

## **EXPLORING SUPPLY CHAIN AGILITY IN THE FMCG INDUSTRY**

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### **Abstract**

The aim of this paper is to identify the core attributes of supply chain agility within the fast-moving consumer goods (FMCG) industry. Despite operating in the type of environment characterised by high levels of complexity, dynamism and uncertainty that agility is purported to help companies address, the FMCG industry has not received specific attention by agility researchers. Moreover, this study contributes to the literature by responding to the calls for refinements to our understanding of supply chain agility unconstrained by prior assumptions about manufacturing or organisational agility that qualitative approaches can provide, and for the use of dyadic data. Accordingly, a case study of a multinational FMCG company operating in the Middle East was undertaken with data primarily collected through semi-structured interviews. The findings confirm the salience of agility in the FMCG context and the attributes that underpin its effective deployment are identified. The paper also contributes to the literature by examining supply chain agility for the first time in the Middle East context.

**Keywords**—supply chain management, agility, fast moving consumer goods (FMCG) information sharing, information technology, Middle East business environment.

# EXPLORING SUPPLY CHAIN AGILITY IN THE FMCG INDUSTRY

## 1. Introduction

Supply chain management (SCM) has become a pervasive management concept and continues to receive much attention from academics and practitioners alike. It is considered a core means of success in increasingly competitive and global business environments and a vehicle that can enable firms to provide their product or service offerings to the market in an enhanced, efficient and effective manner (Jones, 1998). Christopher (1992) went so far as to argue that 'competition in the future will not be between individual enterprises but between competing supply chains'. Consequently, many organisations are expanding their efforts to fine-tune their supply chains (Li et al, 2005). They argue that it is no longer sufficient for companies to focus on improving their internal efficiencies, but that companies must also leverage their supply chains if they are to maintain a sustainable competitive position within their markets and sustained profitability (Power et al., 2001).

Solutions for addressing the problem of how to deal with the environmental changes and uncertainty that businesses frequently face have started to emerge. Notably, Sherehiy et al. (2007, p. 445) suggest that organisations might address such conditions through the adoption of several alternative or possibly complementary paradigms such as 'adaptive organisation', 'flexible organisation' and 'agile enterprise'. Arguably, most of the research in this area to date has focused on 'adaptivity' (Sherehiy et al., 2007) building on prior research on the 'flexible organisation', which has sought to enhance organisations' ability to adapt their internal resources and activities to deal with dynamism (Reed and Blunsdon, 1998; Sherehiy et al., 2007). More recently, a new approach for responding to the rapid changes in the business environment has been introduced, namely 'agility'. Since the late 1990s, agility has received increasing attention in the business world and the academic research arena. Agility can be

defined as an organisation's "ability to efficiently change operating states in response to uncertain and changing demands placed up on it" (Narasimhan et al, 2006, p. 443).

A thorough examination of published work indicates that the literature on supply chain agility is still in its relative infancy (Fayezi et al., 2015). For the purpose of this study, we adopted the definition of supply chain agility proposed by Swafford et al (2006), namely "the supply chain's capability to adapt or respond in a speedy manner to a changing marketplace environment". Most of the previous literature that has attempted to determine agility's elements and components has extracted them from the agile manufacturing literature (Fayezi et al., 2015). These research contributions have discussed the elements and purported capabilities of agility; however, there is a distinct lack of literature examining the underpinning attributes necessary for achieving a high level of agility within the supply chain context, and their relative importance. This research addresses this gap by identifying the attributes necessary to achieve a high level of supply chain agility. Such an understanding can help companies to deal with and quickly respond to environmental changes by focusing on developing and improving these attributes that span from within their internal organisational boundaries to the supply chain.

The extant research has tended to deal with agility and supply chain agility in a narrow field of industries (Chakraborty and Mandal, 2011), primarily those in the electronics and automotive industry sectors. This is despite the fact that there is wide agreement that supply chain agility is applicable to all types of industries that face a high level of complexity and a dynamic, rapidly changing market environment (Sharifi et al., 2006). We add to the literature and understanding of supply chain agility by responding to the need to extend the industry context of agility research, by investigating the underpinning attributes of supply chain agility and establishing their relative importance within the fast-moving consumer goods (FMCG) business sector.

The agility literature has also tended to focus on investigating the concept within Western countries. Although there is growing attention given to the emerging markets such as China and the Middle East region, the agility literature is still largely Western-centric. This study further adds to the literature as it took place in a Middle East context. The Middle East is a fertile region to investigate the underpinning attributes of supply chain agility as many FMCG multinational brands already have operations and are rapidly expanding and diversifying their investments within this region, yet as Behery et al (2014) and Abosag and Lee (2013) note, it has received scant attention in the literature to date. Almahamid et al.'s (2010) study that

examined the impact of agile capabilities and sharing of knowledge at the organisational level on the competitive advantage of Jordanian manufacturing organisations represents the only study in this area in the Middle East to date. In the present study therefore, supply chain agility and its importance within North Africa and the Middle East region and its required attributes across this region are explored for the first time.

The remainder of the paper is organised as follows: the next section reviews the literature on agility and agile supply chain conceptualisations, leading to a summary of the status of our knowledge relating to the core attributes of supply chain agility and hence the gap that this study addresses. The nature of the FMCG industry is subsequently explained. This is followed by a discussion of the methods used in the research (section 3). Next, our findings are presented and discussed (section 4). The paper culminates with the presentation of conclusions and directions for future research.

## **2. Theoretical foundation and literature review**

### ***2.1 The agility concept***

The concept of agility as a means of helping companies to deal with and respond to the changing and ever more challenging business environment emerged in the early 1990s (Goldman et al., 1995). Prior to the interest in its application to a supply chain context, agility was first applied within a firm's boundaries, specifically to the manufacturing function. The origins of agile manufacturing can be traced primarily to a set of researchers at the Iaccoca Institute of Lehigh University (Yusuf et al., 1999). Kidd (1994) defined agility's application to the manufacturing function as 'the integration of organisation, highly skilled and knowledgeable people, and advanced technologies, to achieve co-operation and innovation in response to the need to supply customers with quality customised products'. Brown and Bessant (2003) argued that agile manufacturing's core purpose was to provide the ability to quickly and effectively deal with changes in the environment and market.

