Supply Chain Management's Determinants and the Overall Performance of the Fast-Moving Consumer Goods (FMCG) Sector in Pakistan

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Abstract

This research examines the impact of distinctive determinants namely flexibility, planning, quality and information technology (IT) of the supply chain management on the overall performance. Hence, considered FMCG sector in Pakistan through employing quantitative methods. Through non-probability sampling techniques such as convenience, purposive and referral technique 148 responses were collected via on-line survey questionnaire for quantitative analysis. The statistical analysis confirmed that there exist positive moderate to strong correlation between SCM determinants and attributes of overall performance. Moreover, the regression analysis confirmed that all the determinants have positive significant impact on the considered attributes of overall performance. Detailed analysis and Chi-Square test confirmed flexibility is the most essential determinant that highly affects accuracy. The qualitative findings also confirmed the similar findings. Additionally, it is evident that fast-paced environment exert higher pressure and globalization is the biggest challenge for the FMCG sector of Pakistan.

Keywords: Accuracy, flexibility, SCM determinants, overall performance, FMCG sector

JEL Classification: L25, L29, M11, M19

1. Introduction

In the complex business environment, organisations focus on the effectiveness and efficiency in the operations management in order to survive and thrive in the dynamics (Faizan and Haque, 2015). The strategies and modes of operations have changed all over the world due to globalization and technological advancement (Hu and Haddud, 2017; Milovanović, Milovanović and Radisavljević, 2017). Before proceeding with the determinants of supply chain, it is vital to understand the effect of globalization in this regard. Milovanović et al. (2017) explained that in the last three decades the biggest paradox is globalization as on one hand it offers unlimited choices to people, ultimately leading to homogenization of entire humanity while at other hand, it escalates the chances of attaining economies of scales for global-oriented companies. The fast-moving consumer goods (FMCG) sectors are sub-set of the global-oriented business and therefore, the globalization has a role in affecting the supply chain operations of this particular sector. Nevertheless, Johnson (2006) argued that the driving force behind the supply chain management has been the globalization and technology (cited from Hu and Haddud, 2017). Interestingly, Totonchi and Manshady (2012) found that these two attributes have led to the creation of new economy environment. Dongre (2012) revealed that globalization has a significant impact on fast moving consumer goods (FMCG) sectors and its supply chain operations in emerging economies.

In present study, Pakistan's fast-moving consumer goods (FMCG) are considered. Therefore, the brief overview of the sector is included in this section. In the recent past, the FMCG sector in Pakistan have been expanding while attracted huge new investments of approximately hundreds of millions of dollars (Baloch, 2013; Haq, 2018; Mangi, 2017; The News, 2011). Nevertheless, with the globalization in prospect there are mixed evidence regarding the progress. For instance,

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Mangi (2017) and The News (2011) argued that the growth of the FMCG sector is rapidly increasing whereas Baloch (2013) found that the sector is experiencing slow growth due to functionality of supply chain operations. Hence, there is no conclusive evidence to confirm the on-going progress of the sector.

1.2 Aim

The research aim of this project is "to investigate the impact of distinctive determinants of the supply chain management on the overall performance of the FMCG sector in Pakistan"

1.3 Significance

In various ways the present research is significant but above all it extends the body of knowledge. The foremost important contribution of this research is that it overcome the existing gap in the literature at hand. There is no clear evidence regarding the most dominant factor or factors affecting the overall performance of the FMCG sector, especially considering the dimensions of responsiveness, accuracy, time completion and inventory reduction. The theoretical contribution of this research is that it examines the relationship between determinants and attributes of the performances existing in the FMCG sector. In addition to that, the practical contribution of this study is significant as it investigates the relationship between supply chain determinants and overall performance in the emerging economy's fast-moving consumer goods sector. Therefore, this study is an attempt to test the existing theories and models in emerging economy to have a practical exposure of those models and theories. In other words, Dyads and networking - relational view, resource-based view and transaction-cost economics are three distinctive existing theories that are practically tested in emerging economy. This is a significant development through this study because there are no traces of previous empirical research commenced in this manner.

2. Literature Review

2.1 Supply Chain Management (SCM)

Different authors have defined supply chain management (SCM) in different manner. However, in the simplistic way, from the lens of commerce, "the management of the flow of goods and services while involving the movements of raw material storage, inventory in working-process and finished products starting for conception to consumption" (Harland, 1996). In other words, item's flow managed effectively and efficiently from the point-of-conceiving to point-of-consumption. On the other hand, Kot, Haque and Baloch (2020), supply chain management is quite important management tool in corporations, however it seems to be more used in small and medium enterprises as well. In short, this can be understood from the diverse argument that supply chain management is combination of various activities incorporated together to ensure the items flow in a smooth, effective and efficient manner from the development stage (first stage) to the end consumers (final stage) (Kot et al. 2019a; Kot et al. 2019b).

2.2 Cross-functional approach of SCM

Jacoby (2009) stated that by nature SCM follows cross-functional approach having various activities such as; raw materials' movement into firm, particular attributes of material's internal processing by transforming into finished items and flow of finished items from firm to end consumers. In addition to that, Wieland, Handfield and Durach (2016) argued that when firms attempt to emphasis on key competencies for being more flexible, reduction in sources of raw material ownership and channels of distributions. In order to attain cost effectiveness and improved working efficiency, these functions are largely increased to be outsourced to other specialist firms (Wieland et al., 2016). However, the purpose of the cross-functional approach is a subject matter view. According to Jacoby (2009), the use of cross-functional approach is to ensure that the organisational involvement could be escalated in order to satisfy demands of the customers while

reducing the managerial control related to routine logistic operational activities. Hence, this reflects that the lesser control along with higher partners in supply-chain would eventually enable the firm to form the concept of supply chain. On the other hand, Wieland et al. (2016) argued that the use of cross-functional approach is to ensure that supply chain management improve the level of trust, cooperation and collaboration among the partners involved in the supply chain as it tends to improve the visibility and velocity of the inventories along with its movement. Moreover, the argument posed by Quesada et al. (2012) is that across the globe all organisations incorporate the prime characteristics of supply chain management that has led to display the satisfactory results due to improved financial performances, significant reduction in the delivery times, strengthened trust among different suppliers and teams, and lastly increased satisfaction among various stakeholders. Hence, the aforementioned argument confirms that one of the biggest purposes served by SCM is to ensure the organisational goals are attained by demonstrating top quality performance towards improved productivity.

