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## **The Relationship between Supply Chain Fit and Financial Performance of Manufacturing Firms in the UAE**

العلاقة بين قنوات التوريد المناسبة و الأداء المالي لشركات التصنيع في دولة  
الإمارات العربية المتحدة

By

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## **Abstract**

Inventory Management is the key part of any organization's supply chain and it plays a critical role in the supply chain's efficiency, effectiveness, responsiveness, decisions, and success. The relationship between the firms' supply chain management and financial performance has been discussed and debated for a long time, many researches have been conducted to evaluate the exact impact of supply chain effectiveness on financial performance and it remains speculative. In a recent study by Stephen M. Wagner, Pan Theo Gosse-Ruken, Feryal Erhun has created a quantified link between supply chain fit and financial performance by investigating 259 manufacturing companies in US and Europe. We have tried to test the same with manufacturing firms of the United Arab Emirates (UAE) belonging to various industrial sectors. We have collected the data from 50 companies to establish that there also exists a link between the two variables between manufacturing concerns in the UAE. Our study supports the hypothesis that supply chain fit has a positive relationship with financial performance of manufacturing firms in the UAE; also, we have seen that companies with a positive supply chain misfit have a higher Return on Assets (ROA) compared with companies with a negative supply chain misfit. Our R-Squared value that represents the fit of our linear model is 45.1% that means 45.1% of variability is explained by the variables included in the model and the remainder of the variability can be explained by variables not included in the variable. Additionally, this research includes discussions of the best practices and strategies of the supply chains, recommendations, and suggestions.

**Keywords:** Inventory Management; Supply Chain Management; Supply Chain Fit; Triple –A Supply Chain; Financial Performance; Financial Bottom-Line; Return on Asset (ROA); Questionnaire Survey; Statistical Analysis in Social Science (SBSS) Software; Regression Analysis; Empirical Analysis.

## ملخص البحث

إدارة المخزون تعتبر جزء أساسي من سلسلة التوريد التابعة لأي منظمة فإنها تلعب دورا حاسما في كفاءة و فعالية و استجابة و نجاح سلسلة التوريد والقرارات المتعلقة بها. وقد تمت مناقشة العلاقة بين إدارة سلسلة التوريد للشركات وأدائها المالي لفترة طويلة ، وقد أجريت العديد من الأبحاث لتقييم التأثير الدقيق لفعالية سلسلة التوريد على الأداء المالي ولكنها لا تزال متضاربة. دراسة حديثة أجراها ستيفن م واغنز وبان ثيو غوس - ركن و فريال ارهون لاختبار العلاقة بين كمية تناسب سلسلة التوريد و الأداء المالي للمؤسسات من خلال اختبار عدد 259 شركة من شركات التصنيع في الولايات المتحدة وأوروبا. حاولنا اتباع الاختبار نفسه مع شركات التصنيع في دولة الإمارات العربية المتحدة و الشركات التي تم اختيارها تنتمي إلى مختلف القطاعات الصناعية. قمنا بجمع البيانات من 50 شركة لإثبات أن هناك وجود وجود علاقة بين المتغيرين في شركات التصنيع في دولة الإمارات العربية المتحدة . نتيجة الدراسة التي اجريناها تدعم فرضية أن سلسلة التوريد المتناسبة تربطها علاقة إيجابية مع الأداء المالي لشركات التصنيع في دولة الإمارات العربية المتحدة ؛ كما أننا رأينا أن الشركات التي لديها سلسلة توريد متناسبة تناسبها ايجابيا لديها معدل عائد على الموجودات أعلى مقارنة بالشركات التي لديها سلسلة توريد متناسبة تناسبها سلبيا. كما اظهرت دراستنا ان "ار تريبع" يساوي 45.1% و هذا يعني و يفسر ان 45.1% من المتغيرات مدرجة في المتغير الخطي اما الباقي من التباين غير مدرج في المتغير. كما أننا تطرقنا في هذا البحث الى مناقشة أفضل الممارسات و الاستراتيجيات العالمية المتبعة في ادارة سلسلة التوريد و كيفية تحسينها.

**الكلمات المفتاحية:** إدارة المخزون ؛ إدارة سلسلة التوريد؛ سلسلة التوريد المتناسبة ؛ سلسلة التوريد (اي) الثلاثي ؛ الأداء المالي؛ الحد الأدنى لهامش الربح أو الربحية ؛ العائد على الأصول؛ مسح الاستبيان؛ برنامج اس بي اس اس؛ تحليل الانحدار؛ التحليل التجريبي.

## **CHAPTER ONE**

# **INTRODUCTION**

## 1.1 Overview

During the financial meltdown 2006-2007, most firms reduced their inventories sharply, in order to, stripe layers of cost from supply chain operations, but the firms sometimes using techniques for the goal of firm's survival that would not be sustainable as the economy is recovering. It is stated that, any decision in the inventory management has an impact on the firms' supply chain.(Hugo, 2003) defined supply chain management as the coordination of inventory, production, location, and transportation among the participants in supply chain in order to achieve the best mix of responsiveness and efficiency for the market being served. Traditionally, supply chain management was considered tactical or transactional in nature and cost centre rather than revenue drive and it was viewed mainly as a process of obtaining and moving goods and services. Many researchers have proved that an efficient supply chain management system is definitely a vital competitive advantage for any company and it has a great impact on the firm's financial position. In fact many researchers have even proved that supply chains are an integral part of businesses, their efficiency or inefficiency can impact business productivity and financial performance. Hence after sustaining a strong blow from the financial recession, firms should endlessly evaluate, menstruate, manage, and utilize their supply chains to gain the maximum profit from its tasks, also, firms should adopt the best strategies that provide immediate and sustainable supply chain's value.

Researchers have been correlating the impact of supply chain on the financial bottom line since decades, in 1980 (Shi and Yu, 1980) clearly established that there existed a strong relationship between financial performance, both, accounting based and market based financial performed is closely related to the efficiency of the supply chain management system. Since then, there have been numerous similar researches but unfortunately most of them weren't concrete to be taken as standards as they were either circumstantial and anecdotal or based on specific case analyses. A recent research by (Wagner, Pan Theo Grosse-Ruyken, and Erhun, 2012) studied the strategic association between the bottom line or the financial impact and the supply chain fit and for their study they selected an extensive pool 259 manufacturing companies of Europe and America, which belonged to diverse industries and sectors and also studied their financial data and supply chain management system to find a conclusive analogy. We have planned to reproduce the research on the similar ground within manufacturing companies in UAE. We have also selected a pool of 50 manufacturing companies belonging to various sectors and industries like Electronic Equipment, Stationery, Pharmaceutical, Technology hardware, automotive parts, textiles,



food and beverage, in order to study the impact of the supply chain fit on the financial performance of the manufacturing firms in the United Arab Emirates.

## **1.2 Research Question**

During the time of reviewing the Inventory Management literatures, we have noticed the importance of Supply Chain Management and the various strategies needed to different characteristics of products. So, previous researches on the subject that have linked the supply chain with the operational and production efficacy also with the financial performance has been reviewed. Hence, the recent research's framework and methodology have been decided and the key question for our current research is ***"Can supply chain fit be positively related to the financial performance of manufacturing companies in the UAE?"***

## **1.3 Objectives of the Research**

The core objectives of this research are:-

- ❖ To empirically test the Supply Chain Fit in the manufacturing firms in the United Arab Emirates.
- ❖ To empirically examine the relationship between Supply Chain Fit and the Financial Performance of manufacturing firms in the United Arab Emirates.
- ❖ To raise awareness of supply chain fit.

## **1.4 Rationale of the Research**

It is said that 'the best organizations in the world have the best supply chains in the world'. This research examines the financial impact of supply chain fit and discuss the best-practices and strategies in creating, developing, and managing the firm's supply chain, in order, to have a high level of financial performance and achieve the success of the firm which is the target of all executives and managers since they would like their firms to perform better and seek ways to achieve that. Hence, we believe this research is important and conducting such researches is crucial for economic growth and enhancing the financial health.

## 1.5 Hypotheses Testing

Since our objective in this research is to empirically examine the relationship between the supply chain fit and the financial performance of the manufacturing firms in the UAE, the following hypotheses were set in order to achieve the research main objective:

- **H<sub>01</sub> -Null Hypothesis:** The Supply Chain Fit is not positively related to the financial performance of manufacturing firms in the United Arab Emirates.
- **H<sub>a1</sub> -Alternative Hypothesis:** The Supply Chain Fit is positively related to the financial performance of manufacturing firms in the United Arab Emirates.
- **H<sub>02</sub> -Null Hypothesis:** Manufacturing firms in the United Arab Emirates with positive Supply Chain Misfit do not show a higher financial performance than firms with negative Supply Chain Misfit.
- **H<sub>a2</sub> -Alternative Hypothesis:** Manufacturing firms in the United Arab Emirates with positive Supply Chain Misfit show a higher financial performance than firms with negative Supply Chain Misfit.

## 1.6 Organization of the Research

This research has been divided into 6 main chapters, the first part is an introduction that has briefly introduced the subject with our readers, our second chapter is literature review that will discuss in what supply chain management is, why companies opt for it and what, and the different types of supply chain strategies. It will also discourse upon 3 very important notions that are the very soul of our research, that is competitive priorities of supply chain management system, the various types of products and their peculiar characteristics and how they impact the supply chain and finally, what is a supply chain fit and how can it be achieved. Third chapter will contain a discussion of extra related literature review, mainly, the inventory management and comments and criticism of literature reviewed.

Our fourth chapter is regarding the research Methodology, in this chapter we have conversed in detail regarding the research design and approach, the design of the research instrument and various measures included in it.

In the fifth chapter, that is Findings, Analysis, Discussions, Limitations, and Recommendations, we have shared the findings of our research and discussed them, we have also related to our findings with the

similar research conducted in Europe and America (Wagner, Pan Theo, Gossee-Ruyken, and Erhun, 2012). In the same chapter we have also discussed the various limitations that we were confronted with. The discussion regarding how our research findings can be applied to practical use by industry has also been made part of this chapter. In the same chapter, we have also shared the crux of our research and have given suggestions and recommendations for future researches of the subject and also for the organizations for enhancement of their supply chains. In the last chapter, that is conclusion, we have summarized the current research.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

## **2.1 Overview**

In this chapter, it has been started from the very basic level of what supply chain management is and why companies adopt it. The focus of the research is on manufacturing sector, hence, we have also discussed various model about classification of goods and products and their characteristics. We have also studied the various strategies that are used for exact product types in order to achieve a supply chain fit.

In the very chapter, various notions pertaining to our research like supply chain responsiveness, supply demand uncertainty, and supply chain strategic fit have been discussed.

## **2.2 Definition of Supply Chain Management**

Many researchers argued that supply chain management is still an emerging discipline and there is no consensus about its definition and constructs resulting in the literature, with difficulties in knowledge advance (Harland et al., 2006; Burgess, Singh, and Koroglu, 2006; Mentzer and Cook, 2005, Chen and Paulraj, 2004; Mentzer et al.; 2001). Few researchers explained that supply chain management is an extension of logistic, but, (Cooper, Lambert, and Junus D. Pagh, 1990) suggested that supply chain management is not simply an extension of logistic but logistics is merely a part of Supply chain management, supply chain management is integration of various business processes and initiates from the planning and ends till the end users gets the product. It encompasses all activities and processes that are related with the flow and transformation of goods from one stage to another instigating from pure raw material to end user, it even includes the flow of information and the connections or stakeholders involved. Some researchers tried to define supply chain management; (Van Der Vorst and Beulens, 2002) defined supply chain management as integrated planning, coordination, and control of whole business processes and activities in the supply chain, in order to, deliver superior consumer value at minimum cost to the end-user while satisfying other stakeholder's requirements. Another definition was given by (Mabert and Venkataramanan, 1998) as a series of units that transforms raw materials into finished products and delivers the products to the end-users. (McFadden and Leahy, 2000) defined supply chain as a virtual network which facilitates the movement of product from its production, distribution, and consumption. (Handfield, 2011) believes that every single product that is completed reaches the customer is a product of multiple processes and these processes collectively are called supply chains or supply chain value line. (Porter, 1985) pointed out that every business is a collection of

activities to design, produce, market, deliver, and support its products; the sequence of these activities called 'value chain' and the activities called 'value activities' and they are the means by which an organization creates a product of value to its customers. (Monczka, Trent, and Handfield, 2002) indicated that the supply chain involves in all activities related with the flow and transformation of goods from the raw materials stage (extraction), through the end users, as well as the associated information flows. There may exist more connotations and undertones to the word supply chain management, even (Mentzer, et. al., 2011) agree that there are many definitions of supply chain with little consensus. They studied many prevails notions, conceptions and perceptions of "Supply Chain Management" to reach an accord and have highlighted various important questions and conceptual frameworks that needs intellectual and practical discourse.

### **2.3 Competitive priorities of supply chain**

The operation strategy literature is crucial for this research, and the fundamental element of operation strategy is the competitive priorities. Lot of researchers agreed that firm's competitive strategy plays a crucial role in determining the firm's functional manufacturing and supply chain management strategies (Skinner, 1966, 1969, 1974; Vickery, 1991; Miller and Roth, 1994; Vickery, Droge, and Markland, 1997; Ward et al. 1998; Narasimhan and Das, 1999; Kathuria, 2000; Kakabadse and Kakabadse, 2000; Vonderembse, Koufteros, and Doll, 2002; Kathuria and Porth, 2003; Hollingworth, Devaraj and Schroeder, 2004). Others considered competitive priorities as the core strategic goals and objectives for the manufacturing firms (Koufteros et al., 2002). (Ward et al., 1998; Boyer and Lewis 2002) highlighted that the basic elements of the operation's strategy which includes delivery, cost, flexibility, and quality could be considered as the definition of the organization's competitive priorities; (Hayes and Pisano, 1996; Krause et al. 2001; Kroes and Ghosh, 2010) considered innovation as an additional element. (Porter, 1985) considered product differentiation, cost leadership, and focus (market segmentation) as the three main competitive strategies. (Skimmer, 1969) suggested that an organization should maintain a balance between the organization's priorities which are cost, quality, delivery, flexibility, and innovation while utilizing its scarce resources. (Hayes, 1996) supported the suggestion of (Skimmer, 1969) but with respect to same rate of increment of other priorities. (Fisher, 1997) considered a balance between supply chain efficiency and responsiveness as a supply chain priority. (Boyer and Lewis, 2002) confirmed that firms decide on the amount of resources and time that are capitalized in various areas of the operations across the five competitive priority dimensions in the time of determining the competitive priorities. (Lewis and Boyer, 2002) expressed that firms which

consider cost as a competitive priority; often make trade-offs and sacrifice performance related the other competitive priorities. (Krajewski and Ritzman, 1999) pointed out that choosing cost as a competitive priority leads a firm to produce its products at a low cost and offer them for sale at a low price. (Ketchen and Hult, 2007) concluded in their study that lots of well renowned firms, such as, Wal-Mart, Dell, and Toyota are taking their supply chain management as a key weapon to attain and achieve competitive advantage over others. (Pillania and Khan, 2008) contested that supply chain management is shifting its paradigm continuously and developed itself in accordance to the firm's strategic modifications, technology's changes, customers/suppliers demand, and competitors' competitive actions. (James R. Kreos, 2007) declared that based on an empirical examination; there is a significant positive link between outsourcing alignment and performance for a number of competitive priorities. The priorities of Supply Chain can be many; they may include the basic primacies like cost, quality, delivery, and flexibility (Boyer, Bozarth, and McDermott, 2000) or more enhanced and complicated ones like innovation and creativity or even invention of completely new services (Vachon, Halley, and Beaulieu, 1980).

## **2.4 Classification of products and their characteristics**

There is a common understanding that the product's specification and demand are linked to operational processes and supply chains (Skinner, 1969; Utterback and Abernathy, 1975). A study conducted by (Wailgum, n.d.) highlighted that the new frameworks and innovative processes and above all the intangible power of globalization will influence and help create economical global models for supply chain management. (Wheelwright and Hayes, 1979) stated that matching product specifications and product structure will have a link to financial performance. A study of (Hayes and Wheelwright, 1979) anticipated and recommended a framework of product-process matrix suggesting a link between a firm's products and its process life-cycle stages. Based on the product-process matrix, (Hayes and Wheelwright, 1979) argued that process choice should support the firm's products and conclude that "a certain kind of product structure is matched with its 'natural' process structure. From a supply chain perspective and based on characteristics such as product life-cycle, margin, product variety, forecasting error, stock-out rate, markdown or distribution intensity, products can be characterized as being either certain/predictable (also called 'functional') or uncertain/unpredictable (also called 'innovative') (Fisher, 1997; Qi, Boyer, and Zhao, 2009; Selldin and Olhager, 2007). A study conducted by (Gerwin, 1987; Boyer and Lewis, 2002) highlighted that flexibility helps the firms to react to the uncertainties and unpredictability inherent in the manufacturing industries. (Capon, Farley, Lehmann, and Hulbert, 1992;

Sadizadeh et al., 1996; Safizadeh et al., 2000) clarified that innovativeness refers to the ability of a firm to introduce new products that employ new technologies and the ability to improve the designs of the existing products.

## **2.5 Strategic Fit and Scope, Supply Chain Fit and Financial Performance**

Every organization and business enterprise would like to achieve a strategic fit in their all areas, so is the case with supply chain strategic fit too. Every organization would like to excel and have a consistent supply chain that would not be affected by any internal or external turmoil or turbulence and they try to create a balance between exploration of market and exploitation of resources and to create this balance in performance or achieve the strategic fit they may use various technologies and systems (He and Wong, 2004; Alexander and Randolph, 1985).

When we converse and discuss supply chain management from an operational efficacy perspective, we find that there have been great debates and discussions of the subjects of studying internal fit, environmental fit, and equifinality (Boyer, Bozarth, and McDermott, 2000). We can even relate this with the study of Wickham Skinner (Skinner, 2009) who strongly advocated the alignment of a firm's strategy with its manufacturing function. The product-process matrix research argues that processes of a firm must match the characteristics of its products (Hayes & Wheelwright, 1979). Another study has observed that "manufacturing strategy, competitive strategy, environment, and structure are constituted or interweaved in a manner that they develop a natural congruence among all these fundamentals" (Ward, Bickford, & Leong, 1996) and this study postulated that business divisions which adapt and align themselves to the strategies of the components mentioned are more likely to perform better than those which are not aligned (Ward, Bickford, & Leong, 1996).

Outspreading the notion of fit to the supply chain strategy viewpoint and perspective, it is possible to intellectualize supply chain fit built on the framework of put forward by Marshal Fisher (Fisher, 1997) who formalizes fit by characterizing products as being either certain/predictable or uncertain/unpredictable, and supply chains as being either responsive or efficient.

Supply Chain Fit is suggested by Fisher as the perfect strategic consistency between a product's supply and demand individualities like life-cycle length, demand predictability, lead-times, product variety, service, and specific market requirements and supply chain design characteristics like product design



strategy, inventory strategy, and supplier selection aspects (Chopra and Meindl, 2013; Fisher, 1997; Lee, 2002).

The competitive priorities and processes of a firm must match and support its product characteristics and structures (Hayes and Wheelwright, 1979; Ward, Bickford, and Leong, 1996), and the above argument that firms achieving a high degree of supply chain fit excel firms with a low degree of supply chain fit through higher supply chain and financial performance (Chopra and Meindl, 2013; Fisher, 1997).

A study conducted by (Muhammad Hamza Khan, Muhammad Hassan Khan, Muhammad Maqsood, and Khaliq Ur Rehman 2012) examined the relationship between Supply Chain Fit (the strategic consistency between supply and demand uncertainty and emphasizing on supply chain Structure/Design) and the Return on Assets as a financial performance indicator of the firm, their data analysis supports that supply chain fit is positively linked with the financial performance of the firm, and, supply chain misfit is negatively related with the firm's financial performance. (Fisher, 1997) noted that conceptual supply chain – product match or mismatch has its roots in the operations and manufacturing strategy literature. (Snuffer and Hensley, 2005) considered that they could face an expense of US \$ 10 Billion annually due to supply chain misfit among carmakers and parts service providers in the US automotive market. (Alexander and Randolph, 1985; Gresov, 1989; Burton et al. 2002; and He and Wong 2004) agreed that every organization can achieve better financial performance with external and internal resource or fit among contextual, structural and strategic variables. (Fisher, 1997, Randall et al. 2003; Parmigiani et al., 2011) believed that efficient supply chains seek for efficient cost fulfillment of predicted demand and prompt response to unpredictable demand.

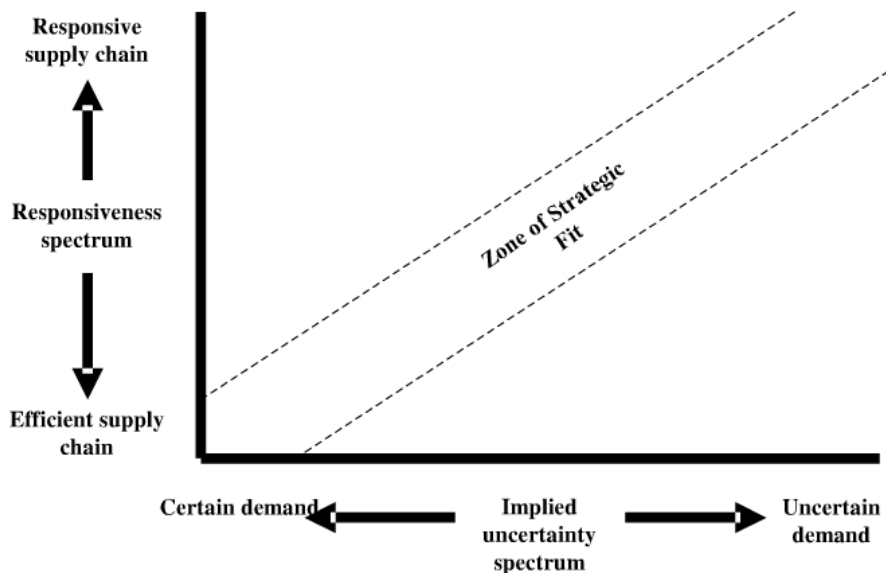
(Shi and Yu, 1980) clearly established that there existed a strong relationship between financial performance, both, accounting based and market based financial performed is closely related to the efficiency of the supply chain management system. Since then there have been numerous similar researches but unfortunately most of them weren't concrete to be taken as a standards as they were either circumstantial and anecdotal or based on specific case analyses. Recent research by (Wagner, Pan Theo Grosse-Ruyken, and Erhun, 2012) they studied the strategic associated between the bottom line or the financial impact and the supply chain fit and for their study they selected an extensive pool 259 manufacturing companies of Europe and America, which belonged to diverse industries and sectors and also studied their financial data and supply chain management system to find a conclusive analogy;

their findings indicated that there is a positive relationship between supply chain fit and the return on assets (ROA) of the firm, also, the firms with positive supply chain misfit showing a higher performance than firms with negative misfit. (Chopra and Meindl, 2001) considered the inventory, facilities, transportation, information, sourcing, and pricing as the logistical and cross functional drivers representing the supply chain management. (Hugo, 2003) introduces a classification that proposes five areas of decision making in supply chain which are inventory, production, location, transportation, and information. The following table illustrates the five supply chain drivers according to (Hugo, 2003).