It was soon argued, for example by Jackson and Johansson (2003), that agility was fast becoming more than just a necessary requirement for the manufacturing function if an organisation was to develop and sustain a high degree of competitiveness. The concept was subsequently introduced for application to the 'whole' organisation, as a way of doing business. Goldman et al. (1995)

and Swafford et al. (2006) positioned an ‘agile organisation’ as one that has a dynamic nature and an ability to gain a competitive advantage through this dynamic nature – an organisation that is focused on developing knowledge and flexible processes for reacting speedily to changing market forces and conditions. Vokurka and Fliedner (1998) suggest that agile organisations are better equipped to enter new markets.

## ***2.2 Supply chain agility***

In parallel with the attention given to agility during the 1990s, attention to the important role played by supply chain management as an enabler of competitiveness also increased dramatically (Bowersox et al., 1998; Christopher, 1998). Following the recognition that supply chains rather than individual firms were becoming the most important players underpinning competitiveness in dynamic business environments, the agility approach started to spread to the supply chain level as a means of maximising the potential for competitive gain (Harrison et al., 1999; Lee and Lau, 1999; Christopher and Towill, 2000). Consequently, the two fields have more recently merged, and accordingly the agile supply chain concept has appeared as a new market-oriented philosophy often regarded as an essential strategy for business (Sharifi et al., 2006). Harrison et al. (1999) extolled the value of applying agility to the supply chain context, arguing that it is not logical to limit the impact of the concept only to the production department, but rather that the concept should be extended across firm boundaries to include the immediate supply-and-demand side echelons and beyond. Likewise, Christopher’s (2000) and Van Hoek et al.’s (2001) work extended the concept of agility to the organisation’s processes and relationships with other members within the supply chain.

Swafford et al. (2008) argued that an important driver for agile supply chains is ‘mass customisation’, where a company seeks to provide ‘customised’ products and services at a cost equal to, or even close to, the costs associated with ‘mass production’. They suggest that companies within an agile supply chain are not only able to deal with unexpected changes but also more able to match demand to supply. It has also been suggested that an agile supply chain extends the concept of agile manufacturing by reducing the non-value-added activities and the set-up time across the company’s boundaries (Gaudenzi and Christopher, 2016). Supply chain agility has therefore been considered an important strategic element (Tse et al., 2016).

The concept has been related to other related philosophies such as lean supply chain, Christopher and Towill (2000) suggesting that the main difference lies in that lean supply is related to the level of scheduling, however, agile supply is related to saving capacity to deal with the dynamic demand. They suggest that lean alone, which focusses on doing more with less, can't help a company to deal with its customers' demands quickly enough, but that agility has to be combined with lean for this to happen.

Over the last two decades, the conceptualisation of agility has started to develop at an increasingly rapid pace, with definitions and delineations of supply chain agility emerging more recently. For example, Baramichai et al. (2007) argue that an agile supply chain represents 'an integration of business partners to enable new competencies in order to respond to rapidly changing, continually fragmenting markets' where the key enablers are 'the dynamics of structures and relationship configuration, end-to-end visibility of information, and event-driven and event-based management'. Sharifi et al. (2006) similarly define agility within the supply chain as the whole supply chain and its members' ability to adjust their network and their operational activities rapidly. Adopting a resource-focused perspective, Prater et al. (2001) define supply chain agility as the company's ability to match its physical resources in sourcing, manufacturing, and delivery to speed and flexibility capability requirements. More recently, Fayezi et al.'s (2015, p. 263) research led them to define supply chain agility as 'a compilation of mind-set, intelligence and process across SC organisations which enables organisations to respond quickly to the environmental uncertainties and change in a reactive, proactive and, ultimately, predictive manner by relying on their integration in order to fulfil end-customer requirements'.

### ***2.3 Agility and supply chain agility attributes - capabilities and enablers***

The existing conceptualisations and definitions of agility, at all its levels — manufacturing, organisation/enterprise, and supply chain — suggest that it is a broad, multi-perspective concept that includes several components and elements (Swafford et al., 2006). Goldman et al. (1995) argued that agility in general encompasses four main capabilities, namely 'enriching the customer', 'cooperating to enhance competitiveness', 'organising to master change and uncertainty', and 'leveraging the impact of people and information'. Yusuf et al. (1999) argued that the foundations for manufacturing agility are speed, flexibility, innovation, proactivity, quality and profitability. They suggested 32 attributes for agile manufacturing, classifying them

into ten decision domains that can be considered to be agile manufacturing's underpinning enablers, namely, 'integration', 'competence', 'team building', 'technology', 'quality', 'change', 'partnership', 'market', 'education', and 'welfare'. Salient associated concepts variously highlighted by other researchers include speed, price, quality, flexibility and production systems such as TQM, JIT, and lean production systems (Goldman and Nagel, 1993; Prince and Kay, 2003).

It is reasonable to argue, and indeed it has been purported (e.g. Kisperska-Moron and Swierczek, 2009) that supply chain agility should include some, possibly many of the aforementioned characteristics required to achieve manufacturing or organisational agility, but applied beyond firms' boundaries to include suppliers/supply chain partners.

Recent research has also started to unravel the components of agility at the level of the supply chain. Gligor et al (2013) provided a useful contribution examining (using a US-based sample) firms' internal organisational agility capabilities within the context of a supply chain environment, and confirming the salience of five distinct components: alertness, accessibility, decisiveness, swiftness and flexibility. Gligor (2016) went on to examine these five components' (as a single construct) ability to mitigate the negative relationship between aspects of environmental uncertainty and supply chain fit, and found that when operating in highly uncertain environments, in order to improve supply chain fit firms should develop their supply chain agility. Gligor et al (2016) also explored, again using a US-based sample, the effect of two strategic antecedents - supply chain orientation and market orientation - on firms' (internal) organisational agility capabilities within the context of a supply chain environment, and establishing a direct link in both cases. Swafford et al.'s (2006) US-based study positioned the supply chain agility of a firm as an outcome variable, comprising the speed or quickness with which a business can engage in improving various production/service delivery dimensions (e.g. manufacturing lead times, delivery reliability and production capacity), and examined the effect of three types of flexibility (procurement/sourcing; manufacturing; distribution/logistics) on it. They found that procurement/sourcing and manufacturing flexibilities directly influence supply chain agility, however distribution/logistics flexibility's influence was indirect.