Interestingly, Rana et al. (2015) argued that determinants and their impact differ from business to business, firm to firm, sector to sector and even the size and nature of industries in distinctive types of economies. This reflects that the determinants of supply chain management are not alike for all types of businesses, sectors and industries. On the other hand, Blanchard (2010) argued that there is no set of best practices in the supply chain management because practices differ for the type of businesses however, to large extent, most of the practices are successful due to frequently found determinants. Hence, based on the preliminary research, in this study, the determinants are included in the literature, which have been most frequently evident in the Fast-Moving Consumer Goods (FMCG) market.

2.3 Theories and models of Supply Chain Management

Transaction-Cost Economics (TCE)

Coase in 1973 conceived the concept of transaction-cost for the first time, which later shaped as transaction-cost economics (TCE) theory (Abushaikha, 2014). Nevertheless, the term Transaction-Cost Economics (TCE) was coined by Williamson (1979), which reflected the theme of reduction of the total cost interlinked with the carrying-out transaction via opting for the most economical and rationale stance in the market (Williamson, 1979; cited from Abushaikha, 2014). This is often the pattern of organising the transactions by ensuring appropriate strategies are considered, which brings cost efficiency in the operations (Heide, 1994; Abushaikha, 2014). However, the argument is opposed by the work of Geyskens et al. (2006) as they explained that the demand and supply's traditional market mechanism is vital for the adequate mode of performed transactions. Nevertheless, through both schools of thought, it becomes clear that with the transaction, certain type of cost is connected. Hence, the decision regarding the performing of a transaction in either case; internal or external rely on the challenges and cost interlinked with the transaction (Abushaikha, 2014).

Specificity, uncertainty and frequency of transaction are three features of a transaction identified by Williamson (Abushaikha, 2014). Due to these characteristics the transactions become further costly (ibid). Geyskens et al. (2006) argued that since there is higher cost interlinked with these attributes enable the hierarchical operations more efficient and effective. Hence, there are both; positive and adverse impact of the associated costs, which could affect the operations in the supply chain management. In a nutshell, the decision of performing internal or external transaction rely on challenges and cost interlinked with a transaction, hence, low cost and hierarchical structure is effective for the market structure in the presence of carrying high cost of transaction. This indicates TCE is effective developing comprehensive understanding about the dynamics for operations. Nevertheless, TCE theory highly focuses from the perspective of economy and hence, heavily rely on the market structure and cost of performing transactions. Thus, this is the drawback that of the

theory as it does not convey the structural flow of supply chain operations in dynamic environment. Therefore, another theory; Resource-based View (RBV), which is widely used by the researchers from the supply chain management (SCM) discipline.

Resource-based view (RBV)

"The theory of the growth of the firm" is the work of Penrose (1959) where the roots of the Resource-Based View (RBV) is evident in the literature (Abushaikha, 2014). According to Penrose's seminal work the organisation prospers in the dynamics while differentiate itself from other competitors due to the set of inimitable internal resources (ibid). The concept was later backed by Rubin (1973) by confirming that the organisation has bundle of resources at its disposal that helps in appropriate functionality (cited from Abushaikha, 2014). Nevertheless, RBV was fully explained by the work of Wernerfelt (1984) in an attempt to support the earlier argument of Penrose and Rubin (ibid). However, the concept of RBV attained higher recognition and popularity in 90s when researchers from various management related discipline considered it (ibid). The RBV was evident in this era especially in the work of Barney (1991), Collis and Montgomery (1995), Grant (1996), Hamel and Prahalad (1994) and Rumlet (1991), where higher focus was on two key aspects namely; logic and firm's resources.

From the above discussed aspects of RBV theory, it is confirmed that more than external, the internal components of the organisation are essential in determining the effectiveness of the organisation. From the strategic management's perspective, the firm's resources are its internal attributes, that helps the organisation in attaining working efficiency through improved operations. Nevertheless, all the theories related considered by the researchers including TCE and RBV has one major drawback that these theories' "unit of analysis" has been more focused on supplier-buyer relationship (another system) rather than taking into consideration the supply chain (Lavie, 2006). Thus, another theory should be explored.

Dyads and Networking - Relational View

According to Dyer and Singh (1998), relational view theory is one of the key exceptions among the other theories used by the scholars from the SCM field because it undertakes the firm's dyads and network as vital unit of analysis in order to explain the higher-level individual performance of the firm (Levi, 2006). Blanchard (2010) argued that wide range of debates regarding the resource-based theory has been made in the discipline of supply chain management whether it enables the firm in attaining the competitive advantage or not in order to have higher overall performance. Ramsay (2001) argued that from the unit of analysis, this is evident that RBV fails to confirm the competitive advantage while the dyads and network theory as part of relational view reveals that the organisations having higher level of networking have more strong grip on the market as they remain competitive in reducing the inventory time and improve the quality of the work through shared expertise. Moreover, following the relational view Barney (2012) argued that "at least in some settings" supply chain management could be a type of source. The integration of Lavie (2006) explains that, "contrasting the formulation of the traditional [resource-based view] with a reformulated version of the [resource-based view] that takes into account the impact of network resources, which explains the functionalities of the supply chain". Thus, according to the updated literature at hand, it can be confirmed that relational view is the most appropriate and updated lens to explain the theoretical underpinning of supply chain management. However, this leads to another important dimension, which is the types of challenges faced by the organisations when integrating resource-based views and networking resources.