<b>Decision making area</b>	<b>Definition</b>	<b>Meaning of efficiency in this area</b>	<b>Meaning of responsiveness in this area</b>
<b>Production</b>	Capacity of factories and warehouses across the SC to make and store the products respectively	No excess capacity	Creating a lot of excess capacity
<b>Inventory</b>	All goods held by the manufacturers, distributors, and retailers throughout the SC	Cost of inventory should be kept as low as possible by holding low amounts of inventories	Holding large amounts of inventory
<b>Location</b>	Geographical sites of SC facilities	Centralizing activities in fewer locations to gain economies of scale	Decentralizing activities in many locations close to customers and suppliers for fast responses
<b>Transportation</b>	Movement of goods between different facilities in SC	Slow and low cost modes of transportation	Fast and costly modes of transportation
<b>Information</b>	Connections among the various activities and stages in the SC	Short term: Collect less information about fewer activities Long term: collect and share informative data generated by the other four drivers	Collecting and sharing accurate and timely data generated by the operations of the other four drivers

(Hogus, 2003; Chopra and Meindle, 2006) argued that strategic fit is the alignment between competitive and supply chain strategies that could be achieved by adjustments between supply chain drivers and environmental uncertainties; the supply chain fit is known to be the most important issue related to supply chain management in competitive environments. (Fisher, 1997) introduced a structure for determining the right supply chain strategy; according to him the supply chain strategy is established based on the product type. (Lee, 2002) introduced a framework for establishing a supply chain strategy based on supply and demand uncertainty (SDU). (Chopra and Meindl, 2006) considered efficiency and responsiveness as the two main strategies for the supply chain, and, they introduced a three step

procedures in order to achieve strategic fit. The first step is establishment of supply chain's competitive strategy and the uncertainty level must be measured. Second step, the supply chain strategy is recognized; and in the third step, the competitive and supply chain strategies are matched to the strategic fit zone. The following figure illustrates the strategic fit zone according to (Chopra and Meindl, 2006).



(Qi, Boyer, and Zhao, 2009) divided supply chain strategy into two fundamental categories; the first category is supply chain strategy for physical efficiency (cost and quality); the second category is supply chain strategy for responsiveness. (Kristal, Roth, and Haung, 2010) expressed that supply chain strategy is ambidextrously benefitting firm's resources. Akyuz and Erkan (2010) highlighted the importance of development of performance measurement systems based on balance scorecard approach and supply chain operations reference (SCOR) model. (Muhammad Shakeel Jajja, Shaukat Brah, and Syed Zahoor, 2012) empirically examined the link between supply chain strategy, objectives, internal and external organization, and performance by studying 188 organizations; the results suggested that there is a strong positive impact of supply chain strategy on supplier functions through supplier focus. (Chopra and Meindl, 2006) ensured that the key to gain competitive advantage depends on appropriate design, planning, and operation of supply chain by achieving strategic fit. (Porter, 1980) believed that competitive strategies usually drive an organization to compete as focused provider, differentiator, and

cost leader. (Skimmer, 1969) claimed for more integrated view of the organization's strategy and its manufacturing functions.

The concept that matches between product structures and manufacturing process structures is related to performance found also empirical support (Miller and Roth, 1994; Safizadeh et al., 1996). (Muhammad Ishtiaq Ishaq, Waseem Khaliq, Nazia Hussain, and Muhammad Waqas, 2012) demonstrated that the world nowadays is changing rapidly due to swift changes in the infrastructures of the firms and supply chain is becoming an important factor which impacts the firm's global competitiveness; and they believe that Triple-A supply chain is considered as viable strategy when it is successfully implemented, which directly linked with supply chain and indirectly related to firms' performance. (Muhammad Ishtiaq Ishaq, Waseem Khaliq, Nazia Hussain, and Muhammad Waqas, 2012) remarked that 'time is money' is the best statement which suggests that firms can suffer if they are slow movers and only those firms obtain a higher profit that complete their tasks faster and that is the reason why firms today focusing on supply chain management. (Ward et al., 1998; Krajewski and Ritzman, 1999; Shin et al., 2000; Boyer and Lewis, 2002) clarified that timeliness can be affected by focusing efforts on reducing development, production cycle times, lead times, setup and changeover times. (Cousins, Lawson, and Squire, 2006) demonstrated that the relationship between supply chain management and performance cannot be regarded as conclusive.

Several studies argued that there is a positive correlation between supply chain management and performance (Shin et al., 2000; Narasimham and Das, 2001; Salvador, Forza, Rungtusanatham and Choi, 2001; Wisner, 2003; Vickery Jayaram, Droge, and Calantone, 2003; Jayaram and Vickery, 2004; Chen, Lado, and Paulraj, 2004; Gimenze and Ventura, 2005; Kaufmann and Carter, 2006; Cousins and Menguc, 2006; Carr and Kaynak, 2007). (Lee, 2004) summarized that failure in managing supply chain effectively causes serious harm, such as, in 2003 Motorola failed to meet the customers' demand for its new camera phones because it did not have enough lenses available. (David. J. Kietchen, William Rebarick, G. Tomas M. Hult, David Mayer, 2008) clarified that best supply chain is designed to deliver superior total value to the customers in terms of flexibility, quality, speed, and cost and this will enhance the firm's performance. (Priscila Miguel and Luiz Brito, 2011) empirically examined the relationship between supply chain management and operational performance by analyzing sample of 103 firms in Brazil using structural equation modeling; the results suggested that there is a positive relationship between the two variables.

A study conducted by (Yahaya Yusuf, Angappa Gunasejara, Ahmed Musa, Mohammed Dauda, Nagham M. El-Berishy, and Shuang Cang, 2014) in order to assess the relationship between dimensions of agile supply chain, competitive objectives and business performance; a questionnaire was designed and sent to a sample of 880 supply chain managers within UK North Sea upstream oil and gas industry; statistical tests, ANOVA, KS statistical test, and *t*-test result were carried out for the purpose of examining the whole supply chain associated with agile practices in an important sector; the result showed that the most important dimensions and characteristics of supply chain agility and provides a deeper insight into those characteristics of agility that are most relevant within the oil and gas industry. (Sufian Qrunfleh and Monideepa Trafdar, 2014) examined the association between supply chain strategy and supply chain information systems strategy, and its impact on supply chain performance and firm performance by employing survey data from members of senior and executive management in the purchase, materials management, logistics, and supply chain functions, from 205 different firms; the results suggested that the Information System strategy enhances the relationship between Lean Supply Chain strategy and supply chain performance, also, the results showed that there is a positive relationship between supply chain performance and firm performance.

## **CHAPTER THREE**

### **EXTRA RELATED LITERATURE REVIEW**

### **3.1 Overview**

Firms should come up with inventory strategies and apply appropriate techniques in order to enhance the management of their inventories which is one of the supply chain's performance drivers and contribute to the success of the firm; many studies discussed the relationship between inventory management and supply chain management. It is said that, without inventory management, there would be no supply chain process; firms should manage their inventory by forecasting demand and uncertainties in demand, also, inventory management has an important role on having an effective competitive strategy in the supply chain and affecting the supply chain responsiveness. In this chapter, we are discussing the previous literature review in the Inventory Management.

### **3.2 Inventory Management**

Inventory Management could be defined as the science or art of maintaining stock levels of a given group of items incurring the minimum cost consistent with other related targets and objectives set by management (Jessop, 1999). (Lyons and Gillingham, 1981) explained that inventory means the quantity or value of supplies, raw materials, work in process (WIP), and finished goods that are available for use as need arises. (Ram Ganeshan, 1999) asserted that inventories exist throughout the supply chain in different forms for various reasons; since carrying these inventories can cost anywhere from 20% to 40% of their value per year, managing them in a scientific manner to maintain minimal levels makes economic sense. (Koumanakos, 2008) pointed out that managing assets of all kinds including cash and fixed assets can be considered as an inventory problem, also, (Koumanakos, 2008) stated that the inventory's EOQ models developed many years ago which represent the tradeoff between ordering costs and holding costs.

Inventory management is important for the firms because mismanagement of inventory threatens the firms' viability (Sprague and Wacker, 1996). (Demirbag, Koh, Tatoglu and Zaim, 2007) confirmed that the optimal application of inventory management concepts and techniques in real business life has a significant impact on firm's performance. (Timothy Lwika, Patrick Ojera, Nebat Mugenda, and Virginia Wachira, 2013) affirmed it is important that inventory managers, to have in mind, the objective of satisfying customer needs and keeping inventory costs at a minimum level, also, (Timothy Lwika, Patrick

Ojera, Nebat Mugenda, and Virginia Wachira, 2013) examined the impact of inventory management practices on financial performance of sugar manufacturing firms in Kenya using structured and semi-structured questionnaires as a primary data and the annual financial performance statements available in the year book sugar statistics as a secondary data; their results indicate that there are a positive correlation between the two variables. (M. Krishna Moorthy, Ng Chee Yew, and Mahendra Kumar, 2012) studied the impact of inventory control on cost and profitability; it has been concluded in their study that inventory control involves many levels of the firm starting from the shop floor workers to the top management commitment, and it is absolutely has a significant impact to the cost and profitability of the firm and it has been advised that the firms should identify their inventory's type, liquidate unwanted inventories in order to maximize their investment, understand the carrying costs of the inventory, and present accurate reports for management decisions. (Rick Lavelly, 1998) affirmed that inventory means 'Piles of Money' on the shelf and profit for the firm, and he noticed that 30% of the inventory of most retails shops are dead and he believes that the purpose of inventory control is to facilitate shop operation by reducing rack time which will increase the gross profit.

The core objective of inventory management is to improve customer service through protection against stock out due to demand variability in the market place; and the cost minimization is the main issue to be considered in formulating inventory policies (Amos and Magad, 1989). Another study conducted by (Andrew Blatherwick, 1996) described that good inventory management is the management of inventory to optimize services and determine the best Economic Order Quantity, in order to, retain profit margin while ensuring customer loyalty. (Sanghal, 2005) examined the link between excess inventory and long-term stock price performance; the evidence suggested that there is a negative relationship between the two variables and this negative effect is statistically and economically significant, also, he asserted that the stock market partially anticipates excess inventory situations and that firm do not recover quickly from negative effects of excess inventory. Also, (Andrew Blatherwick, 1996) presented a problem of lack of involvement and deliberation of Sales and Marketing departments in the inventory system management which causes difficulties for inventory management in preparing for seasonal promotions which leads to poor customer service.

(R.L. Ballard, 1996) mentioned that inventory control is treated as a management function, whereas, monitoring stock is regarded as a supervisory function, also, he confirmed that inventory measuring and monitoring is not just checking the stock, but it is the sufficient knowledge about the stock, in order to, ensure the effective inventory control which is vital and crucial in the competitive business world.



(James Healay, 1998) affirmed that sloppy and inefficient inventory management leads to unnecessary carrying cost, loss of customers, loss of sales, and loss of profits; and he pointed out that there is a critical need to set out procedures to properly control physical inventory, to determine the actual carrying cost and an accurate running report to measure the inventory turns.

(Netessine and Roumiantsev, 2005) examined the impact of inventory management policies and practices on the financial performance of a firm across the period 1992-2002 using inventory levels, lead times, and margins as explanatory variables; they concluded found that there is no evidence that smaller relative inventory levels are related with financial performance as measured by return on assets (ROS). (Coyle, Bardi, and Langley, 2003) declared that inventory as an asset has taken an increased significance on the balance sheet due to a strategy adopted by many firms to reduce their investment in fixed assets.

Inventory plays an important role in the firms' growth and survival in the sense that failure to an efficient and effective inventory management will lead to loss of customers and decline in the sales. (Agus and Noor, 2006) examined the impact of managers' perceptions of inventory and supply chain management practices on the level of the financial performance in Malaysia; they employed a structured questionnaire and the sample companies were randomly chosen from non-food manufacturing companies with medium to high technology; their findings supported that inventory management practices have a significant relationship with profitability and return on sales (ROS). A study conducted by (Eckert, 2007) examining the role of inventory management in enhancing customer satisfaction; the results showed that there is a positive correlation between customer satisfaction and technology, supplier partnerships, education and training of employees. (Krajewski and Ritzman, 1999) believed that inventory management is a crucial concern for managers in all types of businesses and they asserted that the challenge is not to reduce costs or satisfying all demands, but to achieve the competitive priorities for business most efficiently.

(Holdren and Hollingshead, 1999) witnessed that multi-millions of dollars' worth of inventory held by American businesses is financed by bank loans with goods pledged as security; and they declared that there is an important marketing relationship exists between inventory managers and commercial lending officers who write the inventory loans, so, both inventory managers and creditors should concern about risk and return of inventory loans as inventory managers should provide their lenders with accurate information to attain financing at the lowest rate, in addition to, the loan officers should assess the degree of inventory risk in order to decide a proper interest rate. (Eoglu and Hofer, 2011)

empirically examined the relationship between inventory management and financial performance of a firm; the samples used in their study were United States manufacturing firms for the period from 2003 to 2008 using Empirical Leanness Indicator (ELI) as a measurement of inventory management; the results suggested that there is a significant positive relationship between the two variables. In Greece, a study conducted in (Koumanakos, 2008) investigating the impact of lean inventory management on the improvement of financial performance; his study tested textiles, food, and chemicals manufacturing firms for the period from 2000 to 2002; the results showed that there is a negative relationship between the level of inventories preserved (departing from lean operations) by a firm and the rate of return. (Salawati Sahari, Michael Tinggi, and Norlina Kadri, 2012) empirically examined the relationship between inventory management and firm performance and capital intensity on a sample of 82 construction firms in Malaysia for the period from 2006 to 2010 by employing regression analysis and correlation techniques; the results of their study suggested that there is a positive correlation between inventory management and financial performance, also, there is a positive relationship between inventory management and capital intensity. (Aizam Abdul Aziz, Ahmad Ezanee Hashim, and Zarita Ahmad Baharum, 2013) highlighted the importance of space inventory management of the Malaysian Public Universities; they stated that implementation of space inventory management significantly contribute to cost effectiveness, directory, and enrolment projection, grant funding opportunity and institutional comparisons.

### **3.3 Comments and Criticism**

After the entire prolog and discussion in the literature review, we can notice that lots of researchers discussed the importance of inventory management and examined the impact of inventory policy decisions on the effectiveness of supply chain management, enhancement of the financial performance, and success of the firm. Also, it is noticeable that previous literatures agree that an efficient supply chain management system is definitely a vital competitive advantage for any company. In fact, many researches have even proved that supply chains are an integral part of businesses, their efficiency or inefficiency can impact business productivity and financial performance. Researchers have been studying the supply chains and strategies since decades, but, very few studies have examined supply chain strategies in the economies of Gulf Cooperation Council countries. In particular, there are no published researches on supply chain strategies in the UAE. Also, it has been noticed that there is a

severe scarcity in the literatures that address the relationship between the supply chain fit and the financial performance, and to the best of our knowledge, this research is the first to empirically examine the impact of the Supply Chain Fit on the financial performance in the Middle East.

## **CHAPTER FOUR**

### **METHODOLOGY**

## **4.1 Overview**

In this research, before proceeding to our main topic of investigating a relationship between strategic supply chain fit and the financial performance of an enterprise we shall discuss three main postulates and domains regarding the contemporary issues in supply chain.

First of all, we will outspread and discuss the operations and manufacturing approach relating to the more recent research and concepts of supply chain management and we shall do this by analyzing the supply chain strategies that are pursued by any company and investigate their efficacy with their production priorities and business goals and strategic plans.

Secondly, we shall explore the notion of strategic fit or supply chain fit as described by Venktraman and we shall try to establish what exactly does it mean, what is to be perceived by positive fit and negative fit and how does these effect the efficacy of the supply chain system.

Our third line of approach will be a study of the financial performance impact or the bottom line, we will achieve this by measuring the return on assets (ROA) which is already calculated by the companies.

Our research approach is exploratory, though as we have said that in the previous discussion that some researches have been done on the subject, both in past and recently as well, but we feel that there is severe lack of an empirical evidence from a very local perspective with Gulf Cooperation Council countries in general and United Arab Emirates companies in focus.

We have opted for a quantitative design and have selected a questionnaire as our main research instrument. More details about our survey instrument, sample size and frame, methodology used, statistical instruments applied on the gathered data are discussed later in this chapter.

## **4.2 Research Design**

We will be exploring the subject from the subject of supply chain fit and its impact on financial performance from a very local and regional perspective. Some researches on the subject have been done with European companies and American companies in focus or some research about pan pacific ones but nothing has with emphasis on companies manufacturing in UAE. UAE has recently invested a lot in infrastructure and now there are many company that are not only manufacturing goods for the local market but also exporting to other companies. UAE is aspiring to diversify its economy and reduce

its reliance on oil, and increasing and strengthening the manufacturing sector is one of the aim, hence we think the research will definitely contribute towards the goal.

### **4.3 Research Approach**

Just like the model research we have selected, we too have opted for a quantitative approach and used a questionnaire for gathering the data, in order to, test our hypotheses. The questionnaires have been distributed to manufacturing companies in the UAE; the respondents participated actively and the data was collected during the month of February and March 2014.

### **4.4 Research Instrument**

The main research instrument was a structured questionnaire; we had developed the questionnaire in English, though Arabic translation was also available if needed by anyone. It was a self-administered questionnaire hence we tried to make it as simple as possible and provided option for almost all questions.

Our questionnaire was divided in to three sections, supply demand uncertainty, supply chain responsiveness and competitive intensity.

#### **Section one: Supply Demand Uncertainty**

Supply demand uncertainty is inquired using the 5 key parameters defined by Marshall Fisher (Fisher, 1997).

1. SDU1: How long is the average life-cycle of the products in the main product line?
2. SDU2: How many different variants are available for the main product line?
3. SDU3: What is the average margin of error in the forecast based on unit s at the time production is committed?
4. SDU4: What is the n umber of sales locations for the main product line?
5. SDU5: What is the frequency of change in order con tent for the main product line?

#### **Section Two: Supply Chain Responsiveness**

Supply chain responsiveness refers to the ability and efficiency of supply chain mechanism to react if there is any change in product. In this section we inquired respondents regarding the supply chain priorities and their supply chain strategies, this was again based on Marshall Fisher's model of physical efficiency and market responsiveness strategies (Fisher, 1997).

1. SCR1: Improve delivery reliability
2. SCR2: Maintain buffer inventory of parts or finished goods
3. SCR3: Retain buffer capacity in manufacturing
4. SCR4: Respond quickly to unpredictable demand
5. SCR5: Increase frequency of new product introductions

### **Section Three: Competitive Intensity**

In this section we inquired the respondents regarding the level of competition their main products were confronted with, this was based on the model of market orientation presented by (Jaworski & Kohli, 1993).

1. CI1: Cutthroat competition
2. CI2: Anything that one competitor can offer, others can match readily
3. CI3: Price competition is a hallmark of your industry
4. CI4: Relatively weak competitors

### **4.5 Analyzing the Financial Impact**

To know about the financial impact of supply chain management and supply chain fit on the financial performance of the firm, we used the Return on Assets Ratio (ROA), we inquired the respondent to give the ROA of their company but it was not provided, so, we consulted various web portal that provided this data. We referred to ASMA stock Market Analysis, Zawya and Gulfbase. Return on Assets (ROA) is the net income divided by the total assets of the firm which shows the effectiveness in utilizing the firm's assets in generating profits which could be used to tap the financial performance of the firm.

### **4.6 Data Collection**

Our data collection mechanism was a structured self-administered questionnaire with 20 questions. The questions were divided into 4 sections, the first section was about personal information and information about company, in the second section we inquired 5 questions relating to the Supply and Demand Uncertainty and in the third section we gathered information about supply chain responsiveness. In the 4<sup>th</sup> section we have inquired about the competitive intensity as mediating or control variable.

Supply chain fit is calculated by constructing a relationship between the 2 variables which are Supply and Demand Uncertainty(SDU) and Supply Chain Responsiveness(SCR); whereas the relationship of

Return on Assets (ROA) and supply chain is established using the means of ROA of companies with positive and negative supply chain fit.

#### **4.7 Scales of Measurement**

The constructs of interest in this research were measured by referring to ASMA stock Market Analysis, Zawaya, Gulfbase, and multiple items from the self-administered questionnaires.

##### **4.7.1 Supply and Demand Uncertainty**

Supply and Demand Uncertainty refers to the product type (function or innovation) and how convenient is it for the company to predict the accurate demand for the product, it is one of the key elements of our model, we have used the products and process approach of Fishers (Fisher, 1997) model to calculate it. We have inquired 5 questions and used the average or the mean method to calculate and find the SDU.

##### **4.7.2 Supply Chain Responsiveness**

Supply Chain Responsiveness refers the flexibility of the supply chain mechanisms to respond to uncertain demand. We have again used the Fishers (Fisher, 1997) model of process and product matrix and inquired 5 questions, we have used the mean or the average of those 5 responses to calculate our SCR.

##### **4.7.3 Supply Chain Fit**

Supply chain Fit requires a relationship between the two discussed dimension of supply chain namely the Supply & Demand Uncertainty (SDU) and Supply Chain Responsiveness (SCR). We have used the (Chopra & Meindl, 2013) Meindl and Chopra's approach for supply chain fit and have calculated it by subtracted the supply chain responsiveness scores from supply and demand uncertainty scores.

***Supply Chain Fit = Supply Demand Uncertainty – Supply Chain Responsiveness***

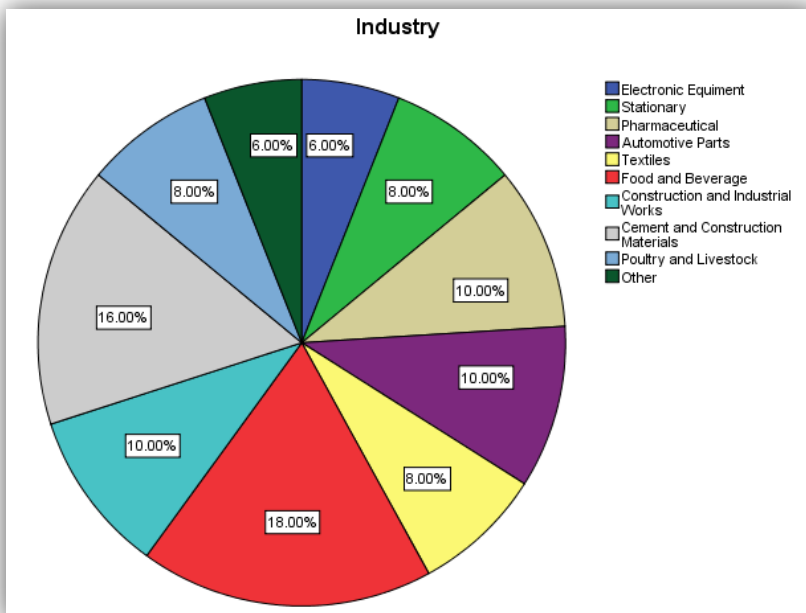
##### **4.7.4 The Relationship between Supply Chain fit and ROA**

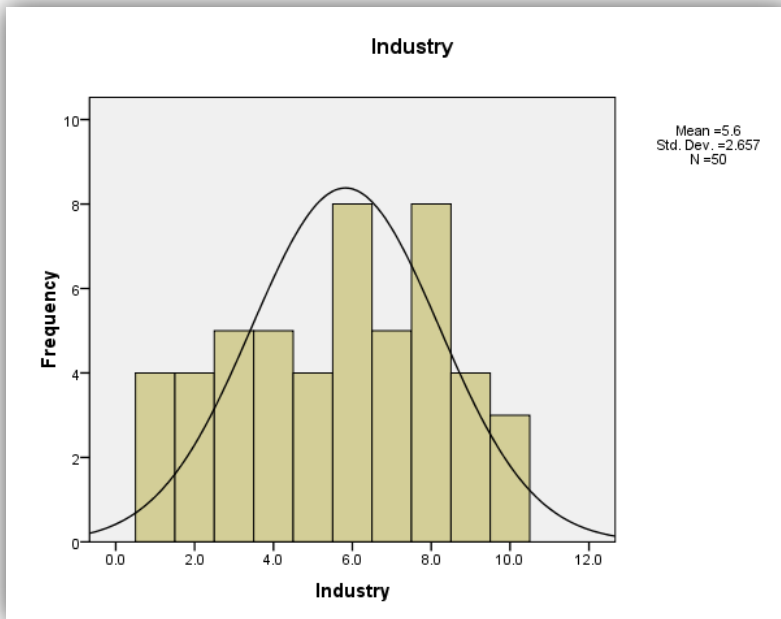
To calculate the relationship between supply chain fit and the ROA of a firm, we have calculated this first dividing our sample in 2 sets, one with a positive supply chain fits and other with a negative supply chain fits. Then we calculated the mean supply chain fits and also the mean ROA of the firms.