Kisperska-Moron and Swierczek (2009) identified four high level factors describing agile firm capabilities of Polish companies in supply chains: namely the relations of the company with its main customers, the relations of the company with its main supplier, the relations of the company

with its main competitors, and the level and intensity of IT use in the company. Van Hoek et al (2001) developed (and tested primarily through an audit for firms in the UK and the Benelux) a framework representing an adjustment of the general agility concept to capture the specific capabilities in the context of the supply chain that are needed to achieve agility in practice. The framework identified five dimensions reflecting general aspects of agility applied to the supply chain operating environment: customer sensitivity, network integration, process integration, virtual integration, and measurement. Fayezi et al's (2015) recent study, although primarily focused on understanding the differences in perception and understanding of agility and flexibility in the context of business and supply chains of Australian manufacturing firms, identified 22 'key words' relating to agility, which were subsequently organised into four proposed underlying components of agility in supply chains, namely organisational mind-set; intelligence; process (systems and technology); and speed.

#### ***2.4 Status of the literature on supply chain agility***

Whilst significant research attention is now being devoted to aspects of agility in the context of supply chain management, and despite the valuable contributions to the latter that have been made as evidenced here, a careful review of the literature also highlights a salient gap in the existing knowledge – namely that considerable attention has been devoted to understanding organisational agility compared with agility's supply chain interpretation (Fayezi et al, 2017). Whilst there is a substantial, developing body of research on agility in general and on agility in the supply chain context, our knowledge about the underpinning attributes of agility is still very much concentrated within the domains of manufacturing agility and organisational agility, and remains very much underdeveloped within the domain of the supply chain. Fayezi et al's (2017) extensive review of the literature on supply chain flexibility and agility uncovered this particular concern, revealing that much of the prior research on agility in the supply chain has been conducted using terminology 'based on descriptions that are closely associated with organizational agility and flexibility as definitional and practical surrogates' (p. 401). This is problematic precisely because it implies that much of the prior literature has tended to assume (sometimes automatically) that the internal dynamics of the organisation reflect those within the supply chain, which is not an accurate representation (Fayezi et al, 2017). This observation was echoed by Gligor et al (2016), who argued that despite supply chain agility's importance theory development has been limited.



Furthermore, although many articles have focused on agility in a 'supply chain' context, it is noticeable that rather than seeking to identify the full range of attributes of supply chain agility and hence provide a holistic picture, many have instead chosen to focus on examining only specific, selected aspects of what they considered to be supply chain agility, for example 'responsiveness' (Handfield and Bechtel, 2002; Hoyt et al., 2007) or 'customer agility' (Roberts and Grover, 2012). Arguably, these observations about the status of our understanding of the attributes of supply chain agility may in part, also be a consequence of the extent to which research has recently shifted and become focused on the concept of leagile firm capabilities (e.g. Qrunfleh and Tarafdar, 2013).

Fayezi et al's (2017) review further found that in terms of the methodological approaches taken in the literature on agility in the supply chain context, areas where there are gaps include case study analysis designs. Fayezi et al (2017) found that much of the research on supply chain agility has concentrated on studies that emphasise a purely statistical analysis of key phenomenon, which is problematic because they are overly reductionist and disregard refinements to our understanding of supply chain agility attributes that qualitative approaches would provide. In other words, the prior literature has tended to assume that the attributes of supply chain agility can be identified by verifying which of the attributes of organisational agility apply in the supply chain context, which is a limitation because important attributes that may emanate only from supply chain relationship specific dynamics and behaviours may therefore not be uncovered. To this end, Fayezi et al (2017) asserted that a more balanced approach to the choice of research method is important to the subject area's development and advocated the use of case study designs which, through the collection of rich data, can also take into account the various contingencies associated with the specific dynamics generated by supply chain.

These observations point to the salient and timely need to provide a firm foundation for the process of theory building in the supply chain agility field by first establishing the core attributes of agility in the supply chain context in a manner which is not potentially constrained by the extent and boundaries of our understanding of manufacturing or organisational agility. It is important that there is a reference point setting out what, in the specific context of the supply chain, are the attributes that comprise and hence define supply chain agility, in order that research being undertaken on specific aspects of supply chain agility can proceed systematically and cumulatively. This study addresses this shortcoming in the existing body of literature.

It has also been argued by Gligor et al (2016) that given that it is individuals who make decisions within supply chains, there is a need for studies that analyse supply chain agility with managers as the focus of analysis, and moreover that incorporate dyadic data (i.e. data from more than one member of a specific supply chain) in order to more truly capture the essence of supply chains. We incorporated both of these salient requirements in our study through our managerial interview based approach and through our inclusion of a core supplier to the focal FMCG company in the data collection and analysis.

#### ***2.4 The fast-moving consumer goods (FMCG) industry***

The fast-moving consumer goods sector is a large investment type of industry, largely made up of several large multi-national companies. Lowson (2002) suggests that retailers and suppliers working within this type of industry are facing a type of demand that can be characterised as volatile and complex. He argues that this type of demand may be due to the fact that the products are no longer associated with utilitarian values; however, they are now representing a set of symbols, signs, images and different statements (Douglas, 1982). This symbolic meaning approach puts more pressure on companies within the FMCG industry (Lowson, 2002). Lowson (2002) also notes that companies working within the FMCG industry need to find ways to improve and enhance their brand names; adding pressure to diversify their products and markets in a nimble manner and to be flexible enough to be able to constantly address new types of demand. Lowson (2001) argues that ‘today’s complex and volatile FMGC environment increasingly requires businesses to seek greater product and process variation through agility and responsiveness, a rejection of the principles of mass manufacturing’ (p. 102).