2.4 Challenges for the organisations

Uhlenberg (2018) argued that three major challenges for the supply chain management include globalization, fast changing markets and quality and compliance. On the other hand, the study of

Rana et al (2015) found that although there are various types of challenges faced by the organisations in the globalized world but the most essential is to remain responsive to continuously changing consumers' preferences, needs and demands. However, the detailed analysis of the Uhlenberg's (2018) findings indirectly communicate the dynamic changes in the environment causing variations, leading to make it difficult for the supply chain management to operate in swift manner. The challenges for the service and manufacturing industry vary. Considering the fast-paced environment, bullwhip effect is one of the constant challenges in the SCM by fast moving consumer products, irrespective of service and product (Faizan and Haque, 2015). Burt, Petcavage and Pinkerton (2010) argued that "phantom demand or fictional demand can create a problem of bullwhip which will lead to produce challenges of delay in response time, inclined cost, and excessive stocking for a firm" (p. 532; cited from Faizan and Haque, 2015).

2.5 Determinants of Supply Chain Management (SCM)

The determinants of supply chain management along with its relationship with the overall performance of the organisation is vital aspect of this thesis. There are several different determinants of supply chain management and attributes of the organisational performance but considering the fast-moving consumer market as area of study, only specific determinants and attributes of performances are considered. The reason for keeping a limited number of determinants and attributes are because the researcher wanted to study in more depth rather than the width. Hence, only those attributes and determinants are included in this section, that has been found in the fast-moving consumer markets to larger extent.

Flexibility:

According to Stevenson and Spring (2007), vast literature has confirmed that in simplest manner flexibility as a reactive method to deal with different types of uncertainty while flexibility include different inter-organisational components namely mixed, volume, routing and product. On the other hand, Han, Wang and Naim (2017) considered process integration and strategic configuration for innovation are the inter-organisational components of flexibility. Vast literature also confirmed that flexibility is vital determinants of supply chain management (Faizan and Haque, 2015; Han et al. 2017; Quesada et al. 2012; Rana et al. 2015; Stevenson and Spring, 2007). Rana et al. (2015) found that the most prominent and key determinant of supply chain management is flexibility that tends to improve the working efficiency of the organisational operations.

The recent work of Fredendall and Hill (2016) revealed that flexibility does not affect the overall performance of supply chain in all types of business. However, it enables the activities of supply chain to cope up with the changing preferences and demands of the consumers by being proactive and responsive (Fredendall and Hill, 2016). Thus, it means that some attributes might be affected while other may not. Nevertheless, current literature does not provide conclusive evidence about the flexibility as key determinant to improve organisational performance in the FMCG sector.

Quality

The literature revealed that another important determinant of the supply chain management is "quality". In simplest terms Quesada et al., (2012) defined it as, "value for the money spent by customers" whereas Mellat-Parast (2013) argued that, considering the features by assessing the measurement of excellence degree. The work of Lorentz et al. (2013) revealed that the SCM performance tends to improve due to the emphasis on the quality of the on-going practices. Conversely, Marwah, Thakur and Gupta (2012) argued that rather than quality, the essential component is to have a higher focus on the skills and resource management while setting priorities. Nevertheless, both aforementioned distinctive studies focused on the manufacturing industry. Thus, there is no conclusive evidence from FMCG markets. Lorentz et al. (2013) work is from the developed economy while although the work of Marwah et al. (2012) is from emerging economy

but the results are limited to India and China so there is still no evidence from Pakistan.

Planning

Quesada et al. (2012) planning in relation to SCM as, "ability to integrate the resources in effective and efficient way" while the work of Crandell, Crandell and Chen (2014) defined it as the forecasting the supply and demand by predicting the requirements to balance the operations. Marwah et al. (2012) considered it a vital feature for reducing the wastage of resources while Ang'ana (2015) argued that planning improves the working efficiency and performance of the organisation by providing the road map to predict the requirements. In addition to that, Chibba (2017) explained that the accuracy and responsiveness improve due to adequate planning. As other determinants, the previous empirical research have been region specific and industry limited and therefore, there are no evidence from the perspective of FMCG market.

Information Technology

The last determinant of the SCM found in the Pakistan is a use of information technology. According to Simchi-Levi et al. (2008), IT is the integration and adequate usage of the computer technology for the different interlined parts of the SCM including, process of distribution, coordination, outsourcing and procurement. The work of Chibba (2017) confirmed that IT is widely used to improve the performance of the manufacturing organisations, especially, in procurement and distribution. On the other hand, the work of Marwah et al. (2012) found that the use of latest technology reduces the wastage of resources while ensuring the time completion is minimum at no expense of the quality. Interestingly, the study of Ang'ana (2015) revealed that in the construction business, IT helps in bringing accuracy and responsiveness but increase the time duration. Hence, there are mixed findings. However, currently, all predictors have been confirmed from the literature and in the context of Pakistan, these predictors are visible in FMCG through preliminary findings. Nevertheless, there are no conclusive study to examine these determinants in one construct to assess the SMEs overall performances.

2.6 Aspects of Overall Performance of Supply Chain Management in FMCG

There are several features to determine the performance of the organisation but in the context of FMCG there are only four attributes including namely responsiveness, time completion, accuracy and inventory reduction to assess and evaluate the performance of the organisation. These attributes are explained below.