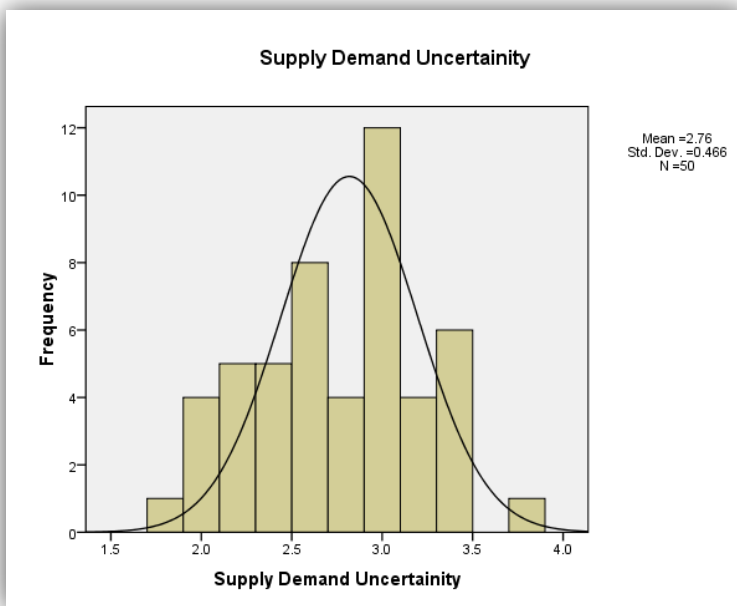
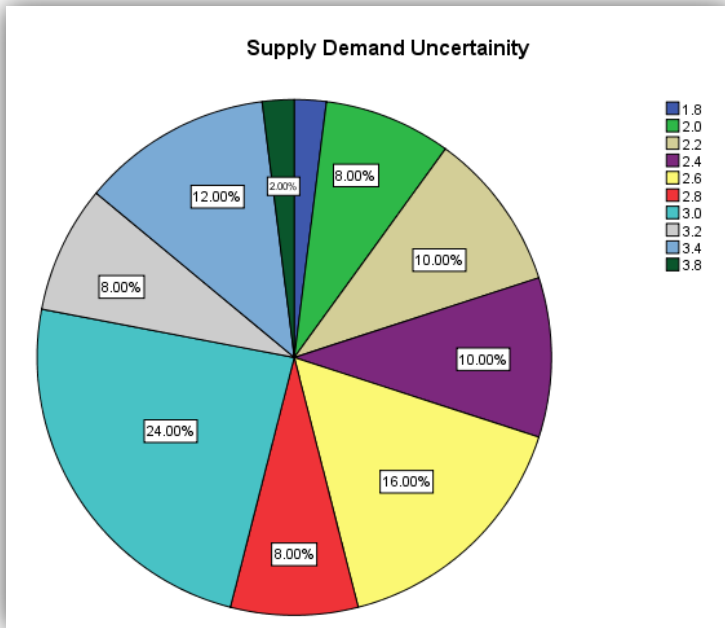
#### 4.8 Analytical Tools and Data Analysis

This section explains the analytical tools used in the analysis, in order to, test the hypotheses. As mentioned earlier, we drafted a questionnaire and collected data from 50 manufacturing firms in the United Arab Emirates; initial mailings were followed by follow-up telecom communication if necessary, fortunately, all respondents participated actively yielding an effective response rate of 100%. We have selected different manufacturing industries in our test including Electronic Equipment, Stationery, Pharmaceutical, Automotive Parts, Textiles, Food and Beverage, Construction Works, Poultry and others. The following graphs show the percentage of different industries tested in our research.

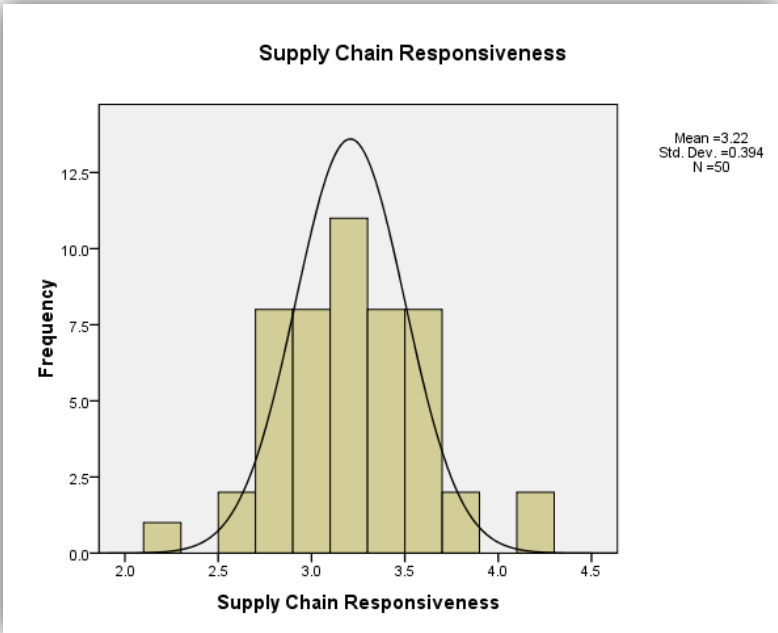
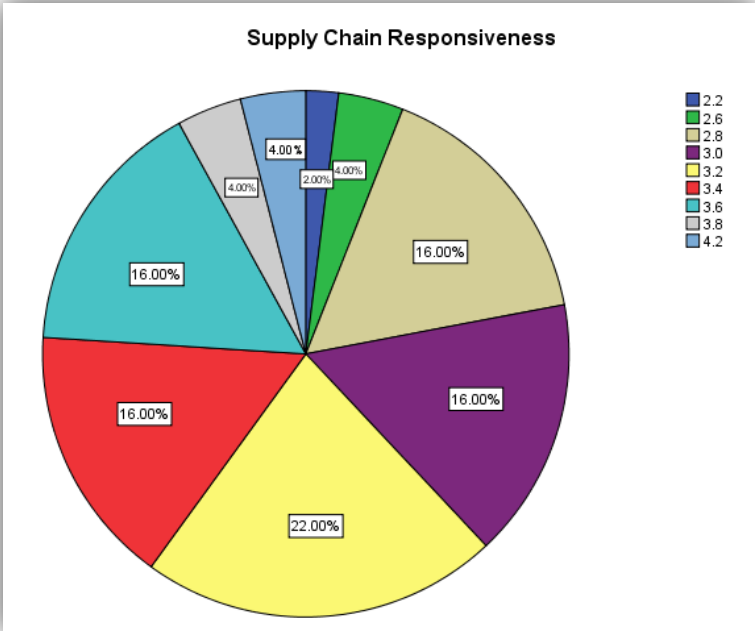




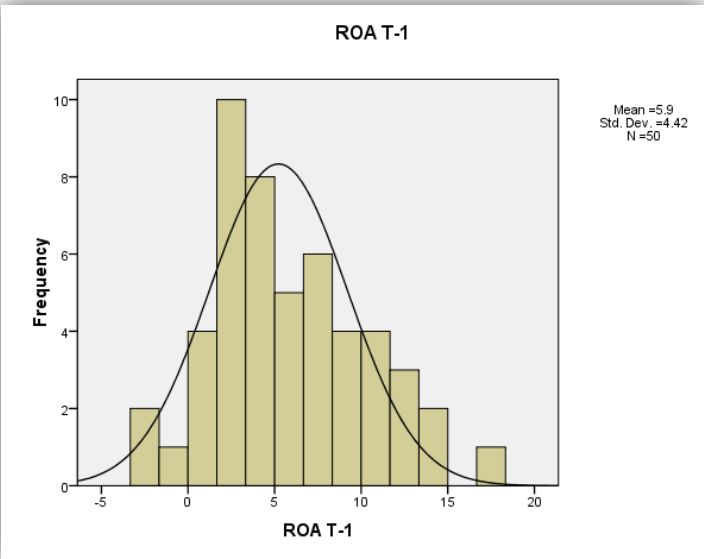
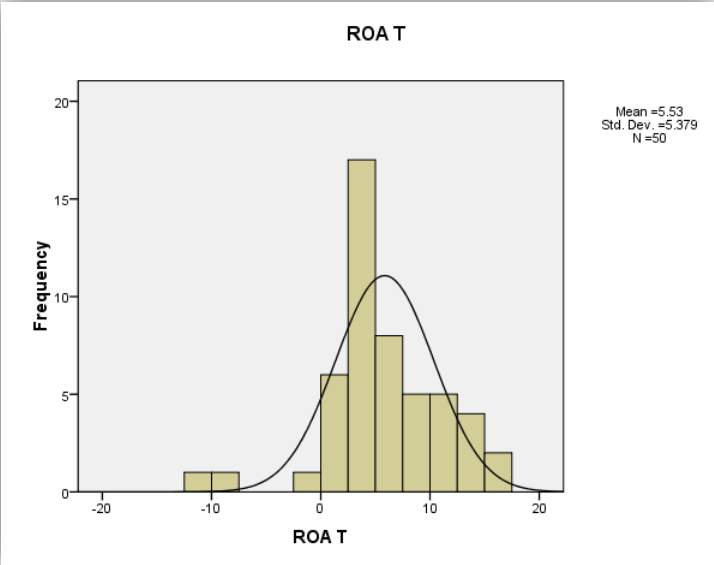
Supply Chain Fit requires a match between Supply and Demand Uncertainty (SDU) of a product and supply chain design characteristics; the respondents had to answer items of these two dimensions in the questionnaire. We calculated the Supply Chain Fit (SCF) for the firm as  $SCF = SCU - SCR$ , the greater value indicates lower fit, and, if the value of SCF equals zero, means perfect Supply Chain Fit Achieved. The following two graphs illustrate the results of our test with regard to Supply Chain Uncertainty (SCU).

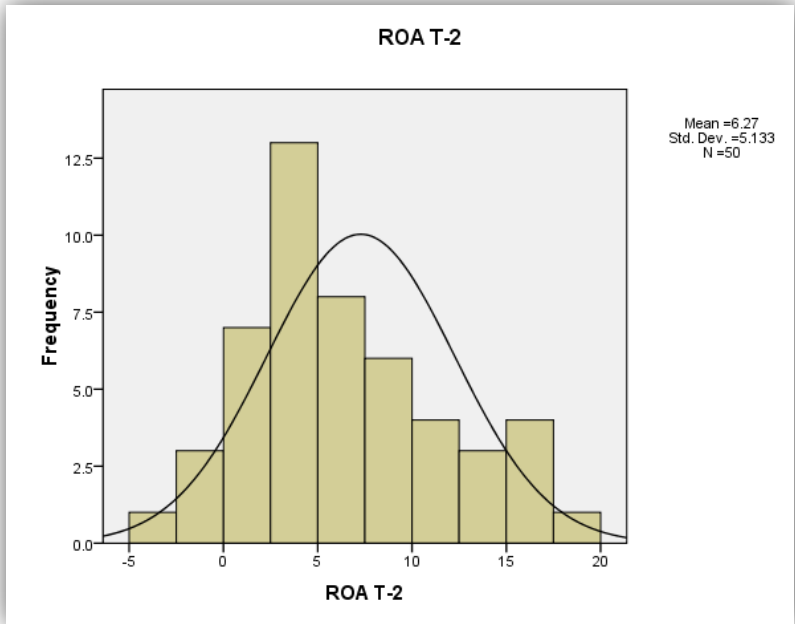


The following figures show the results of the Supply Chain Responsiveness (SCR).

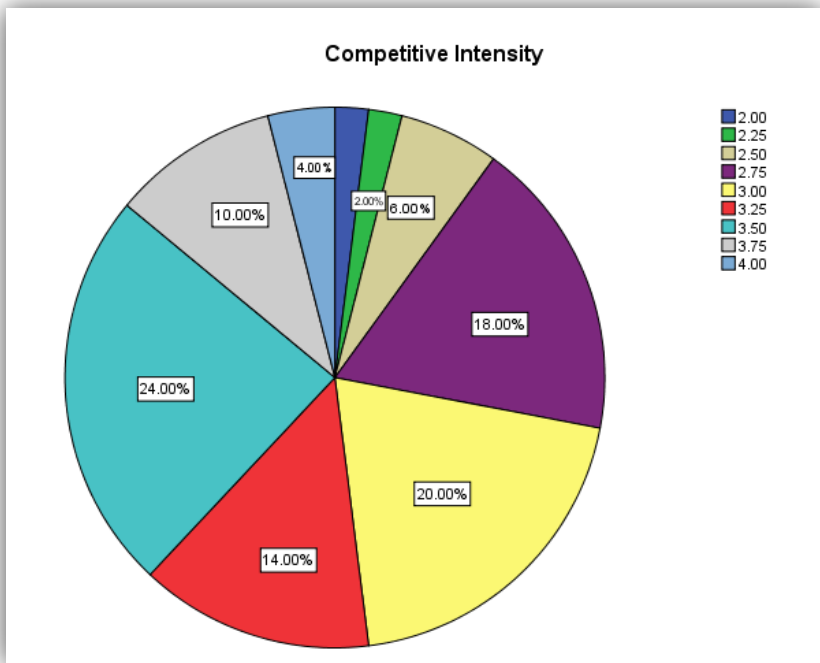


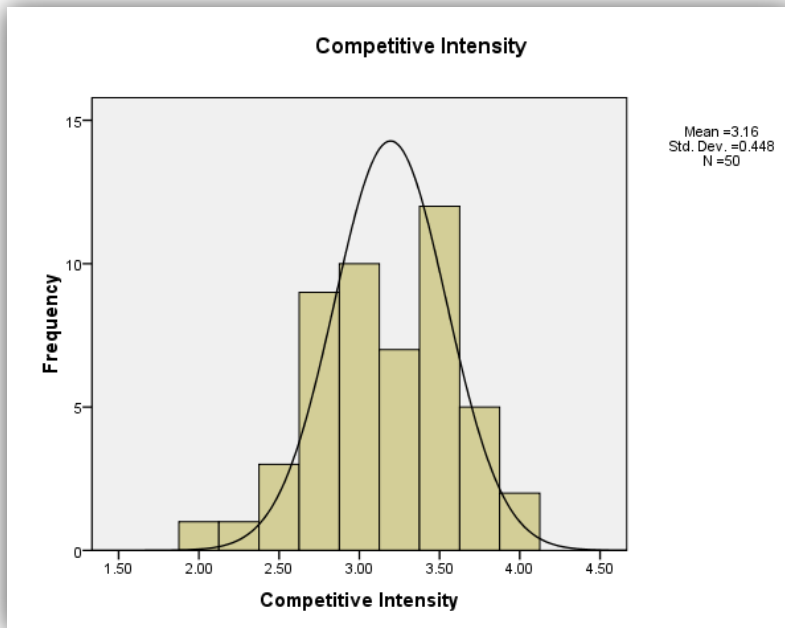
The Return on Assets (ROA) ratio has been used to tap the financial performance of firms; and this ratio can be greatly affected by the previous years' performance, hence, the prior three years ROA has been analyzed in this research (ROA T, ROA T-1, and ROA T-2) as controls in the regression analysis.





Competitive Intensity is an structural variable which has a potential impact on the financial performance; it has been captured through four questions included in the questionnaire.





Our hypotheses have been scrutinized through a regression model; firstly, the performance variable which is Return on Assets (ROA) was regressed on the control variables, then, the independent variable which is Supply Chain Fit (SCF) was entered. It is worth noted that the level of confidence used in this research is 95%.

The main results of our analysis has been included in this section after checking the critical assumptions underlying regression analysis, such as, the multicollinearity is within the accepted range, the residuals are of constant variance over the independent construct values (homoskedasticity), and the residuals are normally distributed.

### **Regression**

Our R-Squared value that represent the fit of our linear model is 45.1% that means 45.1% of variability is explained by the variables included in the model and the remainder of the variability can be explained by variables not included in the variable. Also, the results show R in the regression analysis is 0.698

which indicates significant positive relationship between the supply chain fit and the financial performance of the firms.

The regression model states that our R-squared value without the mediating variable is 0.451 or 45.1% that means out models holds true for 45.1% of the samples, our mediating variable, the competitive intensity adds more validity to our model and our R-Square with the consideration of Competitive intensity is 0.453 or 45.3% that means our model hold true for 45.3% of the sample.

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.688 <sup>a</sup>	.474	.451	.7279
2	.698 <sup>b</sup>	.487	.453	.7264

a. Predictors: (Constant), Supply Demand Uncertainty, Supply Chain Responsiveness

b. Predictors: (Constant), Supply Demand Uncertainty, Supply Chain Responsiveness, Competitive Intensity

**Correlations**

**Correlations**

		Supply Chain Fit	ROA
Supply Chain Fit	Pearson Correlation	1	.490
	Sig. (2-tailed)		.516
	N	50	50
ROA T	Pearson Correlation	.490	1
	Sig. (2-tailed)	.516	
	N	50	50

Correlation is significant at the 0.01 level (2-tailed); our results shows 0.516 which indicates high correlation between the two dimensions, the Supply Chain Fit and Return on Assets (ROA). Also, the Pearson Correlation of our analysis is 0.490 which is considered strongly statistically significant.



**ANOVA**

**ANOVA<sup>c</sup>**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	22.403	2	11.201	21.142	.000 <sup>a</sup>
	Residual	24.901	47	.530		
	Total	47.303	49			
2	Regression	23.029	3	7.676	14.547	.000 <sup>b</sup>
	Residual	24.274	46	.528		
	Total	47.303	49			

a. Predictors: (Constant), Supply Demand Uncertainty, Supply Chain Responsiveness

b. Predictors: (Constant), Supply Demand Uncertainty, Supply Chain Responsiveness, Competitive Intensity

c. Dependent Variable: Supply Chain Fit

**Co-efficient**

**Coefficients<sup>a</sup>**

Model		Un-standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.353	1.034		-.342	.734
	Supply Chain Responsiveness	-1.084	.264	-.435	-4.107	.000
	Supply Demand Uncertainty	1.161	.223	.551	5.203	.000
2	(Constant)	.581	1.341		.433	.667
	Supply Chain Responsiveness	-1.094	.264	-.439	-4.152	.000
	Supply Demand Uncertainty	1.127	.225	.535	5.010	.000
	Competitive Intensity	-.255	.234	-.116	-1.090	.281

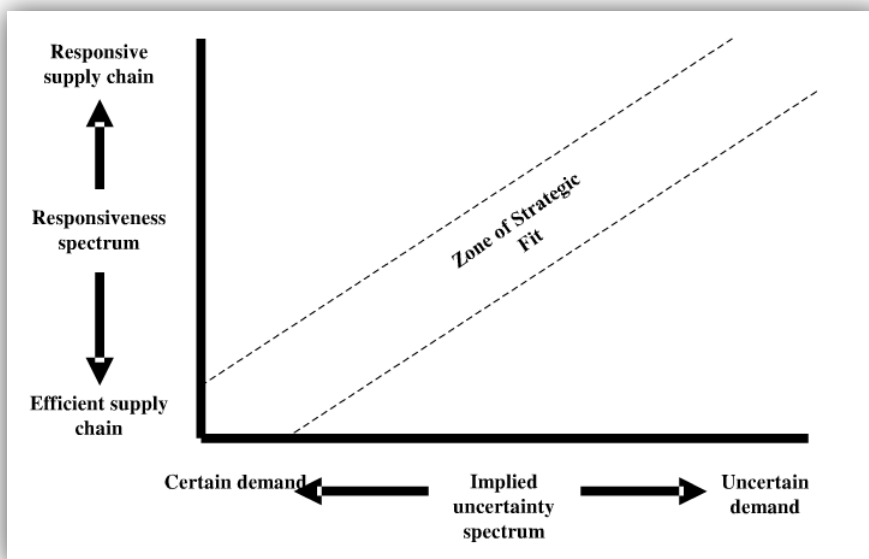
a. Dependent Variable: Supply Chain Fit

The rationality of using Co-efficient test and One Way Analysis of Variance (ANOVA) test in this research is to test and examine whether the groups of sample are significantly different or not, in addition to, compare means of two or more samples. The sample of our research is divided to the following three groups:

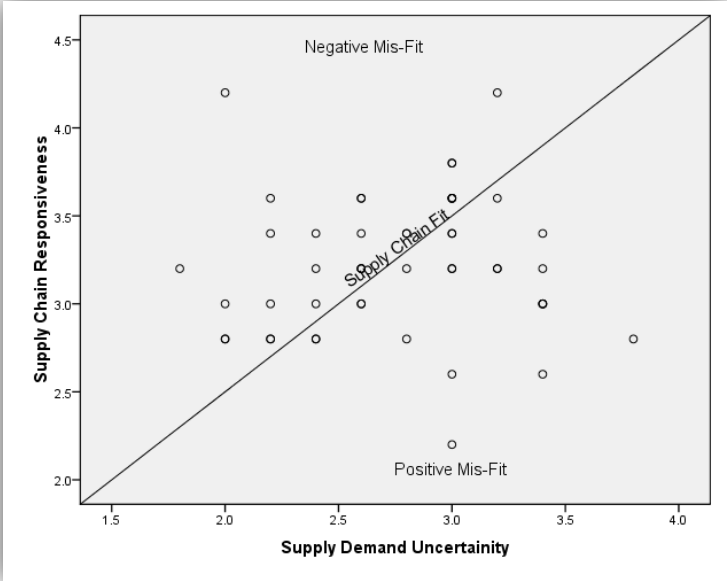
- Supply and Demand Uncertainty (SDU),
- Supply Chain Responsiveness (SCR), and
- Competitive Intensity (CI)

### **Post hoc Analysis**

Post hoc analysis has been conducted in this research, in order to, derive additional insight through differentiating the firms based on supply chain fit, supply chain positive misfit, and supply chain negative misfit. The following figure is supply chain fit adapted from (Chopra and Meindl, 2010; Fisher, 1997).



The following figure is the result of Supply Chain Fit's scatter plot in our analysis for the 50 manufacturing firms.



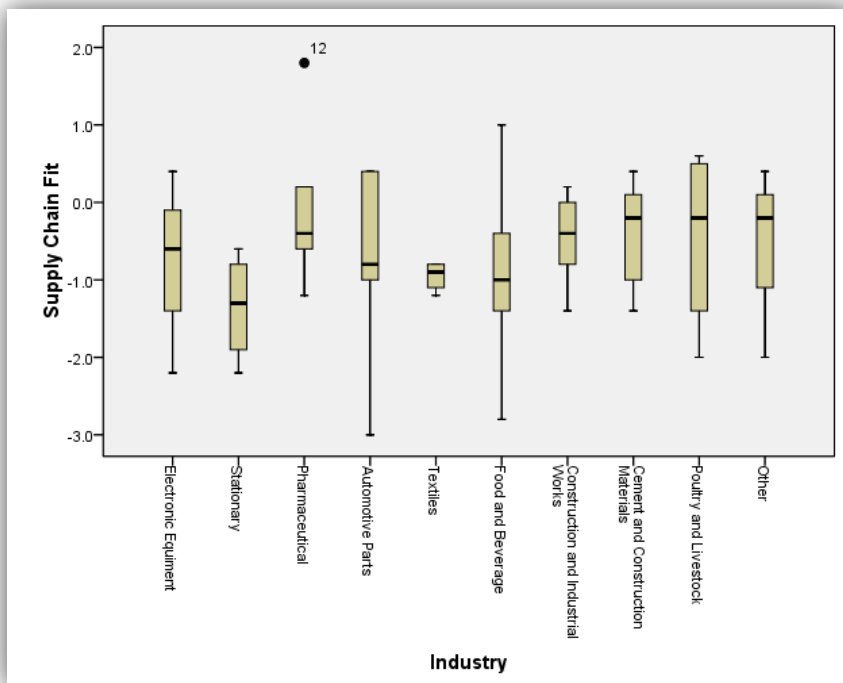
Also, the results shows that companies with Negative Supply Chain Fit have a mean ROA of 3.91, whereas, companies that had a positive supply chain fit had a mean ROA of 4.76 which indicates that firms with positive supply chain fit show a higher financial performance than firms with a negative Supply Chain fit. But, firms with perfect supply chain fit had a mean of 5.43 which is the highest.