The FMCG sector faces other challenges emanating from a number of global trends. SIS International Research (2007) highlight the following, amongst many others: an increase in some products’ demand such as antiaging, moisturising, and whitening creams in what are considered to be emerging markets; the need for global sourcing in order to achieve cost efficiencies; great growth in personal care and household products within emerging markets; brand portfolio extensions, either with new brands or new markets; an increase in cosmetic product sales in emerging markets, especially with organic products; the expansion of core brands geographically; an increase in male products such as personal care and convenience products; an increase in raw materials cost; an increase in commoditisation resulting from price competition; other suppliers and retailers’ private label competition; an increase in spending due to the

increase in incomes in Asian economies; the focus on supplier and retailer partnerships and joint value developments; and increasing attention being given to greener organic products.

### ***2.5 Summary and purpose of the study***

‘Fast moving’ refers to goods that are quick to leave retail shelves as they are typically daily use products that are considered essential. As such, they tend to be low cost items but sold in high volume. It is these features that give the FMCG unique characteristics and demands compared to other consumer goods markets (e.g. electronics). Moreover, population growth in the Middle East continues to outpace growth in developed markets, with an increasing level of disposable income amongst the population, particularly the younger generation (Askew, 2014). Coupled with digital-savvy, well-informed, mobile and less loyal consumers in the FMCG consumer segments who are fast to move on if disappointed with the responsiveness of their preferred brands (Bascle et al, 2012), these factors make the Middle East FMCG sector an attractive investment proposition (Askew, 2014) on the one-hand, but also highlight the need for multinational firms, both those already present and those likely to enter the region, to be sufficiently agile in the Middle Eastern context in order to be able to satisfy customer needs (Bascle et al., 2012).

This research is therefore concerned with addressing the paucity of research on the nature of supply chain agility in the FMCG industry and in the Middle East context. The FMCG sector is of great value to international trade, not least within the Middle East region where foreign direct investments typically represent >40% of the total investment value (Ernst and Young, 2012, cited in Khalaf, 2015), and which is seen as a strategic location for channelling international trade. This is also important as the characteristics of the FMCG supply chain in this region may differ from those in the West and the US (Khalaf, 2015; Zahra, 2011).

### **3. Research method – Case-based approach**

We used a case study methodology given its suitability for research that addresses underdeveloped concepts and constructs. Supply chain agility, as explained above, is still a relatively new concept in the literature and attempting to establish its attributes through a positivistic approach was deemed inappropriate and premature. To explore the attributes to

achieve agility within the FMCG manufacturing company's supply chain required an approach permitting a deep and rich treatment of the subject that, in turn, could enrich the existing literature. This is commensurate with the views and recommendations of other researchers who likewise support the use of qualitative approach studies at this stage in the field's development (Fayezi et al., 2015; Gaudenzi and Christopher, 2016).

The case study approach is widely considered to be an appropriate process for examining or evaluating a specific phenomenon inside a particular context. It is often considered to be the best approach to answer the questions of 'why' or 'how' (Collis and Hussey, 2003; Yin, 2013) in addition to the 'what' (Martin and Grbac, 2003). A single in-depth case study was used, following the recommendation of Dubois and Araujo (2007, cited in Hultman et al., 2012) that a single case provides greater richness than multiple cases for research that focuses more on providing insights from a strong referrer (Hultman et al., 2012), as was the case for our case company - a multinational company working within the FMCG business industry in the Middle East markets. The company has four clusters across the Middle East countries with the headquarters (managing the Middle East subsidiaries) situated in Dubai (UAE).

### ***3.1 Data collection and analysis***

Data were collected from four different sites of the case company: two sites located in Egypt and two located in the United Arab Emirates (Dubai). It was also important that the supplier perspective be taken into consideration in order to determine the supply chain agility attributes from a dyadic perspective, in this case, from another key player within the same supply chain. Therefore, data was also collected from one of the FMCG company's core suppliers. This has the additional benefit of triangulating the findings derived directly from the case company.

Data was collected from a range of sources as advocated in case-based approaches (Yin, 2013), namely interviews, documents and website archives. However, it was the series of 17 semi-structured interviews (see Table 1) that formed the essential core of the data collection strategy. Each interview took place in the interviewees' offices during their working hours and lasted for an average of 45–60 minutes. The interviewees were carefully selected for their knowledge of the supply chain operations of the business and their knowledge of the operationalisation of the agility concept. The interviewees all operated at a senior managerial level, holding positions in the relevant functional areas. They comprised production and operations managers, procurement

managers, a marketing manager and supply chain managers. The semi-structured interviews enabled these practitioners to discuss their opinions freely and openly and to draw on their own experiences, thus supporting the aim of facilitating a deep and rich data collection exercise. Table 1 summarises the interviews conducted. Relevant documentation was also collected during the researcher's visit to the company and its supplier to help triangulate the interview findings. These documents and the web pages of the case study company were accessed regularly during the analysis to provide clarification and verification about the history, principles, values and other relevant contextual information about the case company and the core supplier. Collectively, these additional sources supported the analysis of the interview transcripts, augmenting the researchers' understanding of the nature of the relationship and the business context and the challenges facing both the case company and its core supplier.

The interview protocol was divided into four sections. The first solicited general background on the company, including its history, culture, targets and general operating principles. Section two included questions relating to the nature of the business environment within the Middle East region, including the diversity of the goods produced and marketed within the region. Section three included questions related to the nature and type of FMCG industry, including the characteristics of the industry, and the level of competition and associated challenges. Section four related to supply chain management in general and to supply chain agility in detail. It included questions to ascertain the techniques and methods of managing the supply chain; the attributes of supply chain agility specifically for those working within the FMCG sector and producing and marketing goods within the Middle East region; the reasons for pursuing supply chain agility, and the means for improving agility of their supply chain. The interviews were transcribed and the transcripts sent to the interviewees to confirm details.