Responsiveness

"Responsiveness is promptness to degree of customer demand" (Rana et al. 2015). Contrary to that, the findings of Crandell et al. (2014) revealed that organisations' performance is measured by evaluating its potential and ability to cater with the uncertain demands in appropriate manner. The study of Ang'ana (2012) revealed that higher responsiveness reflects the overall performance of the firm, which results from the use of most advanced technology and means of predicting the probable future outcomes. Nevertheless, Quesada et al. (2012) found that responsiveness indicating the performance of the organisation is a direct resultant of effective and efficient planning. Thus, there two different findings but both are limited to specific industry and regional context.

Accuracy

Rana et al. (2015) defined accuracy as a method to explain the performance of the organisation by viewing the firm's ability to measure the supply chain performance in accurate manner. Furthermore, the preciseness in measuring the demands and planning accordingly leads to improve the overall performance of the organisation (ibid). Hence, the accuracy feature reveals the right estimation made by the organisation while meeting the requirements in the dynamic environment.

It could be concluded that the potential and ability of the organisation in accurately estimating the demands will be revealing their flexibility to shape according to the situation and as a result, the organisational performance will better because the accurate estimation will enable them to reduce their expenses and use resources in right manner.

Time Completion

The study of Rana et al. (2015) revealed that time is the major feature to reflect the performance and working efficiency of the organisation because lesser time taken for the completion of tasks would should the efficiency in the development of final product placement. Nonetheless, the work of Fredendall and Hill (2016) suggested that a producer taking minimal time for the development and production of the items indicate the organisational performance. However, Chibba (2017) argued that the quality is important feature and should not be compromised in the attempt to reduce the time require for completion. On the other hand, Ang'ana (2012) argued that time is vital because in the pursuit of perfection, more time taken to finish will produce more challenges to the business. Thus, the organisational efficiency is revealed by the time taken to produce the final item while ensuring that the demands are met in minimal timeframe. In other words, it could be stated that efficiency is also important feature because minimal time taken to produce item reflects the efficiency of the firm.

Reduction in time inventories

Rana et al. (2015) explained that reduction in inventories over a time period reflects the organisational efficiency and excellence in performance. This attribute also includes the element of ensuring that organisation supply the inventory stock as promptly to the market as it could (Ibid). This again reveals the proper planning taken into consideration as the performance of organisation will be considered good only if it is able to ensure that the inventories are not stored for too long and regularly delivered to the market as per the demands. Fredendall and Hill (2016) showed that the mismatch between the demand and supply would be due to holding of inventories in stock or supplying more than the required. In either situation, the organisation's performance will be considered poor.

2.7 Theoretical Framework and research hypothesis

From the literature at hand, the present thesis has formed the theoretical framework for the research. On the left side are the determinants of supply chain management (independent variables) whereas on the right side are attributes of the overall performances of the organisation (dependent variables).

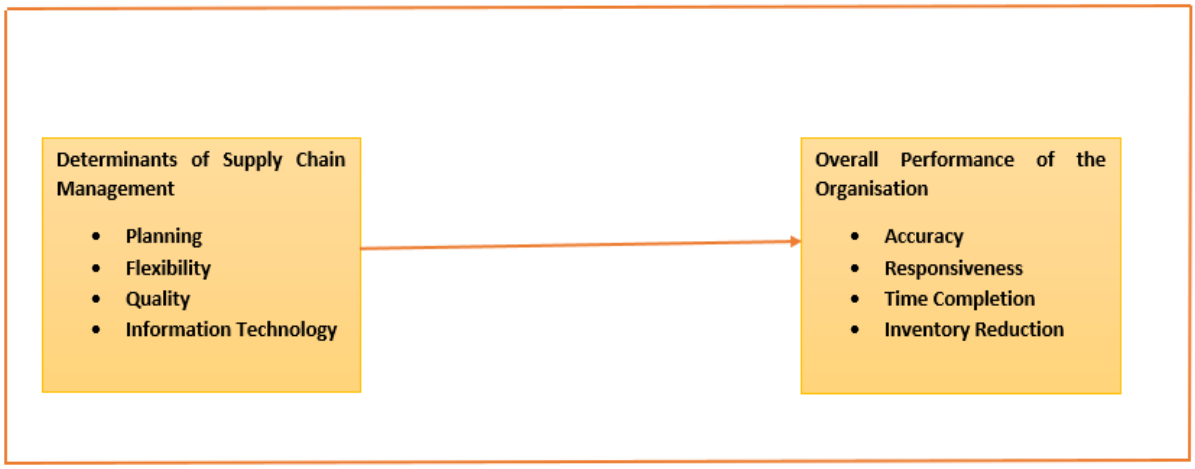

Figure 1: Self-constructed theoretical framework

The main research hypothesis developed from the gap in the literature at hand is as following:

Ho (Null Hypothesis): The determinants of the supply chain management (SCM) have no statistically significant impact on the overall performance of the organisations operating in the FMCG market.

3. Research Methodology

According to Saunders et al. (2012), research philosophy is a guiding belief that enables the researchers to commence research in specific way. Sekaran and Bougie (2012) argued that quantitative methods to numerically express is used under positivism. In this research, quantitative methods are explored to have factful and mathematical objectivity (Faizan and Haque, 2019; Faizan et al. 2019). The research followed the technique of Sekaran and Bougie (2012) "hypothetico-deductive-inductive" approach. The hypotheses are established after identifying the gap in the literature through deductive approach and later tested through statistical tool. Cross-sectional design is used in research that completes in less than a year (Faizan and Haque, 2019; Haque, Nair and Kucukaltan, 2019). This research has taken cross-sectional research design because the research completes within one year and the participants only participate once in this research.