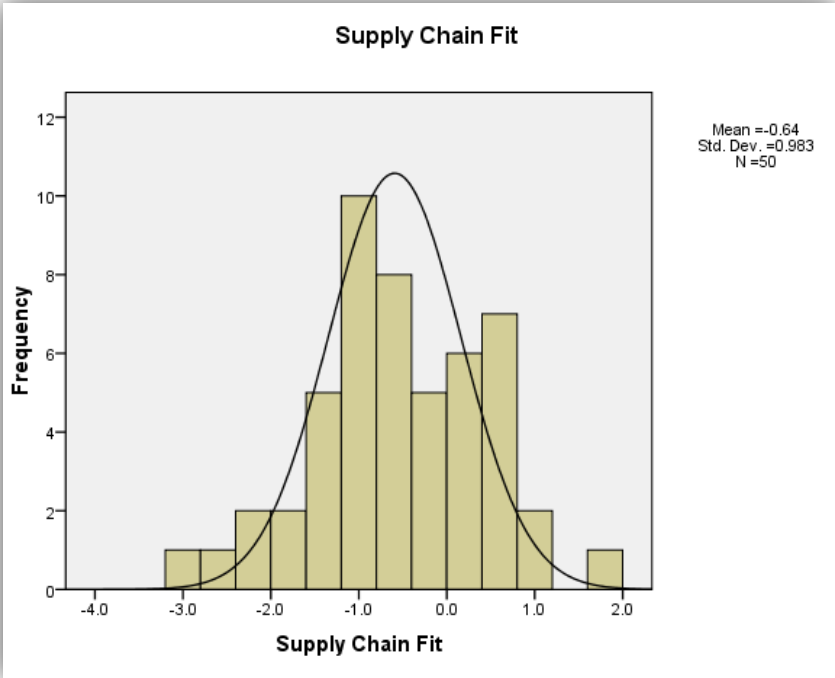
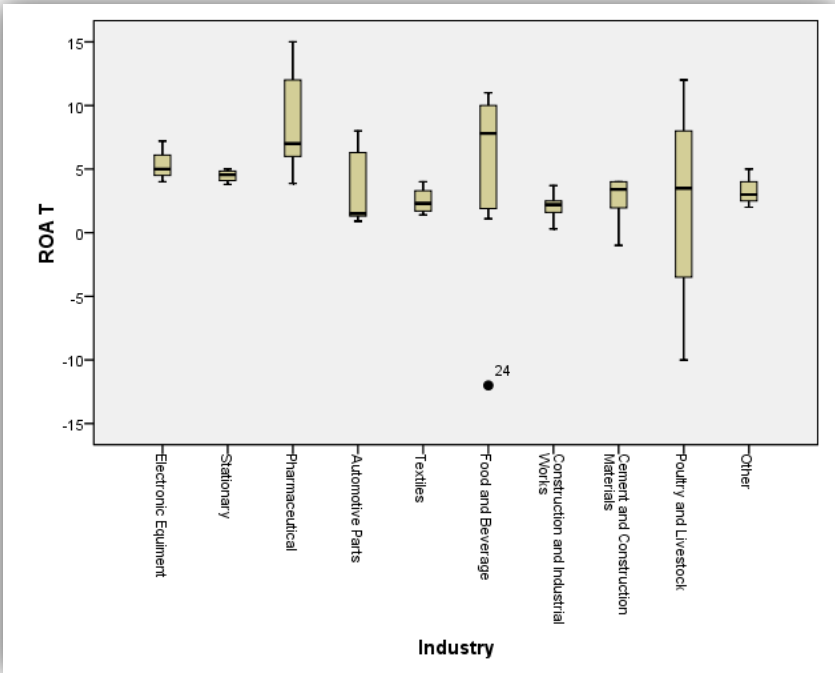
Companies with negative Misfit		
	SCM	ROA
Sum	-39.6	132.78
Mean	-1.1647	3.9053

Companies with a positive Misfit		
	SCF	ROA
Sum	7.4	61.9
Mean	0.5692	4.7615

Companies with a perfect fit		
	SCF	ROA
Sum	0	16.3
Mean	0	5.4333

The analysis results of this research providing support that there is significant positive relationship between the Supply Chain Fit and the financial performance of manufacturing firms.





#### **4.9 Analysis of Data and Empirical Results**

In order to test the hypotheses, we analyzed our data and the various variables which have been collected from the questionnaires using two software; Statistical Analysis in Social Science (SPSS) Software and Microsoft Office Excel. It is worth mentioning that adopting these two software could be considered as the best analytical tools for this research. The most useful software for analyzing data collected from questionnaires including various analytical methods and options used by researchers is the SBSS software; and regarding Excel software, it is considered a well powerful software to study and analyze figures which was the primary reason for using excel in analyzing our data. Hence, using SBSS and Excel software was the best choice for our research.

A moral issue is important in this research, so, the respondents were informed that the information provided by them considered highly confidential and used for the academic research only not for any other purpose without violating their privacy. Details of our empirical results are included in the appendices.

The literature review, different reports, articles and studies, also, our empirical results echo the empirical analysis, findings, discussions, and suggestions of the following chapter.

## **CHAPTER FIVE**

### **FINDINGS, DISCUSSIONS, LIMITATIONS, AND RECOMMENDATIONS**

## 5.1 Empirical Results' Analysis

The first chapter suggested the main goal of this research which included hypotheses for empirically examining the relationship between the Supply Chain Fit and the Financial Performance of manufacturing firms in the UAE. In order to achieve supply chain fit, firms should understand demand and supply uncertainty of their products, customer needs, supply chain's characteristics and capabilities, efficiency-responsiveness continuum, and ensuring that the degree of supply chain responsiveness is consistent with the supply and demand's uncertainty. In this research, the regression analysis has been used, in order to, test the hypotheses. Firstly, the performance variable which is Return on Assets (ROA) was regressed on the control variables, then, the independent variable which is Supply Chain Fit (SCF) was entered. The baseline regression analysis with all 50 UAE's manufacturing firms included show support of our hypothesis that supply chain fit can impact the return on assets and financial bottom line of a company holds true as we have seen that companies with a positive supply chain misfit have a higher ROA compared with companies with a negative supply chain misfit, whereas the companies with perfect supply chain fit (SCF=0) have the highest ROA. Our R-Squared value that represent the fit of our linear model is 45.1% that means 45.1% of variability is explained by the variables included in the model and the remainder of the variability can be explained by variables not included in the variable.

Though there is little doubt about the benefits of efficient supply chain management systems and managers and business operators all agree on the integral part it plays in the smooth functioning of the organizations but it was unfortunate to find that companies in UAE's manufacturing sector are usually unable to create a supply chain strategic fit. We also found that most of the companies have a negative misfit, there were 35 companies whose supply chain misfit was in negative, this is an indication that there might be huge trade-off cost that they are bearing and their supply chain systems lacks the efficacy. There were some companies, 12 to be precise that represent nearly a quarter of our sample that had a positive supply chain misfit.

Hence, it is noticeable that most of the companies have a negative supply chain misfit, almost every industry has a negative mean supply chain fit, this means that there is a dire need to improve the supply chain systems to increase the financial performance, we have also found that companies with a positive supply chain fit have a higher ROA compared with companies with a negative supply chain fit.



Correlation Analysis which describes the strength of relationship between two variables shows, in our research, a significant positive relationship between the supply chain fit and the financial performance of the firms as R in the regression analysis is 0.698. Also, our regression model states that our R-squared value without the mediating variable is 0.451 or 45.1% that means our model holds true for 45.1% of the samples, our mediating variable, the competitive intensity adds more validity to our model and our R-Square with the consideration of Competitive intensity is 0.453 or 45.3% that means our model holds true for 45.3% of the sample. Additionally, the correlation results show 0.516 which indicates high correlation between the two dimensions, the Supply Chain Fit and Return on Assets (ROA); and, the Pearson Correlation of our analysis is 0.490 which is considered strongly statistically significant.

Also, we found that; companies with Negative Supply Chain Misfit have a mean ROA of 3.91, whereas, companies that had a positive supply chain misfit had a mean ROA of 4.76 which indicates that firms with positive supply chain misfit show a higher financial performance than firms with a negative Supply Chain fit; and with regard to firms with perfect supply chain fit, show a mean ROA of 5.43 which is the highest value which indicates the best financial performance. Based on our empirical analysis we can state that our findings provide support to the following hypotheses:

- **Ha1 -Alternative Hypothesis:** The Supply Chain Fit is positively related to the financial performance of manufacturing firms in the United Arab Emirates.
- **Ha2 -Alternative Hypothesis:** Manufacturing firms in the United Arab Emirates with positive Supply Chain Misfit show a higher financial performance than firms with negative Supply Chain Misfit.

## 5.2 Findings, Discussions, and Suggestions

During the financial meltdown 2006-2007, most firms reduced their inventories sharply in order to stripe layers of cost from supply chain operations, but through 'slash and burn' type approach, the firms sometimes using techniques for the goal of firm's survival that would not be sustainable as the economy is recovering. Now, coming out of the economic recession, firms can and should implement strategies that provide their supply chains with immediate and sustainable value. Firms are facing issues in improving their supply chain financial performance and supply chain would not be efficient and responsive if inventory was not managed properly considering strategies and tools. In order to, have an effective inventory and supply chain managements, managers should be able have effective strategy and should be able to go through decisions of supply chain which are associated with uncertainties. Hence, inventory is the main part of the firm's supply chain that plays an essential role in the supply chain decisions and effective inventory management is the core of the supply chain management excellence and it is important that managers always know that effective and efficient supply chain management can be achieved by an effective inventory management and any changes in the inventory policies would always have an effect on supply chain so inventory management and supply chain management processes should be coordinated and integrated in order to lead to the success of the firm.

Jonathan Byrnes, senior lecturer at MIT Centre for Transportation and Logistics and Author of 'Island of Profit in a Sea of Red Ink' stated that supply chain management can have a massive impact on profitability, cost, risk, and cash flow, also, he declared that sometimes a supply chain professionals can deliver more revenue than a sales person ever could. PwC Ireland's SCM partner Garrett Cronin (Sep, 2012) declared that Leaders are investing in next- generation supply chain capabilities that enhance profitability while meeting the needs of individual customers; and responsiveness supply chain configurations not only drive performance, but allow companies to serve their customers seamlessly in turbulent market conditions.

Supply chain Management is not just a matter of handling and management of the logistics of a firm, it is a complete science and a field of study that just like accounting, finance, production or marketing is an integral part of the business, in fact many other domains including the ones

mention rely upon efficient supply chain systems. Supply chain management (SCM) is an integral business process or set of processes that is considered to be an amalgamation of art and science of inventory management, operations management, production management, logistics and strategic management. Its main ambition is to search for enhanced and improved ways for any business to convert the raw material into final products but it does not start or end here, supply chain management initiates from the planning stages when the sourcing of raw materials is considered and ends till the customer receives the final product or service. The Supply Chain council (SCC) has identified few basic components of a supply chain management system; the five processes (plan, source, make, deliver, and return) are the elementary constituents and modules of Supply Chain Management (SCC, 2014).

Planning is at the very heart and soul of supply chain management system, it is the strategic slice of SCM and SCM like any other constituent of management relies on strategic planning and management. As it is a common economic fact that we have limited resources and unlimited wants and desires but we have to create a balance or an optimal combination with the limited resources. When the same process is applied at the businesses level we call it strategic planning. For planning or strategic planning businesses require a strategy through which they can create this optimal balance or combination of resources, they need to keep a track on all resources, tangible and intangible, that collectively contribute to meet the needs and demands of a customer and supply chain management is a big part of the puzzle. Therefore an important constituent of the supply chain management planning is development of criteria and setting of benchmarks against which the performance shall be monitored. Supply chains must also measure and monitor the input and output processes by means of various metrics and ratios to ensure that all resources are managed in an optimum way that provide the company with a competitive advantage, that enhances efficiency and also reduces cost and ultimately facilitates the delivery of high quality and value to end users.

Once planning is done, the measures and metrics are in place, and then is the time to execute the strategic plan. The subsequent step in supply chain management is sourcing or solicitation of suppliers that will supply it with the raw materials and/or equipment or technology or three that are needed by the enterprise to develop and create their products and services. Sourcing is a crucial step, it is so important that even many supply chain managers think that their main requirement is to source goods, raw materials, technology, equipment or other requisites.

Sourcing entails a bunch of activities that includes pricing policies and bands, process and policy and mechanism of delivery (by air, land or sea), the process and parameters of payment (the credit line and credit period, insurance, payback period, discounting and others). Sourcing also involves monitoring of these activities and evaluating them against a benchmark criterion to assess the status of supplier relationship. Sourcing may also involve the procedure and process for storing and safekeeping of these goods or in other words a mechanism for inventory management.

The make part is an indirect component of the supply chain, it is though an essential components as all the sourcing done was for this process only. In this process, the supply chain has to ensure that all the resources needed for manufacturing are readily available; they must test and conduct necessary evaluations in advance. Make is one of the most important components that need to be monitored closely as most of the wastage of resources can occur in this, hence, the supply chain managers must work closely with production, operations and quality assurance managers to ensure the optimal use of resources and optimal end-product, along with high productivity.

Delivery of manufactured goods is another direct component of the supply chain value line; this portion is also referred at times as logistics management. In this component of the supply chain value line, the Supply Chain Manager Management managers need to coordinate and collaborate with sales and business development department. Coordination of customer requisitions of orders and delivery of goods from company warehouses to customers via the agreed means of transportation are the sub-constituents. The mode and mechanism of payment against invoices is also included.

Return is the dreaded part of the supply chain value line that no supply chain manager would like to face; it is problematic and has serious consequences in terms of finance and reputation for the business enterprise. Supply chain planners need to develop a receptive and malleable mechanism and framework for the returning of unwanted or defective network for receiving defective products back from customers.

The entire notion of Supply Chain Management is constructed on two essential concepts. The first concept is that every single product that is completed reaches the customer is a product of multiple processes and these processes collectively are called supply chains or supply chain

value line (Handfield, 2011). The second concept is intuitive, supply chains have been there for very long, even in the era when trade actually started hundreds of years ago but it just recently that we have started paying a lot of attention and developed various scientifically enhanced models of supply chains.

Unfortunately, many organizations still in this era of cut-throat competition and external influences are only attentive to what's goes with their own four walls. But the good thing is that times and our perception of supply chain is evolving, now businesses not only understand but also seek to manage and enhance the entire trail of processes and activities that eventually end at the delivery products to the final customer.

The modern theory has helped remove the disjoint and is now supply chain management is actively involved from planning of production to sourcing of raw materials to the manufacturing and ultimately delivery. Even return of excess or defective products is included in the extended supply chain value chain. All these undertakings not only enhance the reputation of the firm but also maximize customer value and help the business acquire a competitive edge and advantage over other industry players.

Supply Chain Management denotes a cognizant exertion and struggle by the company to enhance its value chain and make it more responsive and efficient. Supply chain management encompasses all activities that range from product planning, creation and manufacturing of products, sourcing of raw materials, production planning, logistics and delivery of products to customers, and it even includes the use of various tools like Information Technology and Information Systems to synchronize these activities.

The firms that make up the supply chain are "linked" together through information and physical flows. Physical flows involve the movement, transformation, and storage of products and materials. They are the most visible part of the supply chain, but, just as important are information flows. Information flows allow the various supply chain partners to coordinate their long-term plans, and to control the flow of products and material up and down the supply chain on a daily basis.

Globalization has impacted all forms and processes of business and same is the case with supply chain management. Globalization has increased the importance and reliance of effective and efficient supply chains within our organizations when raw materials are procured from one geographical location, parts and processes are produced and assembled at another and the consumers and customers are also widespread.

The advent of JIT or Just in time manufacturing has become widely popular among companies, most follow the example of Dell to not only reduce cost but also enhance the delivery time and this all depends upon an effective global supply chain. The out-sourcing of business processes to countries with cheaper labor which is a widespread phenomenon from garments to sports to technological products has also increased the importance of a supply/demand responsive supply chains. The bottom line is that out sourcing of production processes and other impacts of globalization add more uncertainty to the supply chain mechanisms. But fortunately due to the advancements in information technology and the availability of assorted technologies, the uncertainty can be controlled, but like every other process, technology is also costly and adds to the final cost of the product. But it is hoped that new frameworks and innovative processes and above all the intangible power of globalization will influence and help create economical global models for supply chain management (Wailgum, n.d.).

Organizations and businesses rely on Supply Chain Management System as it is an integral part not only for profitability but also for operations. Some reasons due to which businesses need Supply Chain Management are improving operations, increasing levels of outsourcing, increasing transportation costs, competitive pressures, increasing globalization, increasing importance of e-commerce, complexity of supply chains, and managing inventories.

Supply Chain Management has a great impact on the business; it can be greatly beneficial for lower inventories, higher productivity, greater agility, shorter lead times, higher profits, and greater customer loyalty. Supply Chain can impact various factors and segments of an organization. Quality, cost, flexibility, velocity, and customer service are some of the drivers of Supply Chain performance. The trade-offs of SCM are cost-customer service (e.g. disintermediation), lot-size-inventory (e.g. bullwhip effect), inventory-transportation costs (e.g. cross-docking), lead time-transportation costs, and product variety-inventory (e.g. delayed differentiation).

Strategic planning is very important for supply chain in the very same manner as it is in any other discipline, as it is known the purpose of strategic planning is to foresee and predict the future needs and do the necessary planning and preparations for it. One of the key strategic questions that even greatly relates to supply chain management is, “How does an organization that is involved in the manufacturing of goods, especially the ones with variety of products or product lines, resolve and agree what products to produce and in what quantity when the organization simply is not able to confer what its consumers will accept?”, this question was posed by Fisher in his research discussing the right supply chain strategy for products.

Fisher categorized products in two main categories, functional and innovative and their differences in demand and the kind of supply chain strategy that best suited them. Functional products are staples or the basic necessities that one needs, it can be simple petroleum that one needs every day to drive their cars, now it doesn't matter which brand of petrol station you get your fuel, your product shall be the same and will perform the same function, or grocery products, it doesn't matter if one gets their groceries from a souk or common street shop or a hypermarket or a mega mall, the purpose served shall remain the same.

As functional products satisfy the basic needs, they are almost always in demand, hence, it becomes easy to foresee or predict their consumption and companies producing them can envisage the demand and foretell the requirement. The demand of functional products also remains stable and usually has longer life-cycles. Due to these features of assurance functional products attract much competition, and as the theory of economics and market goes, the higher the competition, the lower the profit margins. To overcome the issue of low margins businesses adopt the innovation approach and enhance the quality and functionality of their products, they try and attempt to make their product better than the other so they can even have a competitive advantage. They rely on innovation and novelty not just to increase their profit margins but also to offer customers more reasons to buy their products. Due to innovation the basic functional products become innovative, now a simple piece of cloth becomes a brand and can be ZARA or Alexander McQueen or Gucci, shoes from a cobbler can also be transformed into a Jimmy Choo or Nike, a simple cup of tea or coffee can be Starbucks Designer flavors or Espresso's creamy latte and so on. But, the issue with innovation and innovative products is that their demand becomes unpredictable, they are no longer stable, they are volatile and capricious. They even have smaller life cycles, the plain cup of tea or coffee will remain the same for

decades but a specialty coffee or tea house has to keep on innovating and introducing new variety and ranges. (Fisher, 1997) (Hayas and Wheelwright, 1979).

<b>Functional Versus Innovative Products: Differences in Demand</b>		
	<b>Functional (Predictable Demand)</b>	<b>Innovative (Unpredictable Demand)</b>
Aspects of Demand		
Product life cycle	more than 2 years	3 months to 1 year
Contribution margin*	5% to 20%	20% to 60%
Product variety	low (10 to 20 variants per category)	high (often millions of variants per category)
Average margin of error in the forecast at the time production is committed	10%	40% to 100%
Average stockout rate	1% to 2%	10% to 40%
Average forced end-of- season markdown as percentage of full price	0%	10% to 25%
Lead time required for made-to-order products	6 months to 1 year	1 day to 2 weeks
* The contribution margin equals price minus variable cost divided by price and is expressed as a percentage.		

	Functional Products	Innovative Products
Cost of Sale	Low	High
Risk of Obsolesce	Low	High
Forecast Accuracy	High	Low
Product Variety	Low	High
Product Life Cycle	Long	Short

When the two types of products are known and understood, then appropriate strategies could be applied on them, each type of product has different characteristics and unique features, hence, we need to develop and devise supply chain strategies that match the distinctive nature and characteristic of these products. Producers of functional products can foresee and predict demand and can satisfy more percentage of customers by producing and supply the exact quantity needed by the market but innovative products, new to their nature and large variety

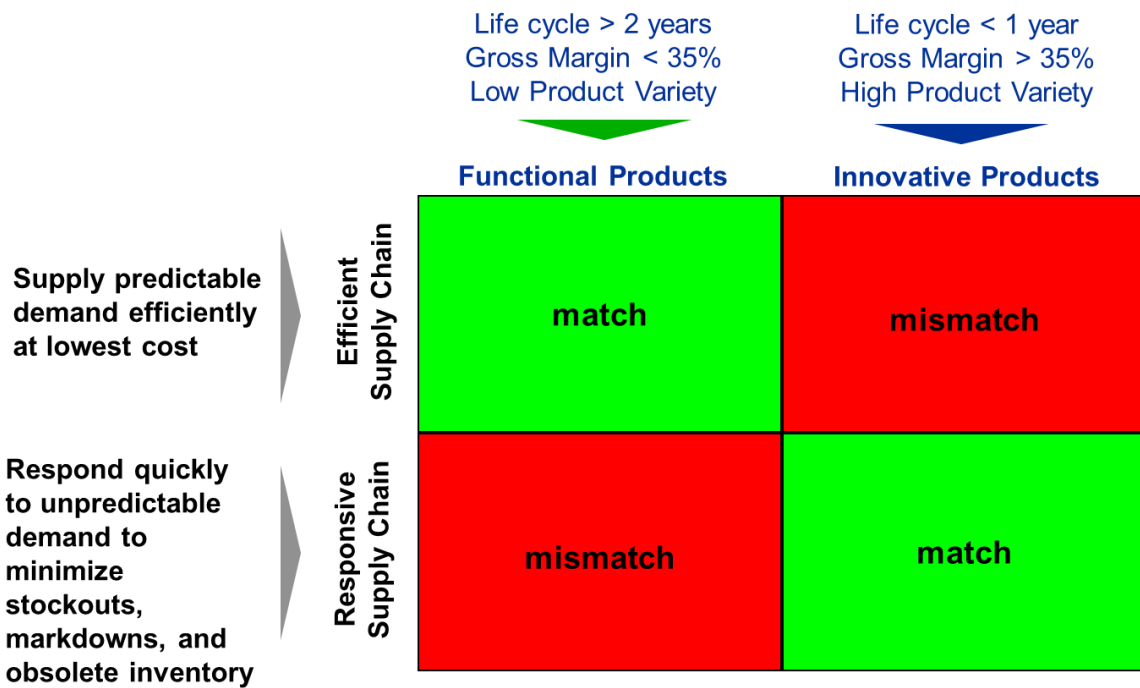


cannot be easily predicted and hence producer are left with estimates which at times can be wrong. The strategies needed for these dissimilar kinds of products can also be classified into two categories, known as physical efficient or supply/demand uncertainty and market responsive or supply chain responsive.

Functional products require efficient processes whereas innovative product requires responsive processes.