The analysis of the case data utilised qualitative content analysis where coding categories are derived directly from the data. The analysis process scrutinised the data for shared experiences, commonalities and any distinct differences amongst the seventeen interviews and across the five sites. Key quotations from the interviews were abstracted, then compared and clustered. We built up frequency tables of each of the emerging themes to complement our analysis. Important themes that emerged, representing recurring themes in the data were used to identify and categorise the attributes. The analysis was an iterative process, cross-referencing against the documentary evidence collected. To help guide the analysis and extraction of the core attributes a definition of a 'core attribute' was developed: *a quality or feature regarded by the interviewees*

as an inherent component of supply chain agility. This was important as it ensured that a clear distinction could be made between the motivations for, and attributes of, supply chain agility. A ‘pattern-matching’ method (Yin, 1994) also served as a useful analytical tool. This approach (rooted in Campbell and Fiske’s (1959) and Campbell’s (1966, cited in Trochim, 1989) work), illustrated in Figure 1, is based on comparing the empirical pattern emerging from the data collected with an ‘expected’ pattern, and was utilised to help compare and reconcile the findings across the different sites. The application of these qualitative analytical techniques enabled us to identify the attributes that were replicated with the greatest frequency across the interviews/sites (Eisenhardt and Graebner, 2007), and hence the key attributes necessary for FMCG supply chain agility, and their relative importance.

Several measures were taken to ensure the validity and reliability (trustworthiness) of the data analysis process. First, each interview was recorded and then carefully transcribed and reviewed several times. Second, following Creswell’s (2007) validity guidelines for qualitative research, different data collection means were used to enable ‘triangulation’ through additional supporting evidence. The participants were also given the opportunity (‘member checking’) to review their associated transcript which enabled minor corrections to be made before it was used in the analysis.

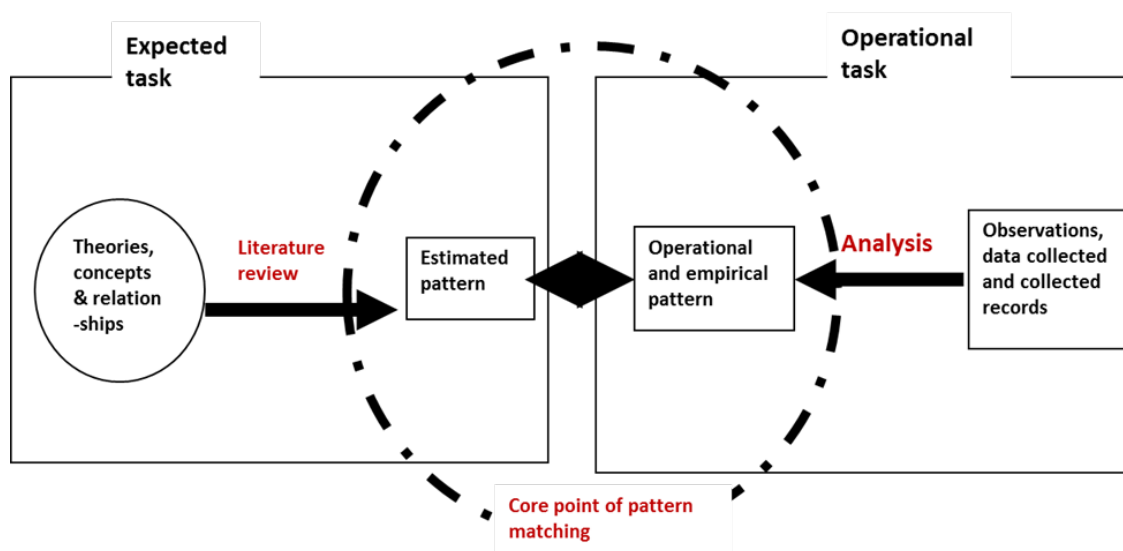


Figure 1: Pattern matching data analysis

**Table 1: Research interviews**

|   |   |  |  |   |
|---|---|--|--|---|
| <b>Multinational FMCG company</b><br>(16 interviews with senior managers) |   |  |  | <b>One core supplier</b><br>(semi structured interview) |
| <b>Egypt (Alexandria, Cairo)</b>  |   | <b>United Arab Emirates (Dubai)</b>                        |  | <b>United Arab Emirates (Dubai)</b>                     |
| <b>Corporate managerial site (A)</b>                                      | <b>Corporate managerial site (B) [with Tea factory and Personal care product factory]</b> | <b>Corporate managerial site (C)</b>                       | <b>Corporate managerial site (D)</b>         | Manager of delivery system                              |
| Marketing Manager (Levant countries: Iraq & Sudan)                        | Tea Factory Manager   | Demand Manager for Kuwait and Qatar (for all products)     | Planning Manager for tea factory (Gulf area) |   |
| Supply Planning and Logistics Manager                                     | Personal care Factory Manager   | Demand Planner for United Arab Emirates (for all products) | Manufacturing Manager (Gulf area)            |   |
|   | National Supplier Development Manager   | Planning Manager for personal care (Kuwait and Qatar)      | Customer Service Manager for tea factory     |   |
|   |   | Customer Service Manager for Gulf business area            | Site Quality Manager                         |   |
|   |   | Technical Project Manager for Gulf area                    | HPC for tea factory                          |   |
|   |   | Supply Chain Manager (Gulf area)                           |  |   |

## 4. Findings and discussion

The study's findings and discussion are presented in three sections. The first discusses the respondents' views on the salience of agility, the second the core attributes for achieving agility, and in the third the study's findings are compared with the findings of prior research.

### *4.1 Importance of agility in the FMCG context*

All sixteen of the interviewees confirmed that agility as a new business concept is a very important factor for success in the FMCG industry. They also confirmed that the business environment is characterised by a high level of competition, dynamism and complexity, as for example was conveyed by the Customer Service Manager for the Gulf business unit: *'It's very competitive. It's very challenging. There is no set trend to follow to be at the top of the market, so it's an everyday exercise where we have to come up with new plans. We face new problems, we give new solutions and that's how the business works. We are already very dynamic . . . . this business moves very fast'*. The Demand Planner (for UAE, for all products) concurred, stating that this type of industry is always fast moving and complex: *'FMCG in general is a very complex industry because we produce products and we sell them almost immediately. It is very fast moving and the cycle between supply and demand is almost continuous. Ours is a really complex business'*.