The selection of research instruments depends on the nature and type of research. Interviews are commonly used in the qualitative research while quantitative research often opt for using of survey questionnaire (Haque, Aston and Kozlovski, 2018). In the context of present study, survey questionnaire as research instruments. The survey questionnaire is self-administered and constructed from the literature at hand. The questions were developed on LIKERT Scale 1-to-5 *(1= Strongly Disagree, 2= Disagree, 3= Neither Agree nor Disagree, 4= Agree, 5 = Strongly Agree)*. Hence, the questions followed semi-structured matrix-based format. The questionnaire was circulated among the employees working in the FMCG producing organisations, especially involved in the supply chain operations. The researcher opted for on-line survey questionnaire using GOOGLEDOC for developing it.

Sample size is a subset of the population (Sekaran and Bougie, 2012). However, there is no agreement in the social sciences about the exact size of the sample for studies as it vary in the context of economies, sectors and businesses especially in the quantitative studies. Interestingly, Roscoe (1975) argued that in the quantitative studies, the rule-of-thumb for determining the sample size is to have a sample of no less than 30 respondents and up to 500 respondents could make adequate and sufficient sample size for concluding results (cited from Sekaran and Bougie, 2012). Current study has the sample size of 148 participants in the survey questionnaire. Total 350 participants working in the FMCG industry involved in supply chain were approached in eight different metropolitan cities of Pakistan. Hence, the total response rate is 42.2%, which is acceptable in social science research.

The work of Haque et al. (2018) revealed that the adoption of non-probability sampling techniques could be used by making proper considerations to avoid biases through having fair representation of sub-sets of the sample. In this study, different techniques of non-probability sampling technique are combined to determine sample size. Purposive, snowball and convenience sampling techniques are types of non-probability sampling techniques (Sekaran and Bougie, 2012), which are used in the present study. Using Urbański and Haque (2020) approach of ensuring the fair representation, the biases are avoided. Hence, it is preferred because the resources are limited, and the attempt was made to ensure data collection procedure remains cost-effective (Ślusarczyk and Haque, 2019). Using the SPSS, researcher determined the correlation and t-statistical test for research variables formed on ordinal scale while chi-square test for categorical data.

4. Results, Finding and Discussions

Reliability Test

Table 1: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.734	.740	16

The reliability statistics confirmed that the research instrument is reliable because the Cronbach's alpha value is greater than the threshold value (=0.734 > 0.70; Table 4.1). Thus, the internal consistency of the items on scale is acceptable.

Descriptive Statistics

Since the purpose sampling was used to ensure equal representation in terms of gender is maintained therefore, male and female equally constitute 50% each. The majority of the participants have bachelors' degree (54.7%) and falls into the age bracket 25-34 (34.5%) with relevant experience of 5-7 years (24%). In addition to that, majority of the SMEs are from Lahore, Karachi, and Islamabad (17.6%) whereas majority of the organisations have 101-149 number of employees.

Correlations between independent and dependent variables

Table 2: Correlations

		Flexibility	Planning	Quality	Information Technology	Accuracy	Time Completion	Inventory Reduction	Responsiveness
Flexibility	Pearson Correlation	1	.102	.164*	.158	.685**	.787**	.676**	.641**
	Sig. (2-tailed)		.218	.046	.054	.000	.000	.000	.000
	N	148	148	148	148	148	148	148	148
Planning	Pearson Correlation	.102	1	.259**	.209*	.588**	.390**	.557**	.518**
	Sig. (2-tailed)	.218		.001	.011	.000	.000	.000	.000
	N	148	148	148	148	148	148	148	148
Quality	Pearson Correlation	.164*	.259**	1	.424**	.592**	.565**	.497**	.561**
	Sig. (2-tailed)	.046	.001		.000	.000	.000	.000	.000
	N	148	148	148	148	148	148	148	148
Information Technology	Pearson Correlation	.158	.209*	.424**	1	.778**	.759**	.526**	.646**

	Sig. (2-tailed)	.054	.011	.000		.000	.000	.000	.000
	N	148	148	148	148	148	148	148	148
Accuracy	Pearson Correlation	.685**	.588**	.592**	.778**	1	.439**	.591**	.502**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000
	N	148	148	148	148	148	148	148	148
Time Completion	Pearson Correlation	.787**	.390**	.565**	.759**	.439**	1	.515**	.443**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000
	N	148	148	148	148	148	148	148	148
Inventory Reduction	Pearson Correlation	.676**	.557**	.497**	.526**	.591**	.515**	1	.430**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000
	N	148	148	148	148	148	148	148	148
Responsiveness	Pearson Correlation	.641**	.518**	.561**	.646**	.502**	.443**	.430**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	
	N	148	148	148	148	148	148	148	148

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Flexibility has positive moderate coefficient correlation with accuracy (r= 0.685), inventory reduction (r= 0.676) and responsiveness (r= 0.641) while positive strong coefficient correlation with time completion (r= 0.787). Moreover, the p-value is evident to be statistically highly significant between flexibility and accuracy (=0.000 < 0.05, p < α; Table 4.2). In other words, there is strong evidence against null hypothesis. Furthermore the 68.5% variation in accuracy is caused by flexibility. Additionally, flexibility has statistically significant correlation with time completion (=0.000 < 0.05, p < α; Table 4.2) while causing 78.7% variation in time completion, hence, null hypothesis rejected. Flexibility has also statically highly significant correlation with inventory reduction (=0.000 < 0.05, p < α; Table 4.2) by causing 67.6% variation whereas significantly correlated with responsiveness (=0.000 < 0.05, p < α; Table 4.2) by having 64.1% variation. Thus, rejecting null hypotheses. Planning has positive moderate correlation with accuracy (r=0.588), indicating that 58.5% variation in accuracy is due to planning. Moreover, the relationship is highly statistically significantly different from zero (=0.000 < 0.05, p < α; Table 4.2). Thus, there is strong evidence against null hypothesis. Similarly, planning has positive moderate correlation with inventory reduction (r=0.557) and responsiveness (r=0.518), reflecting over 50% variation in these are caused by planning while planning has a positive weak correlation with time completion (r=0.390), indicating only 39% variation. Moreover, the planning has statistically significant correlation with time completion, inventory reduction and responsiveness (=0.000 < 0.05, p < α; =0.000 < 0.05, p < α; =0.000 < 0.05, p < α; Table 4.2). Therefore, in this regard, all the null

hypotheses are rejected.

