The most important factor included from every perspective in the literature is top management commitment. However, IT architecture, IT staff factors have not been identified in the literature but are of significance for the adoption and implementation of ERP.

7.1 Implications

Theoretical implications of this paper include: literature assessment with altogether different viewpoint and synthesizing the influential factors for ERP adoption and implementation. Such an implication provides the further scope of applying results from this review to successful ERP implementation. It is expected from the practicing managers that concept and factors would help them to better decision making in ERP implementation from initiation to benefits realisation. There are also some intangible benefits that organisations may enjoy by implementing an ERP system e.g.: better

customer satisfaction, improved vendor performance, increased flexibility, reduced quality costs, improved resource utility, improved information accuracy and improved decision-making capability.

7.2 Limitations and Recommendation

The results presented herein may seem less as they are limited to a single case study, however, it will allow other researchers to take it as a starting point in comparing and better analysing ERP adoption and implementation factors when analysing more case studies.

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