<b>Physically Efficient Versus Market-Responsive Supply Chains</b>		
	<b>Physically Efficient Process</b>	<b>Market-Responsive Process</b>
Primary purpose	supply predictable demand efficiently at the lowest possible cost	respond quickly to unpredictable demand in order to minimize stockouts, forced markdowns, and obsolete inventory
Manufacturing focus	maintain high average utilization rate	deploy excess buffer capacity
Inventory strategy	generate high turns and minimize inventory throughout the chain	deploy significant buffer stocks of parts or finished goods
Lead-time focus	shorten lead time as long as it doesn't increase cost	invest aggressively in ways to reduce lead time
Approach to choosing suppliers	select primarily for cost and quality	select primarily for speed, flexibility, and quality
Product-design strategy	maximize performance and minimize cost	use modular design in order to postpone product differentiation for as long as possible

	Physical Efficient	Market Responsive
Factory Focus	High Utilization	Maintain Buffer Capacity
Inventory Strategy	High Turns	Significant Buffer stocks of components
Lead Time Focus	Low cost trumps Short lead time	Aggressively Short lead time
Supplier Selection	Low Cost	Speed and Flexibility
Product Design Strategy	Integral for maximum performance at minimum cost	Modular to enable postponed differentiation



If the right strategy for the right product type is adopted, not only supply chain systems will become efficient but also the cost of over production and the cost of under production can be reduced.

Businesses want to gain competitive advantage over their competitors and to do this with the help of supply chain one needs to first understand the kind of products portfolio types and create a balance with the right supply chain strategy. The most important and fundamental part of any operations strategy is the delineation of the competitive priorities. These priorities can be many; they may include the basic primacies like cost, quality, delivery, and flexibility or more

enhanced and complicated ones like innovation and creativity or even invention of completely new services.

Just like the economic model of needs and wants, a business enterprise also has to make decisions and trade-offs among these assorted priorities during its planning process while they are assigning and apportioning the scarce resources at least with respect to the relative rates of improvement of the different priorities.

The nature of products and product demand are related to operational processes and supply chain as firms with highly standardized, high volume commodity products should rely on efficient continuous flow shop processes; while, firms with un-standardized, low volume customer-specific products should rely on flexible job shop processes. Hence, firms should consider these points and the functional executives and general managers who have strategic responsibilities for inventory, supply chain, manufacturing, logistics, operations, distributions, or procurement should be aware of the importance of the supply chain fit which is supply chain strategy alignment with competitive strategy.

The supply chain strategy includes inventory, transportation, operations, suppliers, logistics, and information flows; failure in any part of them will lead to failure in the overall supply chain. Managers should understand their customers' needs regarding attributes of supply, understand the supply chain attributes and capabilities, in order to, achieve strategic fit through making supply chain decisions to best serve the best needs of target customers. At the level that, the competitive strategy and supply chain strategy are aligned across all functions in the firm including inventory, manufacturing, and transportation, the intra-company inter-functional scope is achieved and the entire company's activities viewed as one single system, optimization is done, and the profit is maximized. Leaders and managers should not underestimate the importance of supply chain; a recent survey in 2014 of Canadian businesses and commissioned by UPS Canada and conducted by Leger Marketing, showed that 84% of business leaders considered a well-managed supply chain is the key competitive advantage in today's economic environment and 80% of businesses with supply chain and shipping strategy achieved or exceeded their growth targets last year.

In today's the most dynamic and rapidly changing environment, firms doing what they have always done is unacceptable even if they do it very well; firms should seek for innovation which is the main impetus of business development; and adopt the best in class practices in order to enable the firms to leverage their supply chain to create the most value and having highly successful firms. Best value supply chain differs from traditional supply chains in many areas, such as, logistics management, strategic sourcing, relationship management, and supply chain information systems. The following table illustrates the typical supply chains vs. best value supply chain according to (D.J. Ketchen, Jr. et al, 2008).

Issue	Typical supply chains	Best value supply chains	Key to making the transition to a best value approach	Example company
Approach to supply chain management	Supply chains support strategy by ensuring the needed flow of goods and services	Firms should leverage strategic supply chain management, agility, adaptability, and alignment to create competitive advantages	Executives must view supply chains as a strategic weapon rather than as a cost center	Zara keeps pace with and creates transient fads in the fashion industry through very rapid product development and distribution
Agility	Moderate capacity to react to changes	Good capacity to anticipate and react to changes	Executives must devise a company-specific approach to managing the costs of buffers	Raytheon Technical Services Company locates an executive office nearby key customers
Adaptability	Focus on efficiency through the use of discrete supply chains	Maintain overlapping supply chains to ensure customer service	Executives must be willing to accept the added expense of duplication	Based on customer's needs, Computer Science Corporation positions some inventory close to customer locations while other items are warehoused centrally
Alignment	Supply chain members sometimes forced to choose between their own interest and the chain's interest	A rising tide lifts all boats — the interests of supply chain members are consistent with each other	Executives must view problems from the supply chain level of analysis rather than the firm level	When a supplier's suggestion saves R.R. Donnelly money, the firm splits the savings with the supplier
Strategic sourcing	Involve suppliers later in the product development process  Monitor internal processes	Involve suppliers early in product development and throughout  Monitor performance end-to-end	Sourcing managers must adopt a holistic, "big picture" view of their role in the company	Aerospace firms such as Northrup Grumman create product development alliances years in advance of government proposals for new aircraft
Logistics management	Treat logistics as a transportation mechanism	Treat logistics as a strategic inventory mechanism	Finding the ideal balance of speed, quality, cost, and flexibility within distribution systems	Dell Computers revolutionized the personal computer business through by-passing retailers and distributing directly to customers
Supply chain information systems	Participants have data at the same time or after a product's movement	Participants have data prior to a product's movement	Information systems must be created that allow data sharing across supply chain participants while protecting each firm's proprietary data	Wal-Mart uses satellite technology, radio frequency identification (RFID), and Global Positioning Systems to track inventory in real time
Relationship management	Moderate success at matching nature of relationship to the task	Effectively match nature of relationship to the task	Recognizing that most supply chain relationships should be managed through contracts, not rich partnerships	Wendy's carefully examined its 225 suppliers to identify less than 40 that were candidates for collaboration

Firms should not focus on having low cost and high-speed supply chains; it is important to have a 'Triple A Supply Chain' characteristics in order to achieve sustainable competitive advantage. These characteristics include Agility, Adaptability, and Alignment. Agility focuses on responding quickly to short term changes in supply and demand; Adaptability focuses on medium term strategy to cope with market changes like technological advances, political changes, economic progress, and demographic trends; and Alignment is about strategic long term plan to align the interests of all participants firms in the supply chain with their own.

Triple A supply chain covers broad strategies across long time period and it does not require to make big investment. Also we suggest to learn and have experience from other leading companies in order to achieve the desired level of supply chain excellence and maturity. Apple Inc is considered the best company in the world for its supply chain practices; (Walter Isaacson, 2012) summarized the supply chain's lessons we can learn from Steve Jobs which are customer comes first and cost cutting comes second, set impossible targets, prioritize actions based on importance, adopt process view of organization, simplify in product and process, adopt radical changes when necessary, and enhance relationship through face to face meetings. Some other suggestions in order to have a strong base for supply chain excellence are having a regular meetings to evaluate the supply chain of the firm and the alignment of supply chain strategy with the firm's overall strategy, using appropriate technology's software such as inventory optimization to make the supply chain more efficient, making good relationship with the suppliers, optimize company- owned inventory, having a collaborative strategic sourcing, having skilled, knowledgeable, and motive team, considering appropriate techniques, such as, supplier managed inventory to develop supply chain responsiveness to customer needs, and improve quality/cost ratio of the firm's supply chain.

Another important point is that, the supply chain management should be aware of the possible barriers, challenges, and risks involved in supply chain management, such as, currency, political stability, infrastructure, taxes, transportation, lack of trained personnel, and financial risks, in order to, establish appropriate levels of control to manage risks and choose the best risk minimization strategy such as hedging or portfolio approach.

Hence, we suggest that firms can boost their financial performance through achieving supply chain fit; and it is important to put in mind that, any firm can achieve supply chain fit and

excellence but it needs to invest in the right capabilities, skills, and resources. Supply chain fit requires long term commitment and it is a dynamic concept due to changes in customer needs so it also requires adapting to changing conditions quickly and aligning the competitive strategy with supply chain strategy as closely as possible without negatively impacting the bottom line of the firm.

In summary, this research has been conducted to test the supply chain fit of the manufacturing firms in the UAE; our analysis shows that, most of the firms have a negative misfit and this is an indication that there might be huge trade-off cost that they are bearing and their supply chain systems lacks the efficacy.

The second core objective of this research was to examine the relationship between supply chain fit and the financial performance of the manufacturing firms; our results provide support to the hypotheses that there is a positive relationship between the two variables; and manufacturing firms in the UAE with positive supply chain misfit show a higher financial performance than firms with negative supply chain misfit.

Last objective of this research is to raise awareness of supply chain fit; we think that the manufacturing firms can benefit from the results of this research as it is clear that achieving supply chain fit is positively associated with the financial performance. Firms can achieve supply chain fit by understanding the customer needs, supply chain strategies, supply chain responsiveness, supply and demand characteristics, and supply and demand uncertainty; then, firms should focus on matching the supply chain responsiveness and supply and demand uncertainty with taking into account that supply chain positive misfit is more desirable than supply chain negative misfit.

### **5.3 Limitations**

While conducting this research we encountered several problems that become limitations for us. The basic and most fundamental one was the even the management not being able to define and realize the power of supply chain. Many supply chain managers were of the view that their responsibility is only limited to the procurement of resources, after that manufacturing and delivery are not their duties. Secondly, many supply chain managers do not have a formal

degree in supply chain, they were either previously involved into administration or engineering and with the passage of time developed a knack of their field and domain, hence, they were unable to define and differentiate between various supply chain notions.

Then we even faced a little issue with some companies, usually small manufacturers that did not knew the return on assets (ROA) of their firms and as they were not registered in stock exchange we too were unable to find the exact ROA, and hence we had to request an estimate from them.

Another limitation was that we had to rely on the data provided by the respondents, there was no check or verification of data. We would strongly suggest that for future studies a verification of a small sample by means of interview should also be done.

#### **5.4 Recommendations**

Presently the study conducted had a very small sample size and the sample was also not equally distributed. We had more food and beverage companies and construction and cement firms compared with textile or stationary. We can conduct a more extensive study with equal representation from all sectors.

In the present study, we did not include the size of the firm, a large size firm and a small size firm has huge nomenclature differences, a large firm may have complexities of dealing with multiple buyers and suppliers and sophisticated internal processes but at the same time it also had the advantage to negotiate a favorable deal with its suppliers and buyers. In future more work can be done on evaluating the supply chain fit and the effect of the size of the firm.

In this study we also did not consider the age of the business enterprise, a decades old business enterprise has the advantage and knowledge of experience, they have developed enough frameworks to learn from their own mistakes and enhance the supply chain, whereas a young company would not have this advantage. But, the flip side is the old firm may have legacy systems and a young firm can exploit the advantage of a fresh start up and make the best use of technological advances. In future, more extensive and in depth research can be done with keeping this aspect of business in focus as well.



## **CHAPTER SIX**

## **CONCLUSION**

## 6.1 Conclusion

This research has examined the relationship between Supply Chain Fit and the Financial Performance of manufacturing firms in the UAE. In order to achieve supply chain fit, firms should understand demand and supply uncertainty of their products, customer needs, supply chain's characteristics and capabilities, efficiency-responsiveness continuum, and ensuring that the degree of supply chain responsiveness is consistent with the supply and demand's uncertainty. The data in this research was collected from 50 UAE's manufacturing firms through questionnaires; the baseline regression analysis with all firms included show support of our hypothesis that supply chain fit can impact the return on assets (ROA) and financial bottom line of a company holds true as we have seen that companies with a positive supply chain fit have a higher ROA compared with companies with a negative supply chain fit. Our R-Squared value that represent the fit of our linear model is 45.1% that means 45.1% of variability is explained by the variables included in the model and the remainder of the variability can be explained by variables not included in the variable. But, it was unfortunate to find that companies in the UAE's manufacturing sector are usually unable to create a supply chain strategic fit, this means that there is a dire need to improve the supply chain systems to increase the financial performance.

Now, with the global recession abating and studying the importance of the supply chain management, firms can and should implement strategies that provide their supply chains with immediate and sustainable value. In order to, have an effective inventory and supply chain managements, managers should be able have effective strategy and should be able to go through decisions of supply chain which are associated with uncertainties. Supply chain management (SCM) is an integral business process or set of processes that is considered to be an amalgamation of art and science of inventory management, operations management, production management, logistics and strategic management which should be coordinated and integrated. Firms should consider the five processes (plan, source, make, deliver, and return) which are the elementary constituents and modules of Supply Chain Management; and the entire notion of Supply Chain Management is constructed on two essential concepts, the first concept is supply chains or supply chain value line and the second concept is intuitive.

supply chains have been there for very long, even in the era when trade actually started hundreds of years ago but it just recently that we have started paying a lot of attention and developed various scientifically enhanced models of supply chains. The modern theory has helped remove the disjoint and is now supply chain management is actively involved from planning of production to sourcing of raw materials to the manufacturing and ultimately delivery. Even return of excess or defective products is included in the extended supply chain value chain. All these undertakings not only enhance the reputation of the firm but also maximize customer value and help the business acquire a competitive edge and advantage over other industry players. Firms should be aware of all factors which may impact the management of supply chain, for example, globalization has increased the importance and reliance of effective and efficient supply chains within our organizations when raw materials are procured from one geographical location, parts and processes are produced and assembled at another and the consumers and customers are also widespread. Also, the advent of JIT or Just in time manufacturing has become widely popular among companies, most follow the example of Dell to not only reduce cost but also enhance the delivery time and this all depends upon an effective global supply chain. The out-sourcing of business processes to countries with cheaper labor which is a widespread phenomenon from garments to sports to technological products has also increased the importance of a supply/demand responsive supply chains. The bottom line is that out sourcing of production processes and other impacts of globalization add more uncertainty to the supply chain mechanisms. But fortunately due to the advancements in information technology and the availability of assorted technologies, the uncertainty can be controlled. Strategic planning is very important for supply chain in the very same manner as it is in any other discipline, as it is know the purpose of strategic planning is to foresee and predict the future needs and do the necessary planning and preparations for it. Products have been categorized in two main categories, functional and innovative and there are differences in demand and the kind of supply chain strategy that best poised them. Functional products attract much competition, and as the theory of economics and market goes, the higher the competition, the lower the profit margins. To overcome the issue of low margins businesses adopt the innovation approach and enhance the quality and functionality of their products, they try and attempt to make their product better than the other so they can even have a competitive advantage. But, the issue with innovation and innovative products is that their demand becomes unpredictable, they are no longer stable, they are volatile and capricious.

When the two types of products are known and understood, then appropriate strategies could be applied on them, each type of product has different characteristics and unique features, hence, we need to develop and devise supply chain strategies that match the distinctive nature and characteristic of these products. Producers of functional products can foresee and predict demand and can satisfy more percentage of customers by producing and supply the exact quantity needed by the market but innovative products, new to their nature and large variety cannot be easily predicted and hence producer are left with estimates which at times can be wrong. The strategies needed for these dissimilar kinds of products can also be classified into two categories, known as physical efficient or supply/demand uncertainty and market responsive or supply chain responsive; functional products require efficient processes whereas innovative product requires responsive processes. If the right strategy for the right product type is adopted, not only supply chain systems will become efficient but also the cost of over production and the cost of under production can be reduced. Businesses want to gain competitive advantage over their competitors and to do this with the help of supply chain one needs to first understand the kind of products portfolio types and create a balance with the right supply chain strategy. The most important and fundamental part of any operations strategy is the delineation of the competitive priorities and just like the economic model of needs and wants, a business enterprise also has to make decisions and trade-offs among these assorted priorities during its planning process while they are assigning and apportioning the scarce resources at least with respect to the relative rates of improvement of the different priorities. The nature of products and product demand are related to operational processes and supply chain as firms with highly standardized, high volume commodity products should rely on efficient continuous flow shop processes; while, firms with un-standardized, low volume customer-specific products should rely on flexible job shop processes.

Functional executives and general managers who have strategic responsibilities for inventory, supply chain, manufacturing, logistics, operations, distributions, or procurement should be aware of the importance of the supply chain fit which is supply chain strategy alignment with competitive strategy. Also, they should understand their customers' needs regarding attributes of supply, understand the supply chain attributes and capabilities, in order to, achieve strategic fit through making supply chain decisions to best serve the best needs of target customers. At the level that, the competitive strategy and supply chain strategy are aligned across all functions

in the firm including inventory, manufacturing, and transportation, the intra-company inter-functional scope is achieved and the entire company's activities viewed as one single system, optimization is done, and the profit is maximized.

In today's the most dynamic and rapidly changing environment, firms doing what they have always done is unacceptable even if they do it very well; management should seek for innovation which is the main impetus of business development; and adopt the best in class practices in order to enable the firms to leverage their supply chain to create the most value and having highly successful firms. Best value supply chain differs from traditional supply chains in many areas, such as, logistics management, strategic sourcing, relationship management, and supply chain information systems. Firms should not focus on having-low cost and high-speed supply chains; it is important to adopt new supply chain characteristics such a 'Triple A Supply Chain' in order to achieve sustainable competitive advantage. Triple A supply chain covers broad strategies across long time period and it does not require to make big investment. Also we suggest to learn and have experience from other leading companies in order to achieve the desired level of supply chain excellence and maturity. Apple Inc. is considered the best company in the world for its supply chain practices; their practices summarized in customer comes first and cost cutting comes second, set impossible targets, prioritize actions based on importanacy, adopt process view of organization, simplify in product and process, adopt radical changes when necessary, and enhance relationship through face to face meetings. Some other suggestions in order to have a strong base for supply chain excellence are having a regular meetings to evaluate the supply chain of the firm and the alignment of supply chain strategy with the firm's overall strategy, using appropriate technology's software such as inventory optimization to make the supply chain more efficient, making good relationship with the suppliers, optimize company- owned inventory, having a collaborative strategic sourcing, having skilled, knowledgeable, and motive team, considering appropriate techniques, such as, supplier managed inventory to develop supply chain responsiveness to customer needs, and improve quality/cost ratio of the firm's supply chain. The supply chain management should be aware of the possible barriers, challenges, and risks involved in supply chain management, in order to, establish appropriate levels of control to manage risks and choose the best risk minimization strategy such as hedging or portfolio approach. We suggest that firms can boost their financial performance through achieving supply chain fit; any firm can achieve supply chain fit and

excellence but it needs to invest in the right capabilities, skills, and resources. Supply chain fit requires long term commitment and it is a dynamic concept due to changes in customer needs so it also requires adapting to changing conditions quickly and aligning the competitive strategy with supply chain strategy as closely as possible without negatively impacting the bottom line of the firm.

In our effort to empirically examine the financial impact of the supply chain fit, we encountered several problems that become limitations for us; the basic and most fundamental one was the even the management not being able to define and realize the power of supply chain; secondly, many supply chain managers don't have a formal degree in supply chain, they were either previously involved into administration or engineering, hence, they were unable to define and differentiate between various supply chain notions. Then we even faced a little issues with some companies, usually small manufacturers that didn't know the ROA of their firms and as they were not registered in stock exchange we too were unable to find the exact ROA and hence we had to request an estimate from them. Another limitation was that we had to rely on the data provided by the respondents, there was no check or verification of data. We would strongly suggest that for future studies a verification of a small sample by means of interview should also be done; also, in future more extensive and in depth work can be done on evaluating the supply chain fit with keeping some aspects in focus, such as, the effect of the size of the firm and the age of the business enterprise.

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# Appendices

## Appendix I: Questionnaire.

Dear **Respondent**

*This questionnaire is done for an Academic Research. The purpose of this research is to assess the relationship the supply chain fit and the financial performance of a firm. The information provided will be confidential and will not be used for any other purpose.*

*Thank you very much for your kind cooperation.*

Fatma Ahmad  
The British University in Dubai

### **Section A: Personal Information**

Name: \_\_\_\_\_

Industry: \_\_\_\_\_

Company: \_\_\_\_\_

Designation: \_\_\_\_\_

ROA: \_\_\_\_\_

### **Section B: Supply Demand Uncertainty**

Please evaluate the following characteristics for the main product line:

1. SDU1: How long is the average life-cycle of the products in the main product line?
2. SDU2: How many different variants are available for the main product line?
3. SDU3: What is the average margin of error in the forecast based on units at the time production is committed?
4. SDU4: What is the number of sales locations for the main product line?
5. SDU5: What is the frequency of change in order content for the main product line?

**Section C: Supply Chain Responsiveness**

Please indicate the strategic supply chain priorities for the main product line (1: not important at all – 5: extremely important):

- 1. SCR1: Improve delivery reliability [ 1 2 3 4 5 ]
- 2. SCR2: Maintain buffer inventory of parts or finished goods [ 1 2 3 4 5 ]
- 3. SCR3: Retain buffer capacity in manufacturing [ 1 2 3 4 5 ]
- 4. SCR4: Respond quickly to unpredictable demand [ 1 2 3 4 5 ]

**Section D: Competitive Intensity**

Please indicate the competitive intensity of your main product line (1: strongly disagree – 5: strongly agree):

- 1. CI1: Cutthroat competition [ 1 2 3 4 5 ]
- 2. CI2: Anything that one competitor can offer, others can match readily [ 1 2 3 4 5 ]
- 3. CI3: Price competition is a hallmark of your industry [ 1 2 3 4 5 ]
- 4. CI4: Relatively weak competitors [ 1 2 3 4 5 ]



## Appendix II: Findings and Analysis

### 1- Descriptive Statistics

Descriptive Statistics

	N	Mean	Std. Deviation	Variance
Supply Demand Uncertainty	50	2.756	.4665	.218
SDU1: How long is the average life-cycle of the products in the main product line?	50	2.46	1.129	1.274
SDU2: How many different variants are available for the main product line?	50	3.18	.873	.763
SDU3: What is the average margin of error in the forecast based on units at the time production is committed?	50	2.82	.941	.885
SDU4: What is the number of sales locations for the main product line?	50	2.90	.886	.786
SDU5: What is the frequency of change in order content for the main product line?	50	2.42	.835	.698
Supply Chain Responsiveness	50	3.220	.3943	.156
SCR1: Improve delivery reliability	50	3.40	.833	.694
SCR2: Maintain buffer inventory of parts or finished goods	50	3.28	.784	.614
SCR3: Retain buffer capacity in manufacturing	50	3.30	.763	.582
SCR4: Respond quickly to unpredictable demand	50	3.08	.601	.361

SCR5: Increase frequency of new product introductions	50	3.04	.699	.488
Competitive Intensity	50	3.1600	.44824	.201
CI1: Cutthroat competition	50	3.50	.909	.827
CI2: Anything that one competitor can offer, others can match readily	50	2.92	.634	.402
CI3: Price competition is a hallmark of your industry	50	3.18	.774	.600
CI4: Relatively weak competitors	50	3.04	.880	.774
Supply Chain Fit	50	5.60	2.657	7.061
Industry	50	-.644	.9825	.965
ROA T	50	5.53	5.379	28.935
ROA T-1	50	5.90	4.420	19.535
ROA T-2	50	6.27	5.133	26.343
Valid N (listwise)	50			

		Mean	Standard Error	Median	Mode	Standard Deviation	Sample Variance	Kurtosis	Skewness	Count
<b>SDU</b>		2.76	0.07	2.80	3.00	0.47	0.22	-0.70	-0.09	50
<b>SDU1</b>		2.46	0.16	2.50	3.00	1.13	1.27	-1.02	0.15	50
<b>SDU2</b>		3.18	0.12	3.00	3.00	0.87	0.76	-0.09	0.59	50
<b>SDU3</b>		2.82	0.13	3.00	3.00	0.94	0.89	0.06	0.07	50
<b>SDU4</b>		2.90	0.13	3.00	3.00	0.89	0.79	-0.29	-0.53	50
<b>SDU5</b>		2.42	0.12	2.00	2.00	0.84	0.70	-0.25	0.59	50
<b>SCR</b>		3.22	0.06	3.20	3.20	0.39	0.16	0.52	0.19	50
<b>SCR1</b>		3.40	0.12	3.00	3.00	0.83	0.69	-0.39	0.22	50
<b>SCR2</b>		3.28	0.11	3.00	3.00	0.78	0.61	-0.50	-0.02	50
<b>SCR3</b>		3.30	0.11	3.00	3.00	0.76	0.58	0.27	0.58	50
<b>SCR4</b>		3.08	0.08	3.00	3.00	0.60	0.36	-0.11	-0.03	50
<b>SCR5</b>		3.04	0.10	3.00	3.00	0.70	0.49	-0.88	-0.05	50
<b>CI</b>		3.16	0.06	3.25	3.50	0.45	0.20	-0.28	-0.27	50
<b>CI1</b>		3.50	0.13	3.50	4.00	0.91	0.83	-0.72	0.00	50
<b>CI2</b>		2.92	0.09	3.00	3.00	0.63	0.40	-0.41	0.06	50