Quality has positive moderate correlation with accuracy (r=0.592), time completion (r=0.565), inventory reduction (r=0.497) and responsiveness (r=0.561). As a result, the quality has 59.2% variation in accuracy, 49.7% in inventory reduction and approximately 56% variation in time completion and responsiveness. Interestingly, the p-value is highly statistically significantly different from zero for all attributes of the supply chain overall performances (=0.000 < 0.05, p < α; =0.000 < 0.05, p < α; =0.000 < 0.05, p < α; =0.000 < 0.05, p < α; Table 4.2). Therefore, all considered null hypotheses are rejected. Considering the last attribute information technology, it is evident that it has a positive moderate correlation with time reduction (r=0.526) and responsiveness (r=0.646). This reflect that 52.6% variation in the time reduction and 64.6% in responsiveness is due to IT. Moreover, the p-values are highly statistically significantly different from zero (=0.000 < 0.05, p < α; =0.000 < 0.05, p < α; Table 4.2). Therefore, null hypotheses rejected. Additionally, IT has strong positive correlation with accuracy (r=0.778) and time completion (r=0.759). In other words, the IT causes 77.8% variation in accuracy and 75.9% in time completion. Moreover, the correlation is statistically significantly different from zero (p < α; =0.000 < 0.05, p < α; Table 4.2). Hence, null hypotheses are rejected. The present finding extends the work of Stevenson and Spring (2007) by confirming the significant correlation between SCM determinants and overall performance.

Determinants Regression on Accuracy (dependent variable)

Table 3: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	.113	.264		.427	.670
	Flexibility	.195	.039	.252	5.022	.000
	Planning	.302	.036	.429	8.365	.000
	Quality	.285	.044	.357	6.416	.000
	Information Technology	.186	.052	.197	3.587	.000

a. Dependent Variable: Accuracy

In order to determine the impact of each determinant on the attributes of overall supply chain performance, the cut-off t-value is +1.96, which is threshold value. According to Gaskin and Happel (2014), the incurred value greater than 1.96, reflects the statistically significant aspect (t-value=1.96). Vice versa, the p-value is also considered to measure the relationship significance (p < α). The determinants of supply chain include flexibility, planning, quality and information technology in relation with the accuracy (attribute of) overall performance of supply chain process are examined in above table. The results showed that the predictors affect the accuracy. However, planning highly positively affect accuracy by (β = 0.429) when there is increase in the unit by 1 standard deviation (Table 4.9). Moreover, the t-value is greater than threshold value, therefore, planning has a statistically significant impact on the accuracy (t-value=8.365 > 1.96; Table 4.3). Hence, there is strong evidence against hypothesis 1, and it is rejected. As a result, this study supports the work of Chibba (2017). Similarly, the p-value also revealed that it is less than alpha, hence, the impact is highly statistically significant (=0.000 < 0.05, p < α; Table 4.9). Therefore, null H1 is rejected. In this regard, to some extent, this study differs with the previous work of Fredendall and Hill (2016).

Results also showed that quality positively affects accuracy by (β = 0.357) because of the increase of 1-standard deviation while the impact is statistically significant (t-value=6.416 > 1.96; 0.000 <

0.05, $p < \alpha$; Table 4.3). Therefore, H9 is rejected. The work of Marwah et al., (2012) is supported while work of Anga'na (2015) is contradicted. Flexibility causes ($\beta = 0.252$) positive variation in the accuracy when there is increase of 1-standard deviation in the unit while the impact is highly statistically significant (t-value=5.022 > 1.96; 0.000 < 0.05, $p < \alpha$; Table 4.3). Hereby, H5 is rejected. The findings are aligned with the work of Quesada et al., (2012). Lastly, $\beta = 0.197$ is the positive variation caused by IT in the accuracy, while the impact is highly statistically significant (t-value=3.587 > 1.96; 0.000 < 0.05, $p < \alpha$; Table 4.3). Thus, hypothesis rejected. The study supports the work of Ang'ana (2015) to large extent.

Determinants Regression on Time Completion (dependent variable)

Table 4: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	-.424	.302		-1.403	.163
	Flexibility	.310	.044	.361	6.966	.000
	Planning	.157	.041	.201	3.795	.000
	Quality	.270	.051	.305	5.308	.000
	Information Technology	.366	.059	.350	6.171	.000

a. Dependent Variable: Time Completion

With increase in 1 standard deviation, time completion is positively affected by flexibility ($\beta = 0.361$), planning ($\beta = 0.201$), quality ($\beta = 0.305$) and information technology ($\beta = 0.350$) respectively. All the predictors (determinants of supply chain) have statistically significant impact on the time completion (flexibility - t-value=6.966 > 1.96; 0.000 < 0.05, $p < \alpha$; planning - t-value=3.795 > 1.96; 0.000 < 0.05, $p < \alpha$; quality - t-value=5.308 > 1.96; 0.000 < 0.05, $p < \alpha$; IT - t-value=6.171 > 1.96; 0.000 < 0.05, $p < \alpha$; Table 4.4). Thus, this indicates that all the determinants have significant impact on the time completion, which is one of the important attributes of overall performance in the FMCG sector of Pakistan. Therefore, hypothesis rejected. The present findings to larger extent support the work of Ang'ana (2015), Chibba (2016), Marwah et al., (2012) and Quesada et al., (2012) while partially differs with the findings of Fredendall and Hill (2016).