The analysis of the findings showed that the multinational case study recognises the central role that agility must play in order for it to be able to grow in its dynamic business environment. The Tea Factory Manager in Egypt made this clear, stating: *'Let us agree on agility's importance, as without agility there would not be continual growth. We can grow; however, we will not continue to grow without a high level of agility'*. The Supply Planning and Logistics Manager in Egypt confirmed agility's importance: *'It is very important to be agile now and especially with the dynamics of our business environment'*. While discussing the differences between working within the Middle East markets and other markets, the Tea Factory Manager in Egypt highlighted the business environment driver for the adoption of agility, namely agility's role in reducing risk: *'What takes a big percentage of [case study company's] portfolio is FMCG. It is very dynamic and hard to deal with; uncertainty is high. There is a plan but there is a degree of risk and bias and with FMCG, there is always a high level of risk and this needs a very agile and flexible supply chain. For example, the Arab developing country markets*



*are not saturated like Europe for example, but for many years the hypermarkets have now been opened in the Egyptian markets, and every year the behaviour of the customer differs even within near term future timeframes. The customers are dealing differently; you can't predict what in the second half of the year will be the behaviour of the customer. This puts pressure on the supply chain to react in a fast manner, to face the competition'.*

The analysis showed that the focus on supply chain agility was born out of a need to cope with differing and changeable requirements emanating from the many markets the multinational case study serves. It was noted by the vast majority of interviewees that the characteristics and the nature of the markets served differ from one part of the world to another, and this required the case company to quickly adapt its practices, depending on the specific nature of each type of market to achieve its goals within the Middle East region. As the Marketing Manager (Levant countries: Iraq & Sudan) explained, *'...each market has its own needs and requirements and its own characteristics. For example, the supply chain management system may differ from that in New Zealand or Brazil due to the role of the market because everything is related to that market and the end customer'.* The FMCG case company also needed to be agile because their industry includes seasonality of certain product lines, when the customer demand increases rapidly over a certain finite period of time. For example, in the month of Ramadan, the case company needed to be able to deal with high demand for soup products. This is just one example of the seasonal products; many others exist in the company's other market locations across the region: *'I have seasonality for some products such as shampoo or tea in winter, or soup in Ramadan'* (Marketing Manager – Levant countries: Iraq & Sudan).

It was also very clear from the interviewees that the case company's focus on achieving agility was not a short-term measure. Instead, it was seen as a long-term investment, and the company considered enhancing its agility level as one of its main priorities for improvement in the future. For example, the Demand Planner (for UAE, for all products) supported this idea, making the point that there was no business unit within the multinational case company that was immune from the highly dynamic business environment, and that therefore they had to be ready and able to cope and deal with such changes, and that the only real solution for this was to be agile: *'No business unit is ever constant. To improve you need to come up with changes, so definitely, this company is open to changes whenever they come. We adjust, we improve the process, and we review and find whatever part of the business needs to be improved, through agility, to take up the main dynamic changes'.*

#### 4.2 Core attributes of supply chain agility

The iterative qualitative content analysis procedure described in section 3.1, guided by the definition of a ‘core’ attribute, resulted in the identification of eight high level core attributes that were observed with the greatest frequency across the sixteen interviews and five sites. Early stages of the analysis identified multiple possible attributes, which through the processes of grouping, categorization, and abstraction into higher order constructs led to the eight core attributes. A reverse process was then applied, back through the data trail to ascertain an indication (a ‘measure’) of the relative ‘intensity’ of observation, and hence the relative importance of each of the eight core attributes. Although most of the eight core attributes were referred to by the vast majority of the interviewees, our aim here was to identify how many of the interviewees had not just referred to the attribute, but had cited the attribute as a necessary and critical component of agility in the FMCG context. Table 2 below presents the results of this analytical process and evaluation.

**Table 2: Core attributes for achieving supply chain agility within the FMCG industry**

| <i>Agility attribute:</i>            | <i>Number of interviewees citing attribute as a necessary component of agility:</i> |
|--------------------------------------|---|
| Speed/time                           | 14  |
| Flexibility                          | 11  |
| Responsiveness                       | 9   |
| Customer service/ care/customisation | 8   |
| Quality                              | 7   |
| Innovation/knowledge management      | 5   |
| Efficiency/cost                      | 3   |
| Responsible people management        | 3   |

Speed was considered to be the most important attribute or ability that should be possessed by the FMCG case company to achieve a high level of agility within its supply chain. It was identified by over 80% of the interviewees as the most important attribute. The Tea Factory Manager in Egypt, for example, highlighted speed’s essential presence: ‘... you need to take a share of the market from competitors, and to take a share from competitors, you need to be

*faster than them, to be able to reach a high level of speed. About 80% of your ability (to react) is in your supply chain and therefore to be a leader and reach your customers with new products/promotions, your supply chain needs to be agile, flexible and to be faster to be able to adapt to any change in the market and to deliver faster than others'. In the FMCG context, speed concerns minimising the amount of time that the company needs to ship or receive its products (Prater et al., 2001).*

Flexibility was identified by 65% of the interviewees as a core attribute for agility within their supply chain. The General Planner (handling Kuwait and Qatar for all products) emphasised the importance of flexibility and, in fact, considered it to be the most important attribute to achieve agility. He also added that its importance was amplified due to the nature of today's business environment: *'In today's competitive industry it's about getting there to the market first and as fast as we can. So, that requires flexibility and being able to respond to the market demand'.* Here, also consistent with Prater et al. (2001), flexibility was found to primarily refer to the extent to which a company is able to adapt the time needed to ship or receive its products.

One of the most important attributes for achieving agility was found to be a high level of responsiveness, as suggested by over 50% of the interviewees. The Planning Manager of the tea factory for the Gulf area explained that being agile and responsive are core aims of the supply chain design and planning for her company: *'...we have some really important targets of being agile in our market to react to market changes as fast as we can'.* Responsiveness was found to represent the ability to determine changes and react to them rapidly, including estimating, perceiving and identifying market changes, rapidly reacting to them and where necessary recovery (Sharifi and Zhang, 1999).

Customer service was considered by almost 50% of the interviewees as an important attribute leading to agile supply chains. For example, the Customer Service Manager at the tea factory (Gulf area) considered customer service as the essential factor for achieving agility within the supply chain because it provides a working ethos that underpins, and hence can lead to, the embedding of all of the other attributes *'Customer service. Particularly consumer, so anything related to the consumer is important to us. So, if the consumer wants a new product or model, it is innovations, it comes to speed, . . . it comes to all your parameters like responsiveness, flexibility, everything comes into that. So, it's all important, but if you ask, overall which is the most important, it's what the consumer wants, customer service'.* Based on our analysis, the

customer service attribute involves activities primarily clustered around those previously defined by Sherehiy et al. (2007), namely customer enrichment, satisfying the customer and customer-based innovation.