<b>CI3</b>		3.18	0.11	3.00	3.00	0.77	0.60	-0.26	0.22	50
<b>CI4</b>		3.04	0.12	3.00	3.00	0.88	0.77	-0.38	0.11	50
<b>Industry</b>		5.60	0.38	6.00	6.00	2.66	7.06	-1.03	-0.17	50
<b>Supply Chain Fit</b>		-0.64	0.14	-0.80	-1.00	0.98	0.97	0.17	-0.10	50

**Supply Demand Uncertainty**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.8	1	2.0	2.0	2.0
	2.0	4	8.0	8.0	10.0
	2.2	5	10.0	10.0	20.0
	2.4	5	10.0	10.0	30.0
	2.6	8	16.0	16.0	46.0
	2.8	4	8.0	8.0	54.0
	3.0	12	24.0	24.0	78.0
	3.2	4	8.0	8.0	86.0
	3.4	6	12.0	12.0	98.0
	3.8	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

**SDU1: How long is the average life-cycle of the products in the main product line?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 6 Month	13	26.0	26.0	26.0
	6 - 12 Months	12	24.0	24.0	50.0
	1 - 2 Years	15	30.0	30.0	80.0
	2 - 5 Years	9	18.0	18.0	98.0
	More than 5 Years	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

**SDU2: How many different variants are available for the main product line?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20 - 50	10	20.0	20.0	20.0
	50 - 100	26	52.0	52.0	72.0
	100 - 200	9	18.0	18.0	90.0
	1000	5	10.0	10.0	100.0
	Total	50	100.0	100.0	

**SDU3: What is the average margin of error in the forecast based on units at the time production is committed?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0% to 9%	4	8.0	8.0	8.0
	10% to 19%	13	26.0	26.0	34.0
	20% to 39%	23	46.0	46.0	80.0
	40% to 59%	8	16.0	16.0	96.0
	60% or More	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

**SDU4: What is the number of sales locations for the main product line?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 100	4	8.0	8.0	8.0
	100 - 500	10	20.0	20.0	28.0
	500 - 1000	23	46.0	46.0	74.0
	1000 - 1500	13	26.0	26.0	100.0

**SDU4: What is the number of sales locations for the main product line?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 100	4	8.0	8.0	8.0
	100 - 500	10	20.0	20.0	28.0
	500 - 1000	23	46.0	46.0	74.0
	1000 - 1500	13	26.0	26.0	100.0
	Total	50	100.0	100.0	

**SDU5: What is the frequency of change in order content for the main product line?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely Low	4	8.0	8.0	8.0
	Low	28	56.0	56.0	64.0
	Medium	11	22.0	22.0	86.0
	High	7	14.0	14.0	100.0
	Total	50	100.0	100.0	

**Supply Chain Responsiveness**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.2	1	2.0	2.0	2.0
	2.6	2	4.0	4.0	6.0
	2.8	8	16.0	16.0	22.0
	3.0	8	16.0	16.0	38.0
	3.2	11	22.0	22.0	60.0
	3.4	8	16.0	16.0	76.0
	3.6	8	16.0	16.0	92.0
	3.8	2	4.0	4.0	96.0
	4.2	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

**SCR1: Improve delivery reliability**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Some what impactful	6	12.0	12.0	12.0
	Neutral	23	46.0	46.0	58.0
	Important	16	32.0	32.0	90.0
	Extremely Important	5	10.0	10.0	100.0
	Total	50	100.0	100.0	

**SCR2: Maintain buffer inventory of parts or finished goods**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Some what impactful	8	16.0	16.0	16.0
	Neutral	22	44.0	44.0	60.0
	Important	18	36.0	36.0	96.0
	Extremely Important	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

**SCR3: Retain buffer capacity in manufacturing**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Some what impactful	5	10.0	10.0	10.0
	Neutral	29	58.0	58.0	68.0
	Important	12	24.0	24.0	92.0
	Extremely Important	4	8.0	8.0	100.0
	Total	50	100.0	100.0	

**SCR4: Respond quickly to unpredictable demand**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Some what impactful	7	14.0	14.0	14.0
	Neutral	32	64.0	64.0	78.0
	Important	11	22.0	22.0	100.0
	Total	50	100.0	100.0	

**SCR5: Increase frequency of new product introductions**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Some what impactful	11	22.0	22.0	22.0
	Neutral	26	52.0	52.0	74.0
	Important	13	26.0	26.0	100.0
	Total	50	100.0	100.0	

**Competitive Intensity**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	1	2.0	2.0	2.0
	2.25	1	2.0	2.0	4.0
	2.50	3	6.0	6.0	10.0
	2.75	9	18.0	18.0	28.0
	3.00	10	20.0	20.0	48.0
	3.25	7	14.0	14.0	62.0
	3.50	12	24.0	24.0	86.0
	3.75	5	10.0	10.0	96.0
	4.00	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

**CI1: Cutthroat competition**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	7	14.0	14.0	14.0
	Neutral	18	36.0	36.0	50.0
	Agree	18	36.0	36.0	86.0
	Strongly Agree	7	14.0	14.0	100.0



**C11: Cutthroat competition**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	7	14.0	14.0	14.0
	Neutral	18	36.0	36.0	50.0
	Agree	18	36.0	36.0	86.0
	Strongly Agree	7	14.0	14.0	100.0
	Total	50	100.0	100.0	

**C12: Anything that one competitor can offer, others can match readily**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	12	24.0	24.0	24.0
	Neutral	30	60.0	60.0	84.0
	Agree	8	16.0	16.0	100.0
	Total	50	100.0	100.0	

**C13: Price competition is a hallmark of your industry**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	9	18.0	18.0	18.0
	Neutral	25	50.0	50.0	68.0
	Agree	14	28.0	28.0	96.0
	Strongly Agree	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

**CI4: Relatively weak competitors**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	2.0	2.0	2.0
	Disagree	13	26.0	26.0	28.0
	Neutral	21	42.0	42.0	70.0
	Agree	13	26.0	26.0	96.0
	Strongly Agree	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

**Industry**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Electronic Equipment	3	6.0	6.0	6.0
	Stationary	4	8.0	8.0	14.0
	Pharmaceutical	5	10.0	10.0	24.0
	Automotive Parts	5	10.0	10.0	34.0
	Textiles	4	8.0	8.0	42.0
	Food and Beverage	9	18.0	18.0	60.0
	Construction and Industrial Works	5	10.0	10.0	70.0
	Cement and Construction Materials	8	16.0	16.0	86.0
	Poultry and Livestock	4	8.0	8.0	94.0
	Other	3	6.0	6.0	100.0
	Total	50	100.0	100.0	

**Supply Chain Fit**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-3.0	1	2.0	2.0	2.0
	-2.8	1	2.0	2.0	4.0
	-2.2	2	4.0	4.0	8.0
	-2.0	2	4.0	4.0	12.0
	-1.6	2	4.0	4.0	16.0
	-1.4	3	6.0	6.0	22.0
	-1.2	2	4.0	4.0	26.0
	-1.0	8	16.0	16.0	42.0
	-.8	5	10.0	10.0	52.0
	-.6	3	6.0	6.0	58.0
	-.4	4	8.0	8.0	66.0
	-.2	1	2.0	2.0	68.0
	.0	3	6.0	6.0	74.0
	.2	3	6.0	6.0	80.0
	.4	6	12.0	12.0	92.0
	.6	1	2.0	2.0	94.0
	1.0	2	4.0	4.0	98.0
	1.8	1	2.0	2.0	100.0
Total		50	100.0	100.0	

ROA T

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-12	1	2.0	2.0	2.0
	-10	1	2.0	2.0	4.0
	-1	1	2.0	2.0	6.0
	0	1	2.0	2.0	8.0
	1	2	4.0	4.0	12.0
	1	1	2.0	2.0	14.0
	1	1	2.0	2.0	16.0
	1	1	2.0	2.0	18.0
	2	1	2.0	2.0	20.0
	2	1	2.0	2.0	22.0
	2	1	2.0	2.0	24.0
	2	2	4.0	4.0	28.0
	2	1	2.0	2.0	30.0
	3	1	2.0	2.0	32.0
	3	1	2.0	2.0	34.0
	3	3	6.0	6.0	40.0
	3	1	2.0	2.0	42.0
	4	1	2.0	2.0	44.0
	4	1	2.0	2.0	46.0
	4	1	2.0	2.0	48.0
	4	1	2.0	2.0	50.0
	4	6	12.0	12.0	62.0
	4	1	2.0	2.0	64.0
	5	1	2.0	2.0	66.0
	5	3	6.0	6.0	72.0
	6	1	2.0	2.0	74.0
	6	1	2.0	2.0	76.0

7	1	2.0	2.0	78.0
7	2	4.0	4.0	82.0
8	1	2.0	2.0	84.0
8	2	4.0	4.0	88.0
10	1	2.0	2.0	90.0
11	2	4.0	4.0	94.0
12	2	4.0	4.0	98.0
15	1	2.0	2.0	100.0
Total	50	100.0	100.0	

ROA T-1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-2	1	2.0	2.0	2.0
	-2	1	2.0	2.0	4.0
	0	1	2.0	2.0	6.0
	1	1	2.0	2.0	8.0
	1	1	2.0	2.0	10.0
	1	1	2.0	2.0	12.0
	1	1	2.0	2.0	14.0
	1	2	4.0	4.0	18.0
	2	3	6.0	6.0	24.0
	2	1	2.0	2.0	26.0
	2	1	2.0	2.0	28.0
	2	4	8.0	8.0	36.0
	3	1	2.0	2.0	38.0
	3	3	6.0	6.0	44.0
	3	1	2.0	2.0	46.0
	4	1	2.0	2.0	48.0

4	1	2.0	2.0	50.0
4	3	6.0	6.0	56.0
4	1	2.0	2.0	58.0
5	1	2.0	2.0	60.0
5	1	2.0	2.0	62.0
5	3	6.0	6.0	68.0
6	1	2.0	2.0	70.0
6	1	2.0	2.0	72.0
7	1	2.0	2.0	74.0
7	1	2.0	2.0	76.0
8	1	2.0	2.0	78.0
8	1	2.0	2.0	80.0
8	1	2.0	2.0	82.0
8	1	2.0	2.0	84.0
9	1	2.0	2.0	86.0
9	2	4.0	4.0	90.0
10	1	2.0	2.0	92.0
11	1	2.0	2.0	94.0
15	1	2.0	2.0	96.0
16	1	2.0	2.0	98.0
17	1	2.0	2.0	100.0
Total	50	100.0	100.0	

ROA T-2

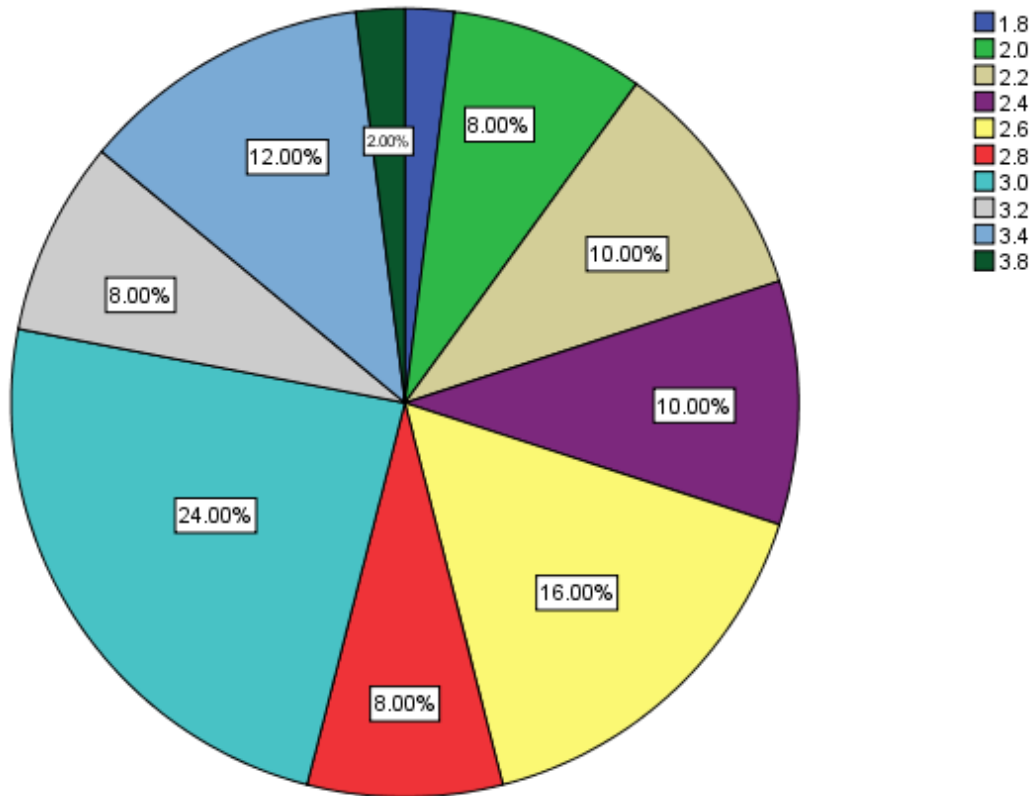
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-4	1	2.0	2.0	2.0
	-2	1	2.0	2.0	4.0
	0	1	2.0	2.0	6.0
	0	1	2.0	2.0	8.0
	0	1	2.0	2.0	10.0
	1	2	4.0	4.0	14.0
	1	2	4.0	4.0	18.0
	1	1	2.0	2.0	20.0
	1	1	2.0	2.0	22.0
	1	1	2.0	2.0	24.0
	2	1	2.0	2.0	26.0
	2	3	6.0	6.0	32.0
	2	1	2.0	2.0	34.0
	3	1	2.0	2.0	36.0
	3	1	2.0	2.0	38.0
	3	1	2.0	2.0	40.0
	3	1	2.0	2.0	42.0
	4	2	4.0	4.0	46.0
	4	1	2.0	2.0	48.0
	4	1	2.0	2.0	50.0
	4	3	6.0	6.0	56.0
	5	1	2.0	2.0	58.0
	5	1	2.0	2.0	60.0
	5	1	2.0	2.0	62.0
	6	1	2.0	2.0	64.0
	6	2	4.0	4.0	68.0

6	1	2.0	2.0	70.0
7	1	2.0	2.0	72.0
7	2	4.0	4.0	76.0
8	2	4.0	4.0	80.0
8	1	2.0	2.0	82.0
9	1	2.0	2.0	84.0
11	1	2.0	2.0	86.0
11	2	4.0	4.0	90.0
13	2	4.0	4.0	94.0
15	1	2.0	2.0	96.0
18	1	2.0	2.0	98.0
19	1	2.0	2.0	100.0
Total	50	100.0	100.0	

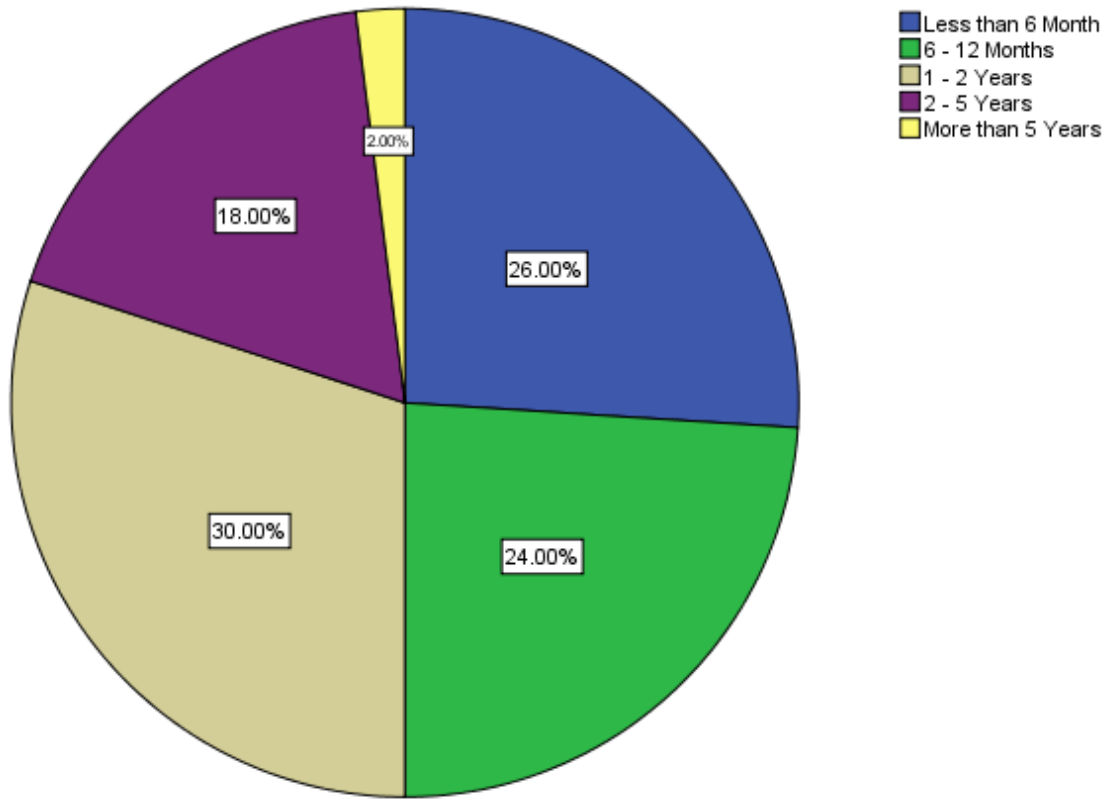


2- Graphical Representation

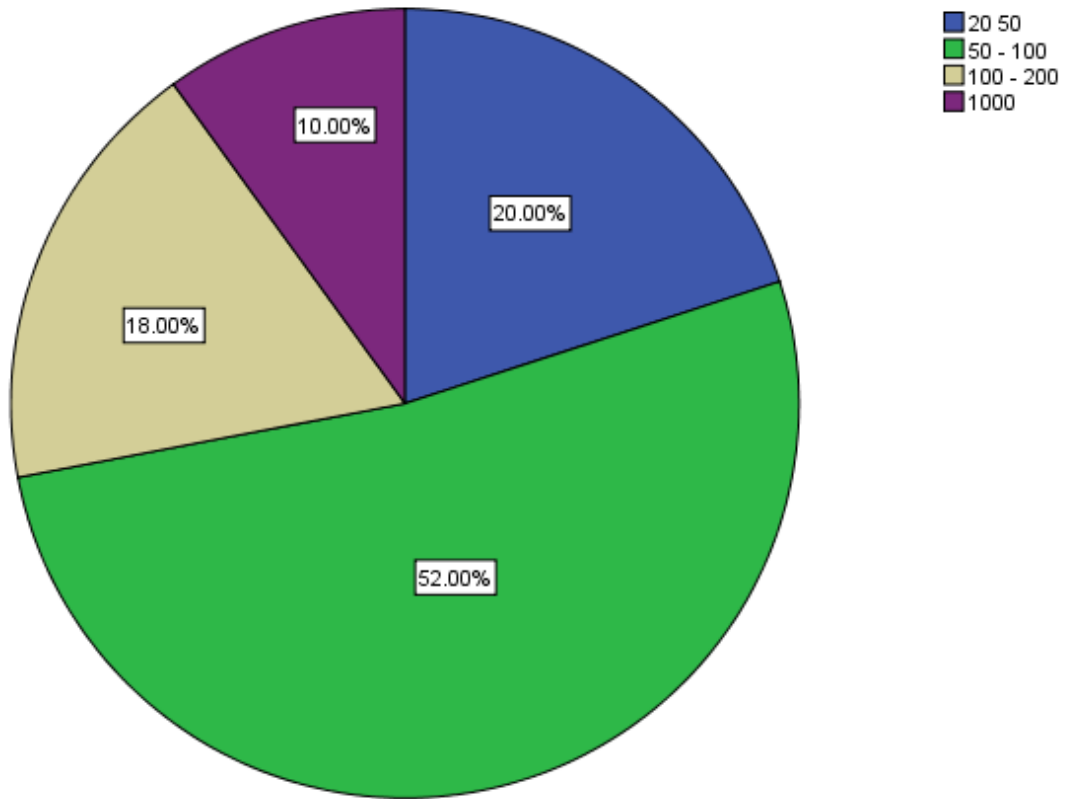
Supply Demand Uncertainty



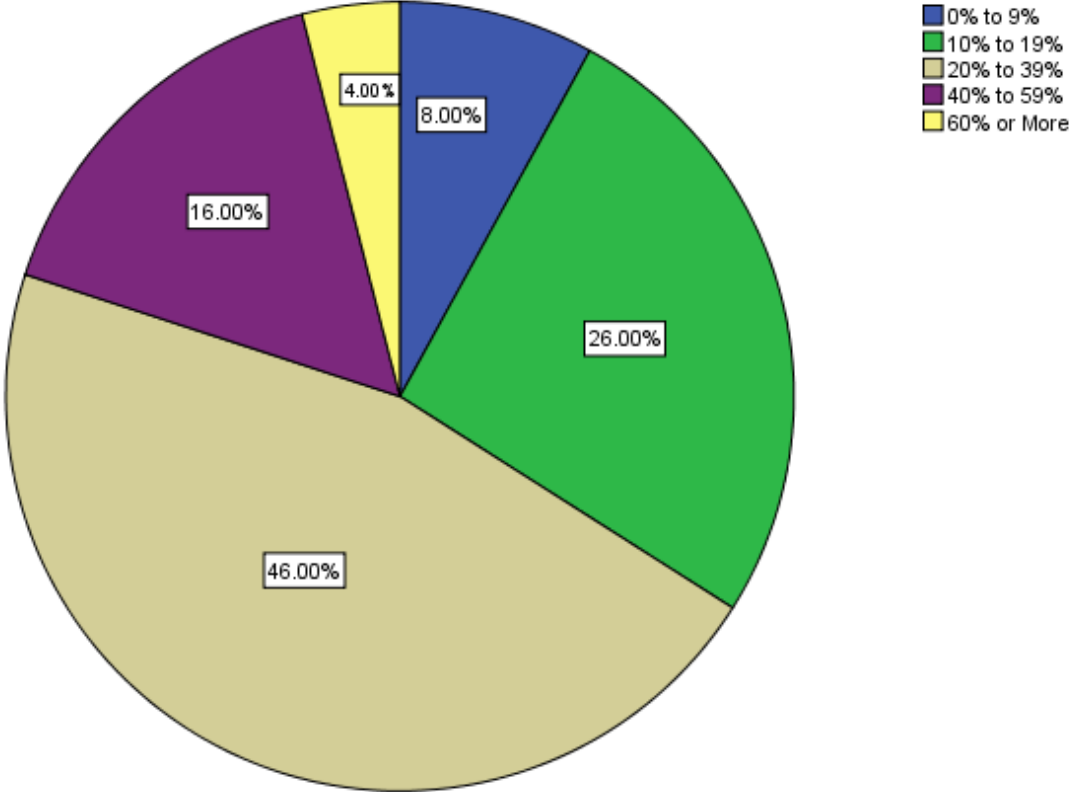
**SDU1: How long is the average life-cycle of the products in the main product line?**