Determinants Regression on Inventory Reduction (dependent variable)

Table 5: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	.006	.261		.023	.981
	Flexibility	.270	.038	.353	7.037	.000
	Planning	.281	.036	.406	7.898	.000
	Quality	.164	.044	.209	3.752	.000
	Information Technology	.276	.051	.296	5.395	.000

a. Dependent Variable: Inventory Reduction

Considering inventory reduction as a dependent variable, it is found that all the predictors positively affect it. Flexibility ($\beta = 0.353$), planning ($\beta = 0.406$), quality ($\beta = 0.209$) and information technology ($\beta = 0.296$) positively affect inventory reduction when there is 1-standard deviation increase in unit (Table 4.5). Furthermore, all determinants have highly statistically

significant impact on the inventory reduction (attribute of overall supply chain performance) (flexibility - t-value=7.037 > 1.96; 0.000 < 0.05, $p < \alpha$; planning - t-value=7.898 > 1.96; 0.000 < 0.05, $p < \alpha$; quality - t-value=3.752 > 1.96; 0.000 < 0.05, $p < \alpha$; IT - t-value=5.395 > 1.96; 0.000 < 0.05, $p < \alpha$; Table 4.5). The statistical evidence confirmed that in the FMCG sector of Pakistan, the inventory reduction is highly significantly affected by flexibility, planning, quality and IT. Hence, hypothesis rejected in this study. As a result, the findings are aligned with the work of Ang'ana (2015), Chibba (2016), Faizan and Haque (2015), Marwah et al., (2012), Quesada et al., (2012), and Simchi-Levi et al., (2008) whereas contradict the previous empirical studies of Fredendall and Hill (2016).

Determinants Regression on Responsiveness (dependent variable)

Table 6: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	.305	.298		1.023	.308
	Flexibility	.225	.044	.284	5.125	.000
	Planning	.260	.041	.363	6.389	.000
	Quality	.281	.050	.344	5.601	.000
	Information_Technology	.173	.058	.179	2.953	.004

a. Dependent Variable: Responsiveness

Lastly, responsiveness (attribute of overall performance of supply chain) is also found to be positively affected by the considered determinants of the supply chain management namely; flexibility (β = 0.284), planning (β = 0.363), quality (β = 0.344) and information technology (β = 0.176) due to increase by 1 standard deviation (Table 4.18). In addition to that, all the predictors have statistically significant impact on the responsiveness (dependent variable) (flexibility - t-value=5.125 > 1.96; 0.000 < 0.05, $p < \alpha$; planning - t-value=6.389 > 1.96; 0.000 < 0.05, $p < \alpha$; quality - t-value=5.601 > 1.96; 0.000 < 0.05, $p < \alpha$; IT - t-value=2.953 > 1.96; 0.04 < 0.05, $p < \alpha$; Table 4.6). Therefore, in the context of FMCG sector of Pakistan, flexibility, planning and IT have significant impact on the responsiveness. Thus, hypothesis rejected. Present findings confirm the previous findings of Stevenson and Spring (2007) and Rana et al., (2015) while partially oppose the work of Uhlenberg (2018).

Chi-Square Test

The survey contained categorical data in order to examine the relationship between the most dominants of supply chain management and attributes of firm's organisational performance Chi-Square test was carried out.

Table 7: Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.896[a]	9	.004
Likelihood Ratio	10.441	9	.003
Linear-by-Linear Association	.032	1	.859
N of Valid Cases	148		

a. 2 cells (12.5%) have expected count less than 5. The minimum expected count is 3.47.

Table 8: Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.459	.004
	Cramer's V	.349	.003
N of Valid Cases		148	

It is evident that the most dominant determinants of supply chain management are "flexibility" and it affects highly significantly the "accuracy" (attribute of the overall performance). After flexibility, information technology, planning and last quality are the determinants that impact the performances while responsiveness and time completion is more affected than inventory reduction. The sig-value is less than alpha, reflecting that there is statistically significant relationship between dominant SCM determinant and specific attribute of overall performance of SCM (=0.004 < 0.05; $p < \alpha$; Table 4.7). The effect is moderate and significant as the Phi-value is 0.459 while the P-value is 0.004, which is less than alpha (Phi=0.459; sig-value=0.004 < 0.05; $p < \alpha$; Table 4.8). This is the new development of present study by confirming that the impact and size effect is moderately significant between the SCM determinants and overall performances of the FMCG sector in Pakistan.

5. Conclusion

The statistical analysis and qualitative findings confirmed that flexibility, planning, quality and IT are all essential determinants of SCM that are interlinked with all the attributes of the overall performance in the FMCG sector of Pakistan. Flexibility is significantly correlated with the accuracy (r= 0.685), inventory reduction (r= 0.676) and responsiveness (r= 0.641), reflecting the magnitude of the relationships are moderately positive. Moreover, the magnitude of correlation between flexibility and time completion is strong and positive (r= 0.787) whereas as the relationships are statistically significant (F-->A=0.000 < 0.05; F-->IR=0.000 < 0.05; F-->R=0.000 < 0.05; F-->TC=0.000 < 0.05). Planning is the second SCM determinant, which is evident to have positive weak correlation with time completion in terms of magnitude (r=0.390) while positive moderate coefficient correlation with accuracy (r=0.588), inventory reduction (r=0.557), and time completion (r=0.390). Furthermore, the relationships are statistically significant (PL-->A=0.000 < 0.05, PL-->TC=0.000 < 0.05, PL-->IR=0.000 < 0.05, PL-->R=0.000 < 0.05). Quality is another predictor (SCM determinant) that has been found to have positive moderate linkage with accuracy (r=0.592), time completion (r=0.565), inventory reduction (r=0.497) and responsiveness (r=0.561). The relationship of quality with all the attribute of the overall performance is highly statistically significant (Q-->A=0.000 < 0.05, Q-->TC=0.000 < 0.05, Q-->IR =0.000 < 0.05, Q-->R=0.000< 0.05). Lastly, the magnitude of correlation is strong and positive between IT and accuracy (r=0.778) and IT and time completion (r=0.759) while the relationship is highly statistically significant. Furthermore, in terms of magnitude, IT has positive moderate correlation with responsiveness (r=0.646), time reduction (r=0.526) and responsiveness. The relationship of IT is statistically significant (IT-->A=0.000 < 0.05, IT-->TC=0.000 < 0.05, IT-->IR=0.000 < 0.05, IT-->R=0.000 < 0.05).