Quality was also considered an essential factor for achieving agility, as cited by over 40% of the interviewees. For example, the General Planner (handling Kuwait and Qatar for all products) considered quality alongside flexibility and customer service as the core attribute for achieving agility: *'I would say flexibility would be one of the most important factors, followed by quality and customer service. I'd ask about quality, so if I'm quick but my quality is not good, that won't get me anywhere. So, it's not a trade-off that we can accept'*. The quality attribute in this FMCG context primarily embraced right first time design quality and the development of shorter cycle times, in addition to value-enhancing additions to products.

Innovation was identified by 30% of the interviewees as an important attribute for achieving a high level of agility within the case study's supply chain. The site Quality Manager (Tea Factory, Gulf area) stated that for the company to be able to lead the market it needed to possess a high level of agility based on quality and innovation abilities: *'... because if you go to the market there are a lot of innovations every day and there's a lot of competition every day. So, to lead, and to be on top of decisions we had to be very agile, we have to be on top of the issues. We need to have the technology in place, and we need to have innovation as a central part of our business approach'*. Innovation in this context was found to encompass the development of information technologies, logistical issues and marketing strategies in order to enhance both operational efficiency and service effectiveness (Bello et al., 2004).

Efficiency was considered important by approximately 20% of the interviewees, and centred on the optimal use of the range and variety of products and flow of information (Gunasekaran and Ngai, 2004). The National Supplier Development Manager in Egypt stated: *'My mind is clear about having better agility, through efficiency on the lines; the production lines themselves, having continuous improvement monitored'*.

Finally, the empirical data from the interviews revealed the importance (also approximately 20% of the respondents) of responsible people management. The Supply Planning and Logistics Manager in Egypt added that people's ability and willingness to accept change are crucial factors for achieving an agile supply chain, noting how responsibility should be

devolved down to those directly dealing with the supply chain planning and management: ‘...it can be implemented by the people that are running the supply chain themselves. For those people are the people who can make it agile.’ A focus by the company’s management on developing an organisational culture that emphasises the role played by the people and information (Goldman et al. (1995), cited in Jackson and Johansson (2003)) underpinned this final attribute.

#### ***4.3 Juxtaposition with the prior literature***

In the FMCG industry the business environment has been shown to be dynamic and complex. The evidence revealed by this study indicates that the nature of this uncertain business environment has spurred the case company to identify the means for enabling agility within their supply chains. Our findings indicate that the uncertainty of and incumbent changes within, the FMCG industry has led to the need for supply chain agility realisation as a necessity. Such dynamic change in the FMCG industry has previously been identified as the key driver of agility, notably in Rimiene’s (2011) study in which she reviewed most, if not all of the extant literature on agility in Western and US contexts since the early 1990s up to 2010. Rimiene noted that ‘change’ had been mentioned in almost all contributions as a common motivating factor.

Following the pattern-matching mode of analysis, Table 3 presents a comparison of the main findings of the present study with the two prominent prior review-based studies (Gligor and Holcomb (2012) and Rimiene (2011)) that sought to analyse the supply chain agility concept, including identifying its attributes.

As shown, some of these attributes identified in the present study have been suggested previously as important agility characteristics in other contexts. In a study by Yusuf et al. (1999), which sought to provide a clearer definition for agility, the definition included speed, flexibility, quality, and innovation as important characteristics for agility, but from a manufacturing perspective. The importance of employees and their impact on achieving agility has also been suggested by Goldman et al. (1995) but from an organisational agility point of view. Speed was also suggested by Zelbst et al. (2010) as an important element of agility to enable organisations to respond to unexpected conditions.

**Table 3: Agility attributes, and comparison with previous studies**

| Agility attribute                   | This study's findings<br>(number of interviewees citing as essential) | % of citation | Gligor and Holcomb's (2012) review<br>(number of prior studies citing as important) | Rimiene's (2011) review<br>(number of prior studies citing as important) |
|-------------------------------------|---|---------------|---|--|
| Speed/time                          | 14  | 82%           | 12  | 11   |
| Flexibility                         | 11  | 65%           | 8   | 9  |
| Responsiveness                      | 9   | 53%           | 16  | 10   |
| Customer service/care/customisation | 8   | 47%           | 9   | 10   |
| Quality                             | 7   | 41%           |   | 4  |
| Innovation/knowledge management     | 5   | 29%           |   | 3  |
| Efficiency/cost                     | 3   | 18%           |   | 8  |
| Responsible people management       | 3   | 18%           |   |  |
| Cooperation/integration             |   |               | 9   | 3  |
| Search for market opportunities     |   |               | 19  | 8  |
| Organisational structure            |   |               | 7   |  |
| Mobilisation of core competencies   |   |               | 8   |  |

In Rimiene's study (2011) which examined the agility literature in a range of different types of industries within Western and US contexts speed/time was argued to be the most important element or attribute for achieving agility. Our findings lend support to those of Rimiene (2011). Despite the fact that customer service/care and responsiveness were jointly the second highest ranked attributes identified by Rimiene (2011) she argued that speed, because of its direct ability to deal with change, together with flexibility, are arguably the most accepted attributes characterising agility within Western and US contexts. This is in line with our findings, in which data analysis revealed speed and flexibility as the attributes most cited by the participants to achieve a high level of FMCG supply chain agility within the Middle East. Rimiene's (2011) study also highlighted the importance of efficiency/cost, quality and /innovative solutions. In a departure from the Rimiene's (2011) findings however, in our study the continual searching for market opportunity and cooperation (partnerships), although mentioned by some of the respondents, did not fall into the set of attributes deemed as necessary and critical.