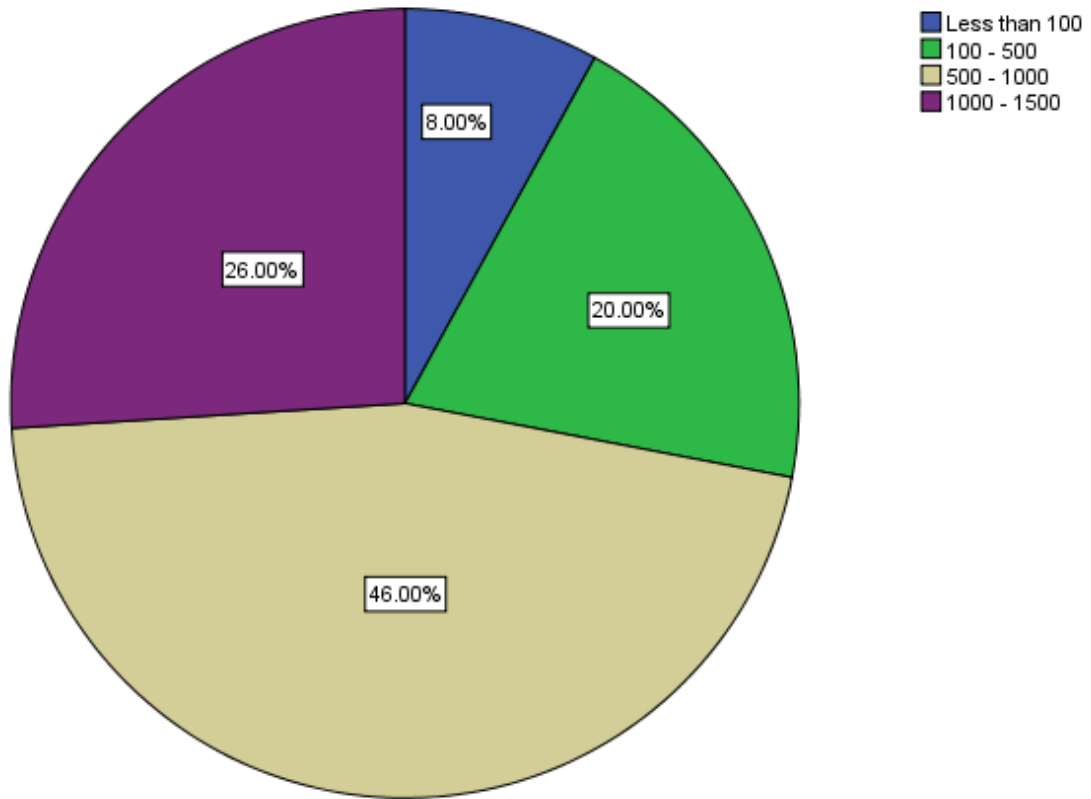
**SDU2: How many different variants are available for the main product line?**



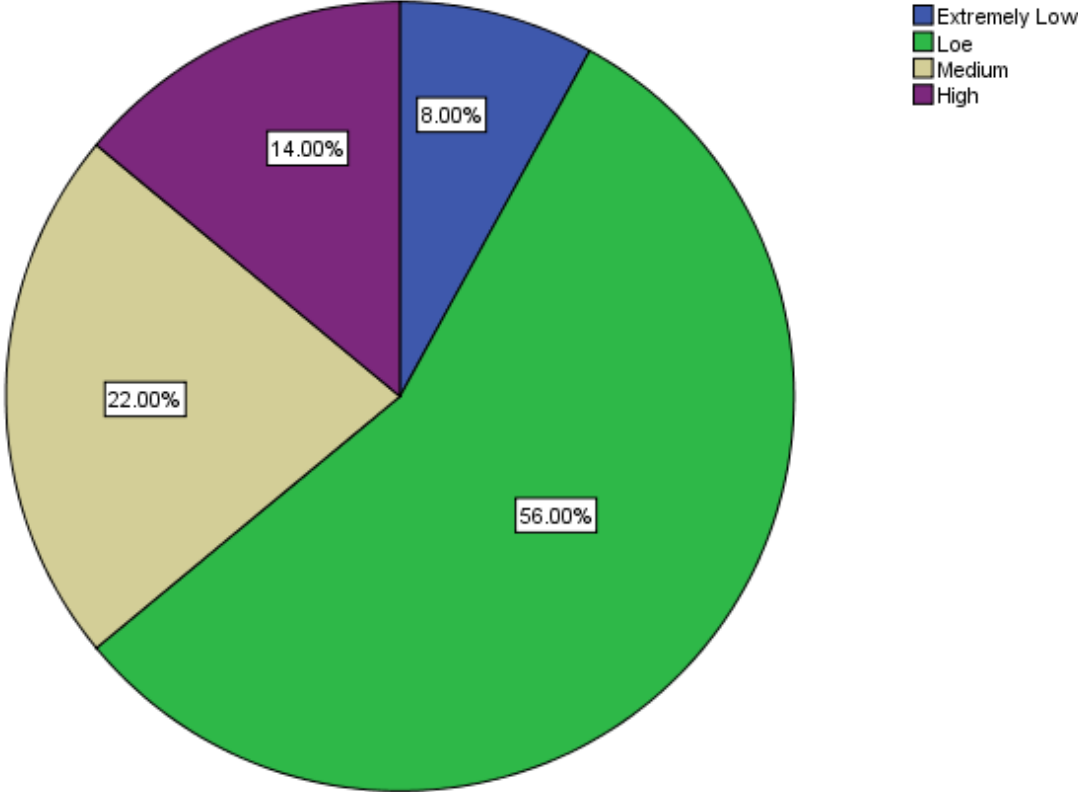
**SDU3: What is the average margin of error in the forecast based on units at the time production is committed?**



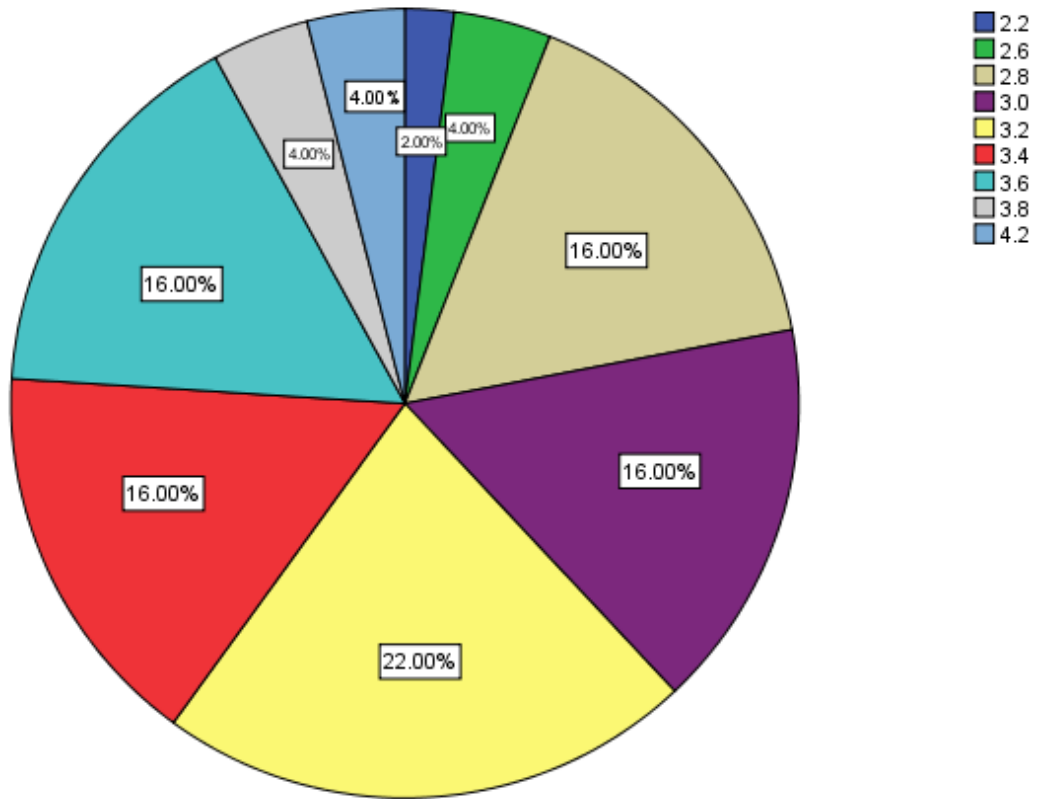
**SDU4: What is the number of sales locations for the main product line?**



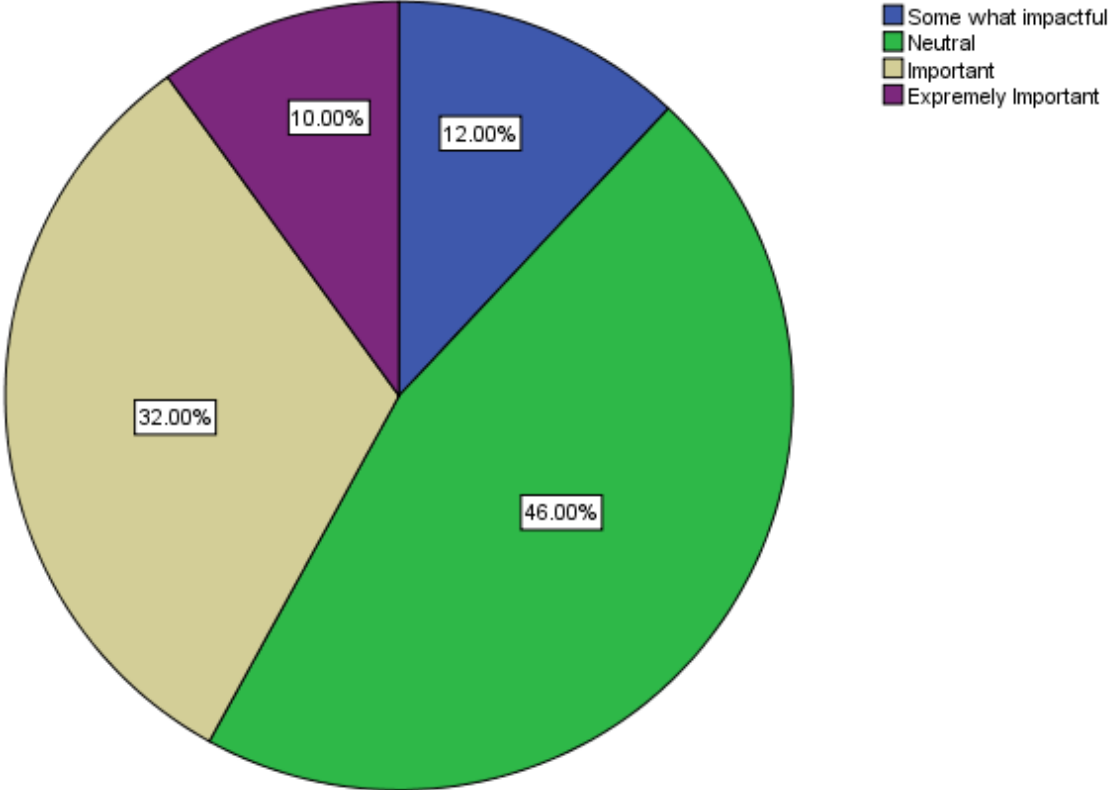
**SDU5: What is the frequency of change in order content for the main product line?**



### Supply Chain Responsiveness

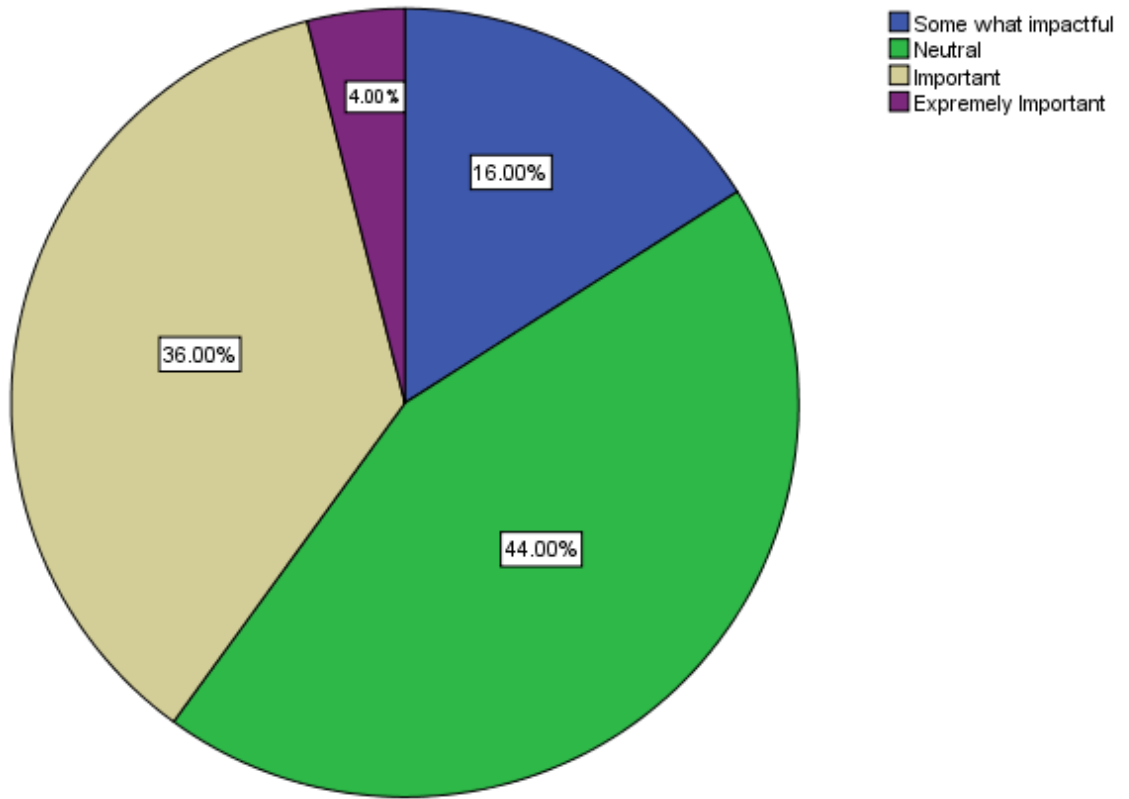


**SCR1: Improve delivery reliability**

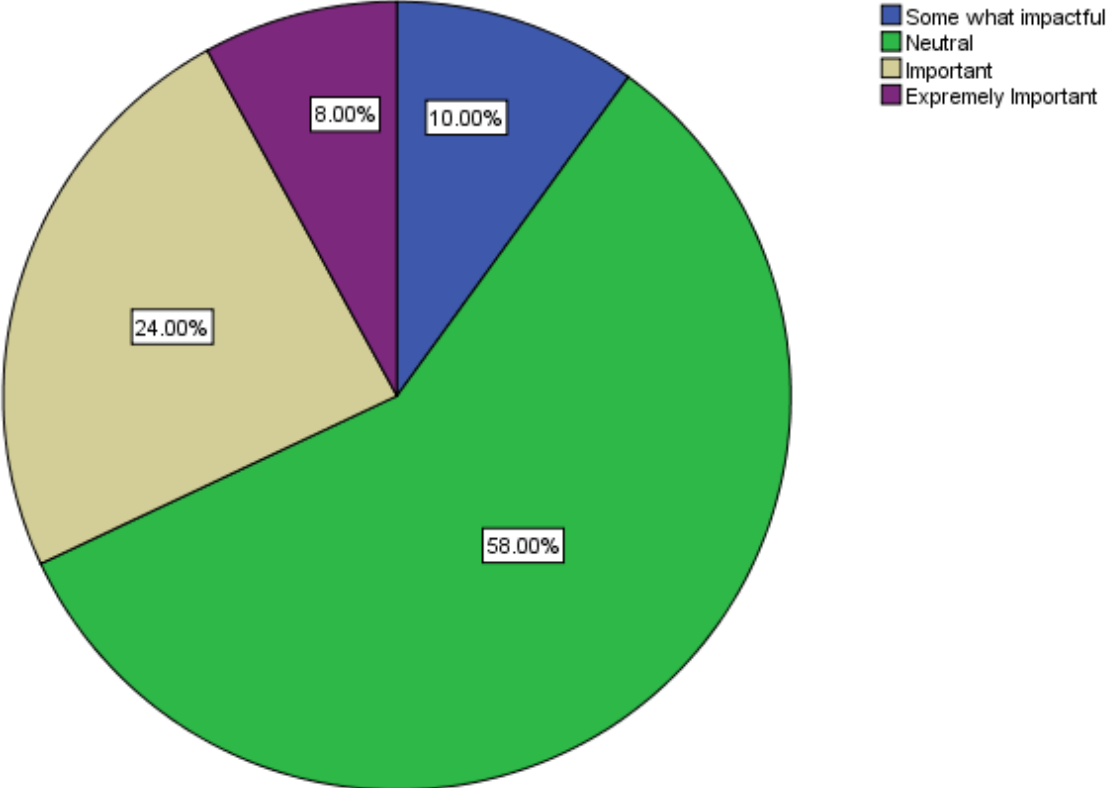




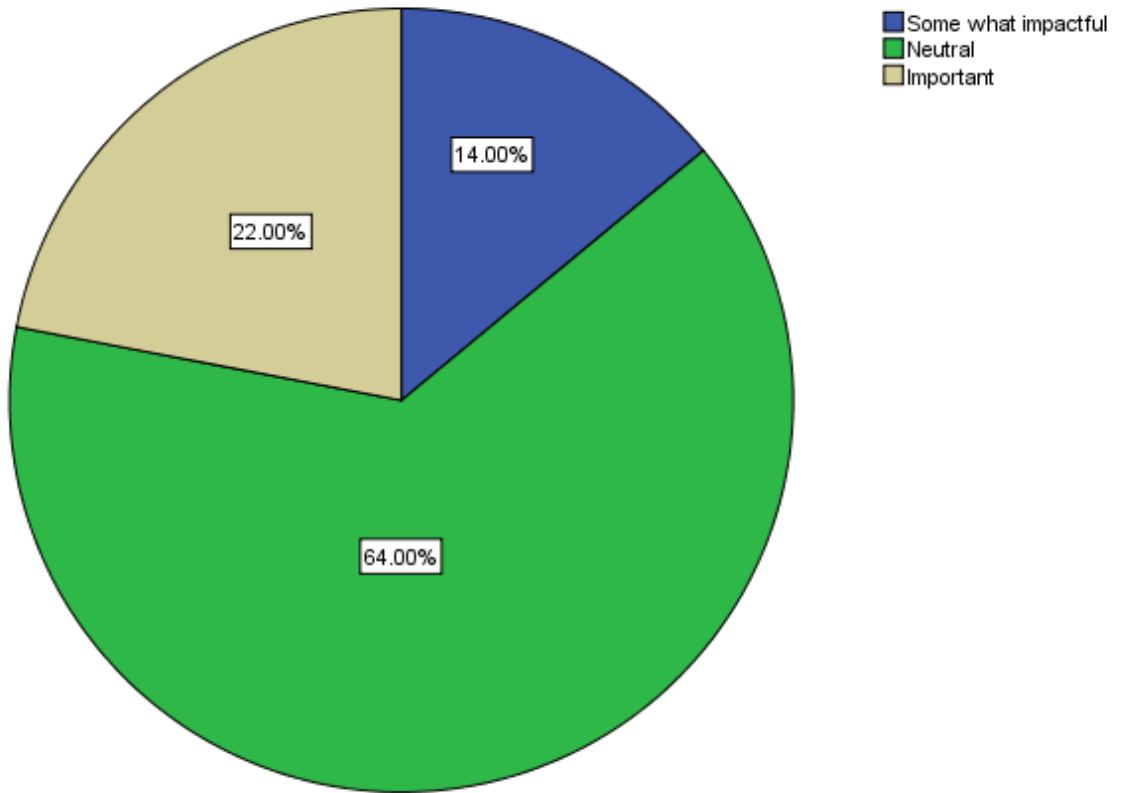
**SCR2: Maintain buffer inventory of parts or finished goods**



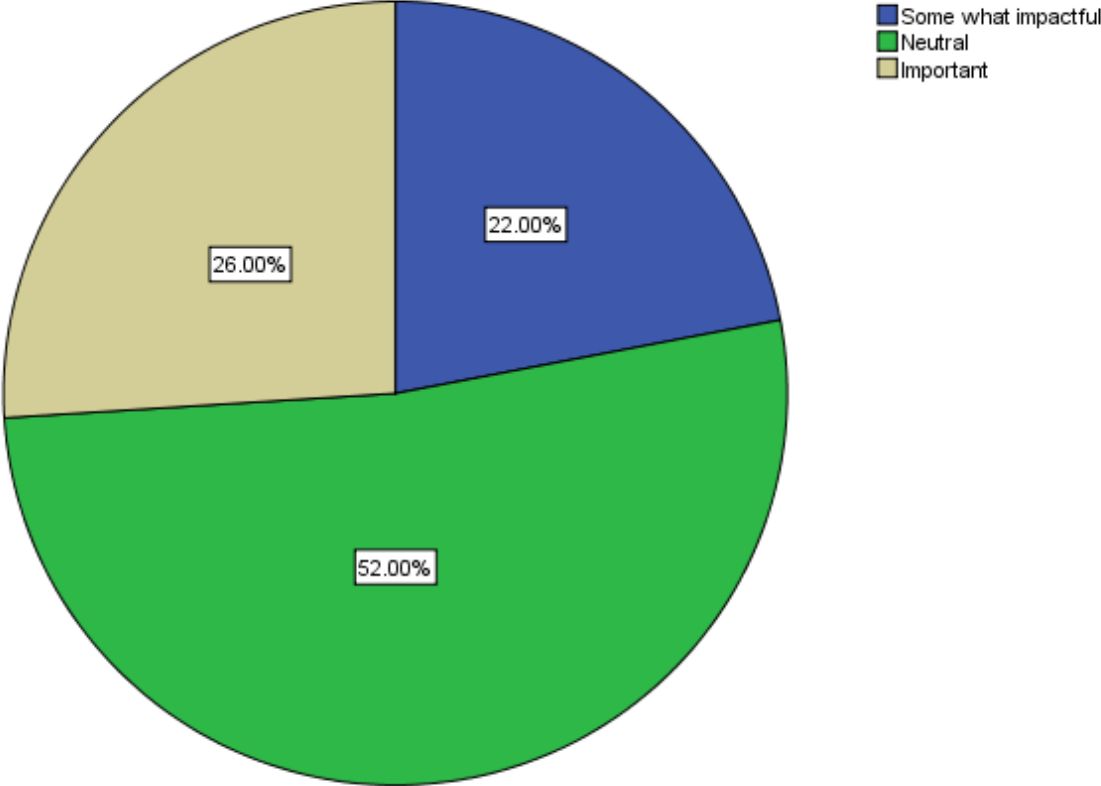
**SCR3: Retain buffer capacity in manufacturing**