The regression analysis confirmed that SCM determinants have effective role in improving the overall performance of FMCG sector in Pakistan. Planning positively influence accuracy by (β = 0.429) while the impact is statistically significant (t-value=8.365 > 1.96; =0.000 < 0.05, $p < \alpha$). Current findings are aligned with the work of Chibba (2017) while partially differs with the previous work of Fredendall and Hill (2016). Furthermore, quality positively affects accuracy by (β = 0.357) and impact is statistically significant (t-value=6.416 > 1.96; 0.000 < 0.05). In this

regard, the study support work of Marwah et al., (2012). Flexibility causes (β = 0.252) positive variation in accuracy while it is evident to be statistically significant (t-value=5.022 > 1.96; 0.000 < 0.05). Thus, findings support work of Quesada et al., (2012).

IT causes variation by β = 0.197 in the accuracy while the affect is statistically significant (t-value=3.587 > 1.96; 0.000 < 0.05). Hence, to larger extent the findings are aligned with the work of Ang'ana (2015). Furthermore, flexibility (β = 0.361), planning (β = 0.201), quality (β = 0.305) and IT (β = 0.350) positively affect time completion. The relationship between all the predictors and time completion is statistically significant (F-->TC: t-value=6.966 > 1.96; 0.000 < 0.05, PL-->TC: t-value=3.795 > 1.96; 0.000 < 0.05, Q-->TC: t-value=5.308 > 1.96; 0.000 < 0.05, IT-->TC: t-value=6.171 > 1.96; 0.000 < 0.05). Therefore, results confirmed that determinants are effective in determining the overall performance of FMCG sector of Pakistan. Previous work of Ang'ana (2015), Chibba (2016), Marwah et al., (2012) and Quesada et al., (2012) are confirmed to larger extent.

Similarly, all the SCM determinants are evident to have significant positive affect on the inventory reduction (F--> β = 0.353; PL--> β = 0.406, Q--> β = 0.209 and IT--> β = 0.296) whereas the relationship is statistically significant (F-->IR: t-value=7.037 > 1.96; 0.000 < 0.05, PL-->IR: t-value=7.898 > 1.96; 0.000 < 0.05, Q-->IR: t-value=3.752 > 1.96; 0.000 < 0.05, F--> IT: t-value=5.395 > 1.96; 0.000 < 0.05). In the light of present findings, it is confirmed that the SCM determinants have significant positive impact on the overall performance therefore this study support to large extent the work of Ang'ana (2015), Chibba (2016), Faizan and Haque (2015), Marwah et al., (2012), Quesada et al., (2012), and Simchi-Levi et al., (2008).

Additionally, the SCM determinants are evident to have significant positive impact on the responsiveness (attribute of) overall performance in FMCG sector of Pakistan (F--> β = 0.284, PL--> β = 0.363, Q--> β = 0.344, and IT--> β = 0.176) the effectiveness is highly significant F-->R: t-value=5.125 > 1.96; 0.000 < 0.05, PL-->R: t-value=6.389 > 1.96; 0.000 < 0.05, Q-->R: t-value=5.601 > 1.96; 0.000 < 0.05, IT-->R: t-value=2.953 > 1.96; 0.04 < 0.05). Thus, the findings support the work of Rana et al., (2015) and Stevenson and Spring (2007). Furthermore, the chi-square confirmed that the effectiveness of SCM determinants are moderate and significant.

The Pearson's correlation confirmed that the nature of the relationship between all the SCM determinants and attributes of the overall performance of supply chain in the FMCG sector of Pakistan is positively statistically significant and the strength of the relationship is moderate to positive between all the research variables, apart from correlation between planning and time completion. The Chi-Square test further confirmed that the relationship between the individual predictors of SCM and attributes of overall performance have distinctive variations while major linkage between flexibility and accuracy (40%) and the impact of these predictors on the attributes are statistically significant (sig-value=0.004 < 0.05). Furthermore, the effect is positive and moderate (Phi=0.459).

6. Recommendations for FMCG

These recommendations are largely resulting from the findings of this study.

Recommendation 1: The FMCG sector should consider proactive organisational management techniques by improving inventory reduction. This will enable in capturing the natural resource-based view capabilities.

Recommendation 2: Interview findings revealed that the sector should focus on the use of measurement techniques for dynamic performance. Thus, the goal creation and setting should be done through consensus and resource modification as per the changes in the environment.

Recommendation 3: interview findings also revealed that inter-firm relationship skills should be

considered. The interaction between the managers of Supply chain with all other department should be more strengthen as in the case of outsourcing the efficiency there should be clear information about suppliers, stocks, resources, etc because there is higher dependence on external factors and the task complexities require inter-relationship skills of supreme level to ensure the accuracy, responsiveness, inventory reduction are carried out in timely manner while using IT, planning, quality assurance in flexible manner.

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