In Gligor and Holcomb's (2012) review, which sought also to review the literature (up to 2010) on the concept of agility, change within the business environment was also found to be the

most prevalently identified characteristic shaping firms' focus on the implementation of agility. The search for new market opportunities (see Table 2) was overwhelmingly the most frequently identified attribute of agility. Beyond this, Gligor and Holcomb's (2012) findings were very similar to the findings of our empirical work. They argued that the attributes responsiveness, speed, customer care and flexibility form the core attributes for agility as evidenced by the contributions in their review sample, but also identified as being core organisational structure and integration and mobilisation of core competencies, and like Rimiene (2010), cooperation/integration. Although our study did not explicitly reveal these elements as core attributes, it is nevertheless reasonable to argue that responsible people management equates, in part at least, to mobilising core competencies.

In another study, Agarwal et al. (2006) set out to explore the relationship between competitive dimensions including quality, cost, lead time, and service level, and leanness and agility within an FMCG supply chain in India. They concluded that this supply chain had no alternative but to implement both an agile and a lean approach. Agarwal et al.'s (2006) study thus provides additional support for our research findings, despite the fact that the lean approach was not explicitly exposed in our study as a core attribute underpinning agility. Lean has previously however been suggested by Van Hoek et al (2001) as one of, if not the most important 'philosophy' for achieving agility. Clearly, future research is needed to verify the veracity of the lean approach in FMCG supply chain agility.

Although the business environment within the FMCG sector may differ in some respects from other types of industries more widely studied, such as automotive and electronics, the comparative analysis leads us to propose that enhancing supply chain agility can be considered as an efficacious way to leverage capabilities and keep pace with fast-changing customer expectations and competitor moves.

It is also important to note that during our qualitative analysis procedures, although not positioned as an essential attribute, the importance of information sharing and supporting technological tools was also highlighted. This is consistent with the important role played by information sharing and information technology as an enabler for achieving agility identified in Harrison et al.'s (1999) conceptual framework delineating important considerations for an agile supply chain.

## **5. Conclusion and contributions**

The present study has taken a multinational company working within the FMCG business sector in order to collect empirical data and examine the need for supply chain agility and its required attributes within this unique type of industry. It can reasonably be argued that dynamic change in the environment, and risk mitigation through proactive steps to protect the organisation from the incumbent challenges are the main drivers underpinning the application and enhancement of supply chain agility within the FMCG industry context. The combined findings of this study, in conjunction with those in the prior literature, suggest that all firms operating in the FMCG sector would be wise to examine the potential benefits of developing the capabilities to establish and maximise supply chain agility, and simultaneously to develop their information technology and information sharing platforms to support its realisation.

### ***5.1 Academic and managerial contributions***

Our research has helped extend the knowledge base on supply chain agility attributes and their relative importance. This is especially important for a number of reasons. Firstly, because despite some notable exceptions, for example Agarwal et al.'s (2007) examining supply chain agility in the Indian auto industry, there is still a paucity of research exploring agility attributes from a supply chain perspective. Secondly, because most of the prior literature specifically on supply chain agility attributes has been based on examining the salience of those attributes already derived for manufacturing agility and organisational agility. Whilst recourse to these prior foundations is important, by taking a qualitative case-based exploratory approach this study has placed no preconceived 'boundaries' on the possible portfolio of agility attributes that may be relevant and indeed essential to the supply chain context. In this way this study has responded to Fayezi et al's (2017) call for a more balanced approach to the subject area's development, and Gligor et al's (2016) call for research that can support supply chain agility theory building.

An equally important contribution is the present study's location in one of the largest industry sectors alongside the automotive and electronics sectors, yet one which has not been given corresponding attention in the prior literature. This research has provided an examination of supply chain agility within the FMCG industry. The FMCG industry was selected because of its size, its importance to international trade, and hence its importance to the GDP of numerous



trading nations, and because it extends analyses of the agility concept beyond the high-technology type of industries that dominate the previous empirical research. Moreover, current evidence indicates that FMCG companies are starting to focus much more on collaborative arrangements within their supply chains (Ireland and Bruce, 2002; Christopher and Peck, 2004). This is likely to focus increasing attention on supply chain agility based on agile partnerships with other FMCG supply chain members (Christopher and Peck, 2004). Accordingly, agility's perceived and practical relevance in the FMCG is likely to intensify rapidly.

Another important contribution is the study's geographical context. While an abundance of agility-based research has been conducted in a Western context, little, if any, has been conducted in the domain of the Middle East region. This is despite that fact that Egypt and other Middle Eastern areas have become increasingly attractive locations for foreign direct investment as evidenced by the numerous multinational companies that have located or expanded their operations there in recent decades, coupled with an increasing amount of investment in opening retail and consumer goods and designer brand channels (SIS International Research, 2007). Egypt became a preferred location for several multinational FMCG companies such as Reckitt Benckiser, P&G, Colgate, Johnson & Johnson and Unilever who have transferred responsibility for demand fulfilment from Kenya to their manufacturing plants and supply chains in Egypt (SIS International Research, 2007).

Our research directly benefits managers working in the FMCG sector, as it provides an understanding of the attributes required to achieve supply chain agility that has hitherto been absent. Given the rapid expansion of the Middle East markets and the relocation of FMCG firms to the region, the research is extremely timely. Based on this understanding of the salient attributes that underpin supply chain agility, managers are now supported in being able to identify the specific strategies and actions that will help them implement and achieve agility for their FMCG supply chains. In this way they are better able to direct their finite resources to areas of supply chain and operations development that will directly support agility development. This is the first research of its kind that provides managers with an empirically derived foundation on which to make and prioritise amongst important investment alternatives about operations and supply chain capabilities.

## 5.2 Limitations and future research

As with all studies, this study has some limitations. The findings were generated from one case study working within the FMCG industry in the Middle East, therefore while making a valuable contribution to help theory building (Yin, 2013) the generalisability of the results is necessarily limited. It is imperative both to extend our understanding of supply chain agility by studying the concept in other sectors or industry settings, and in other emerging markets and other regional contexts around the world, such as the Indian subcontinent and the expanding markets of South America, that may or may not share similar characteristics. Although the study employed a dyadic perspective another limitation is that data was collected from only two echelons – the FMCG case company and a core supplier. Future research should extend the reach or locus of investigation, for example to second tier suppliers and/or demand side chain members' perspectives, such as distributors and retailers.

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