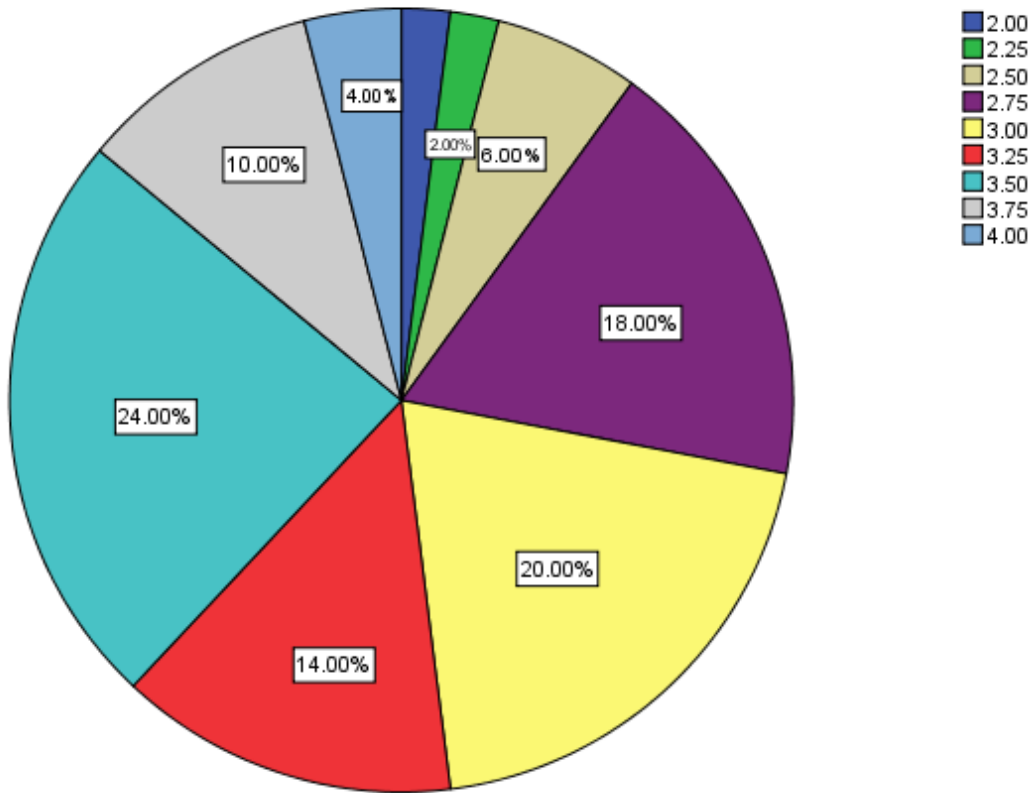
**SCR4: Respond quickly to unpredictable demand**



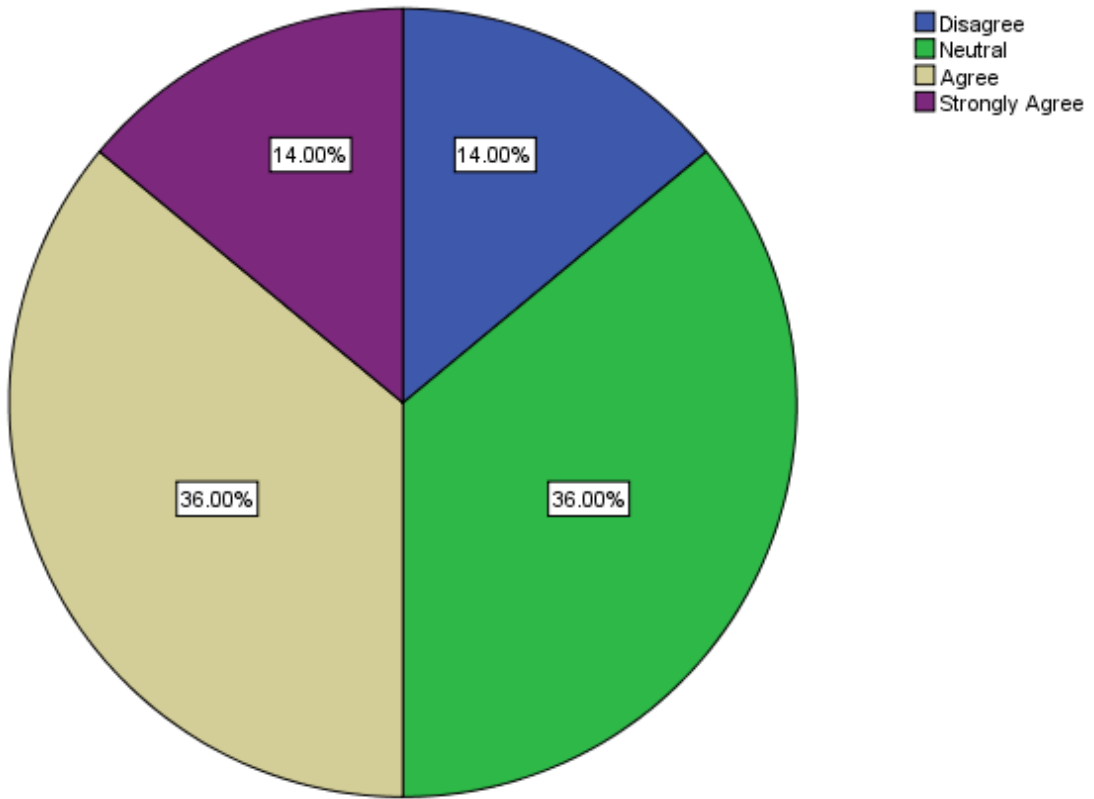
**SCR5: Increase frequency of new product introductions**



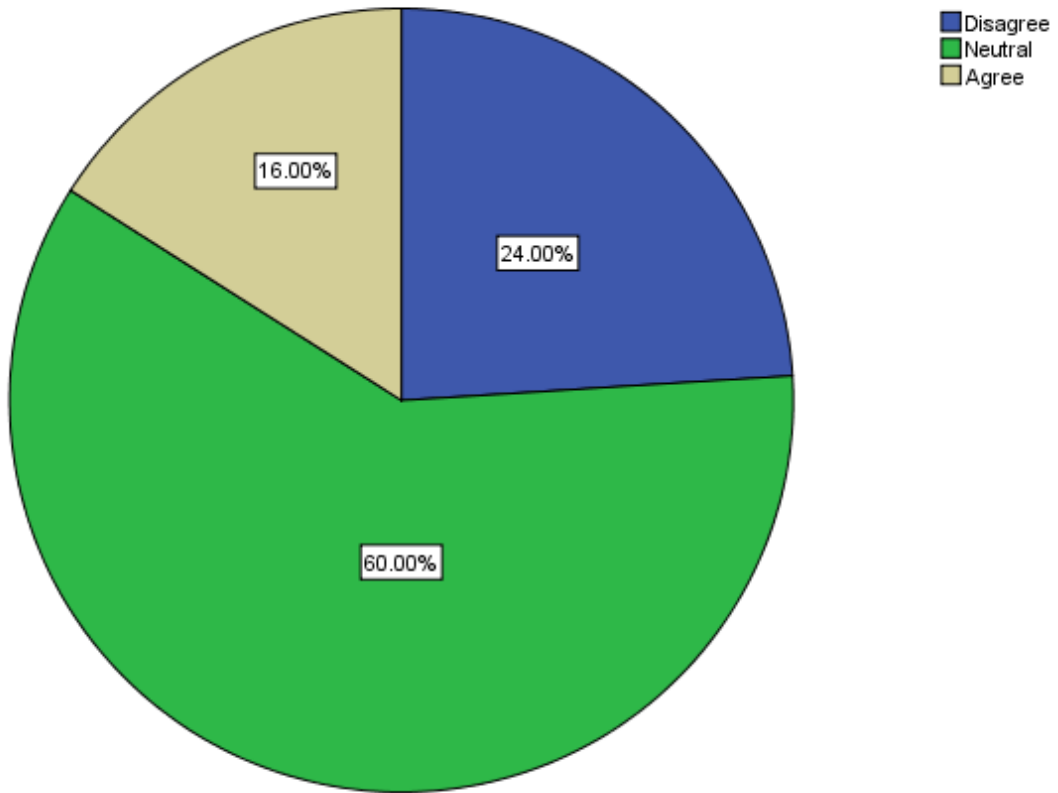
### Competitive Intensity



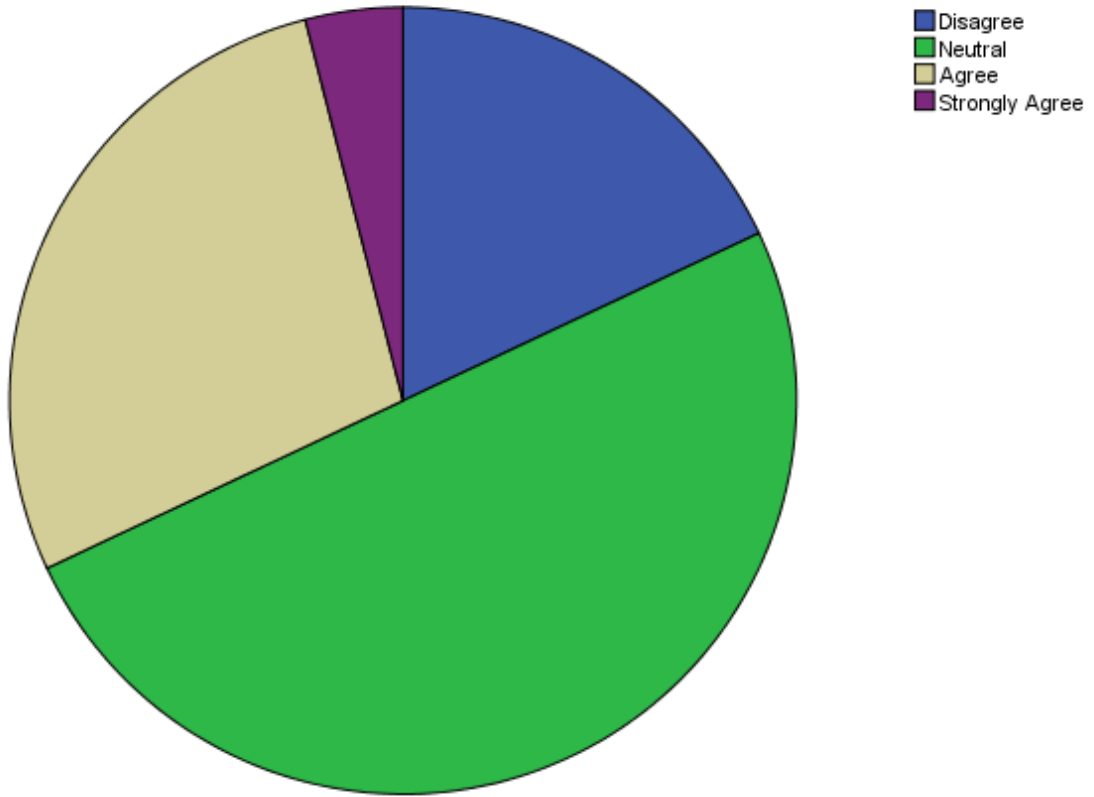
### C11: Cutthroat competition



**CI2: Anything that one competitor can offer, others can match readily**

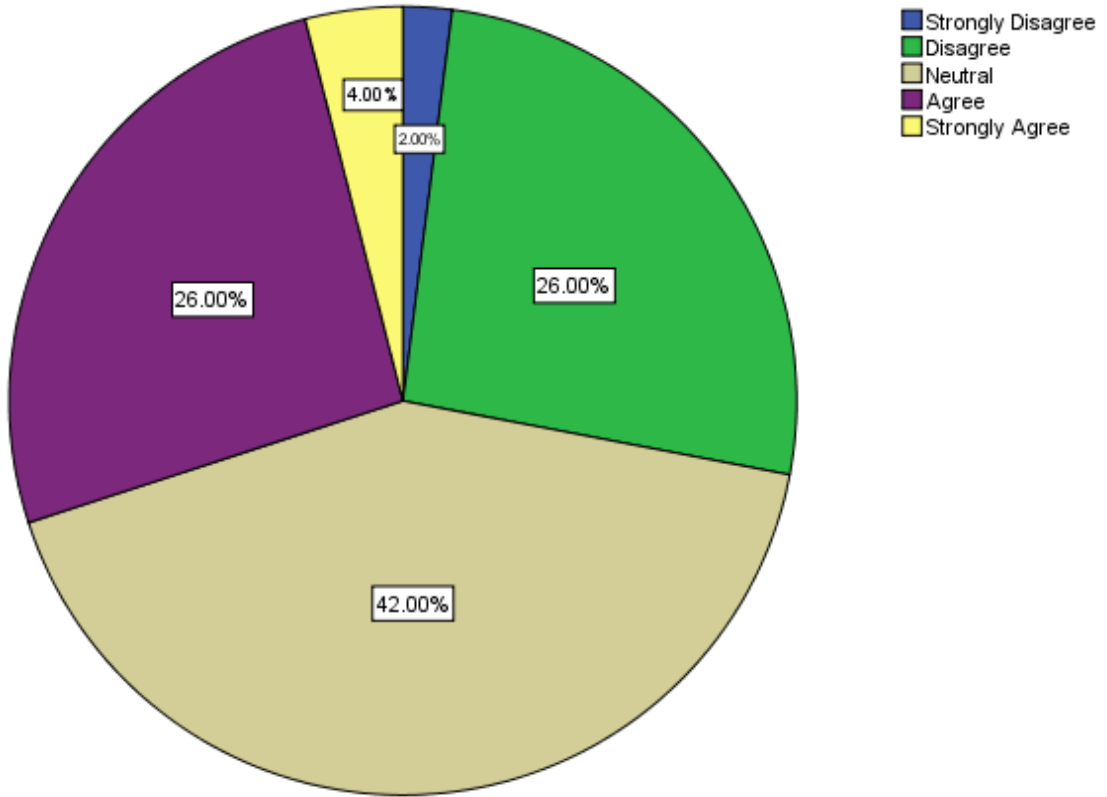


**CI3: Price competition is a hallmark of your industry**

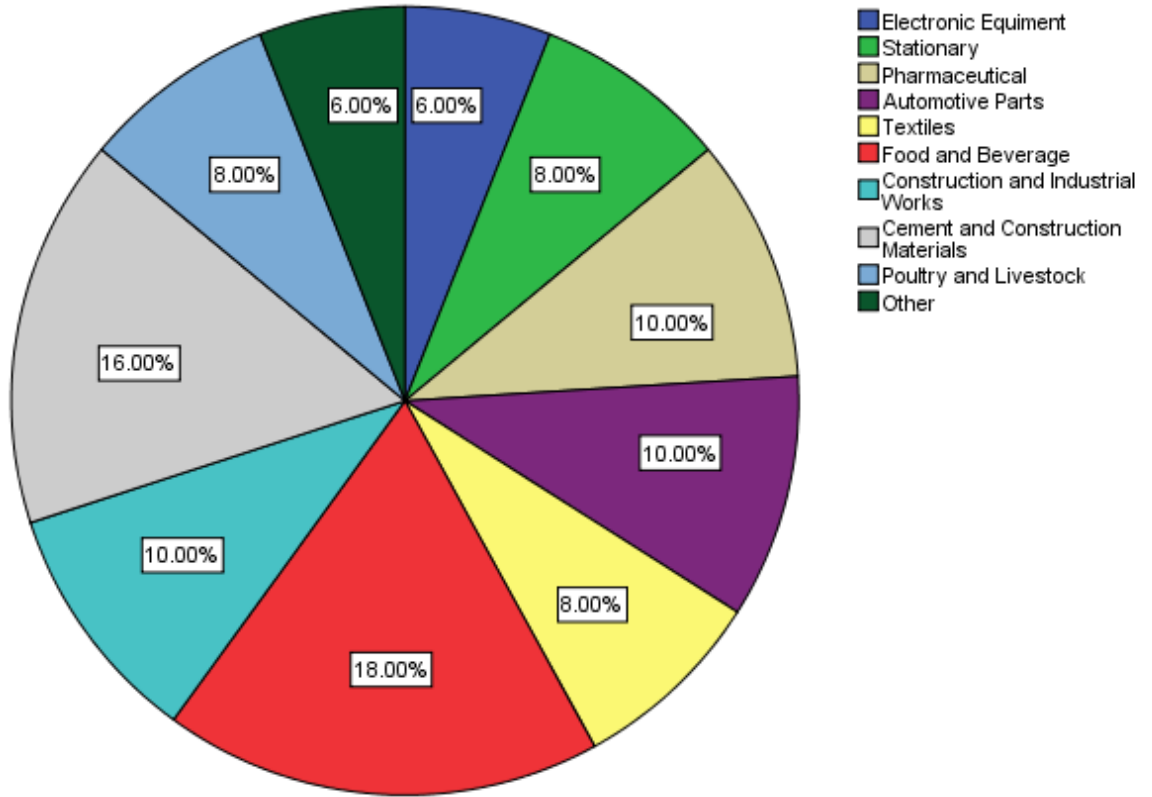




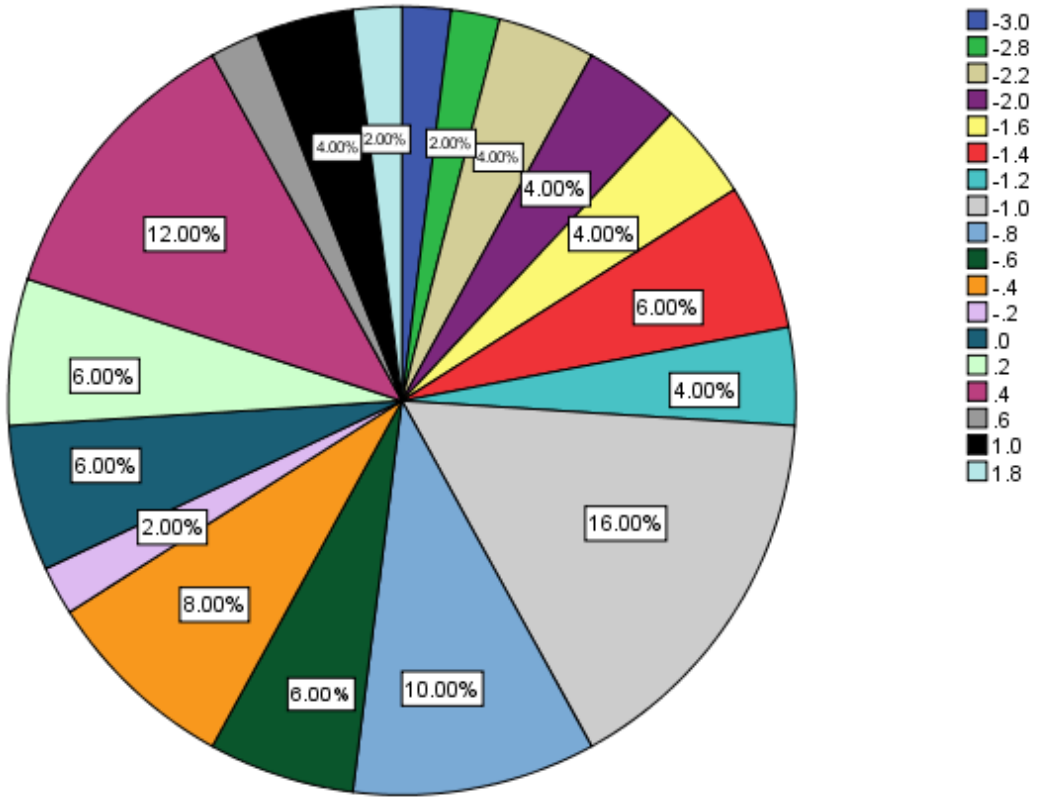
### CI4: Relatively weak competitors



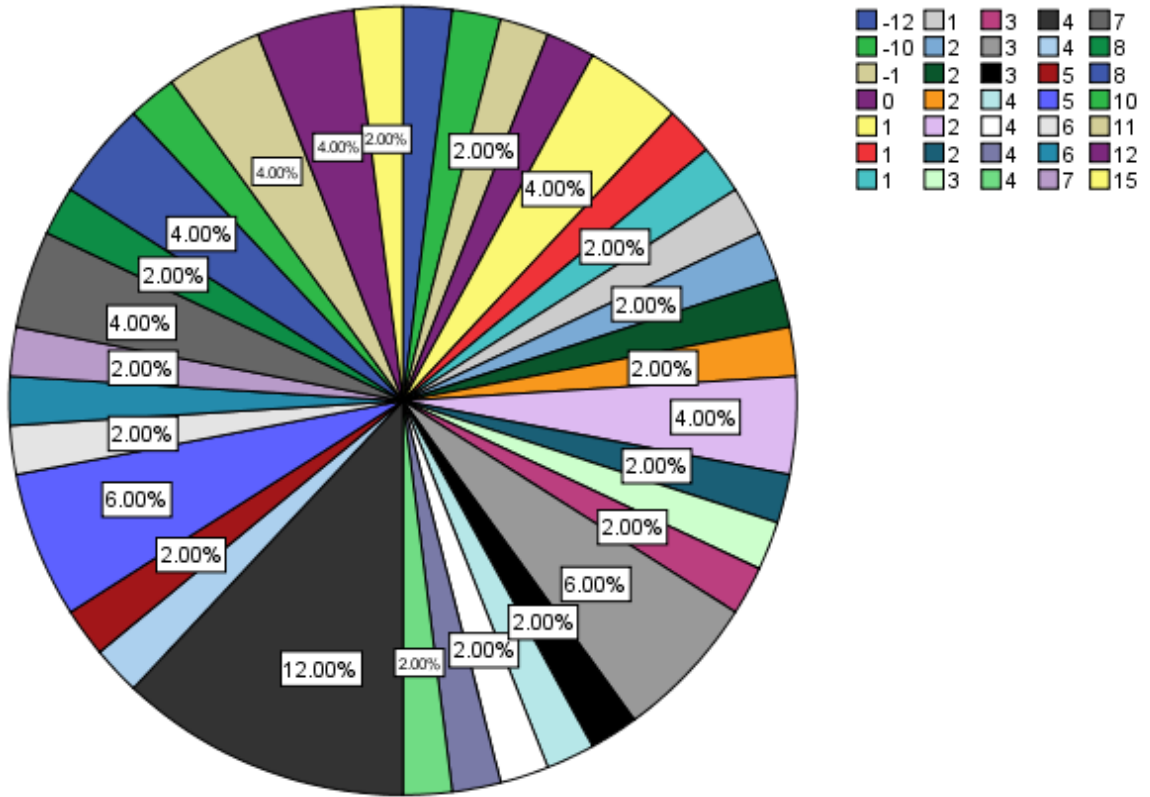
# Industry



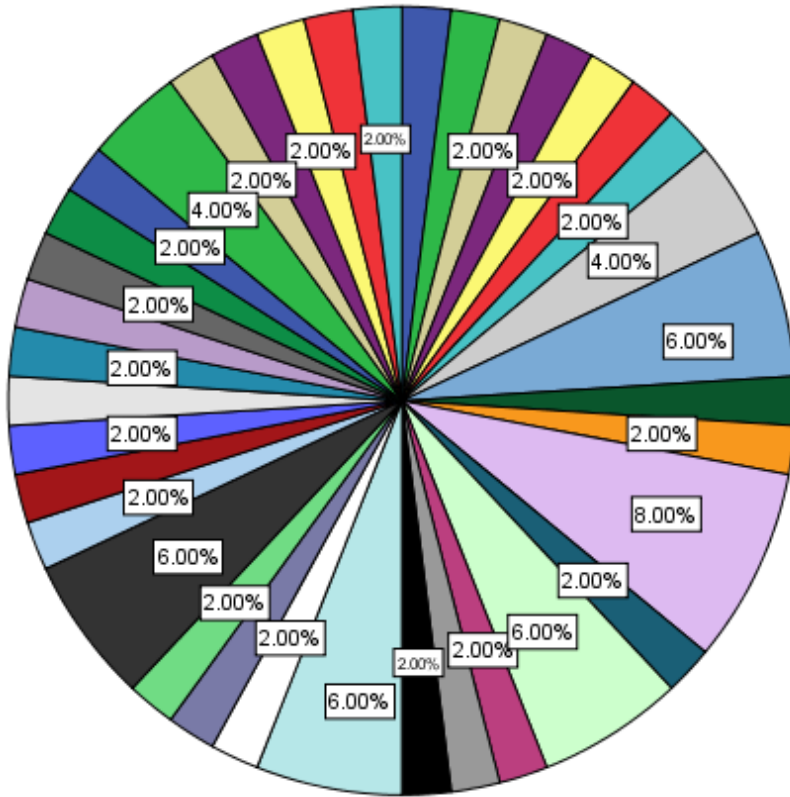
### Supply Chain Fit



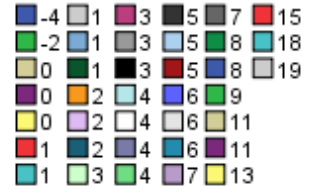
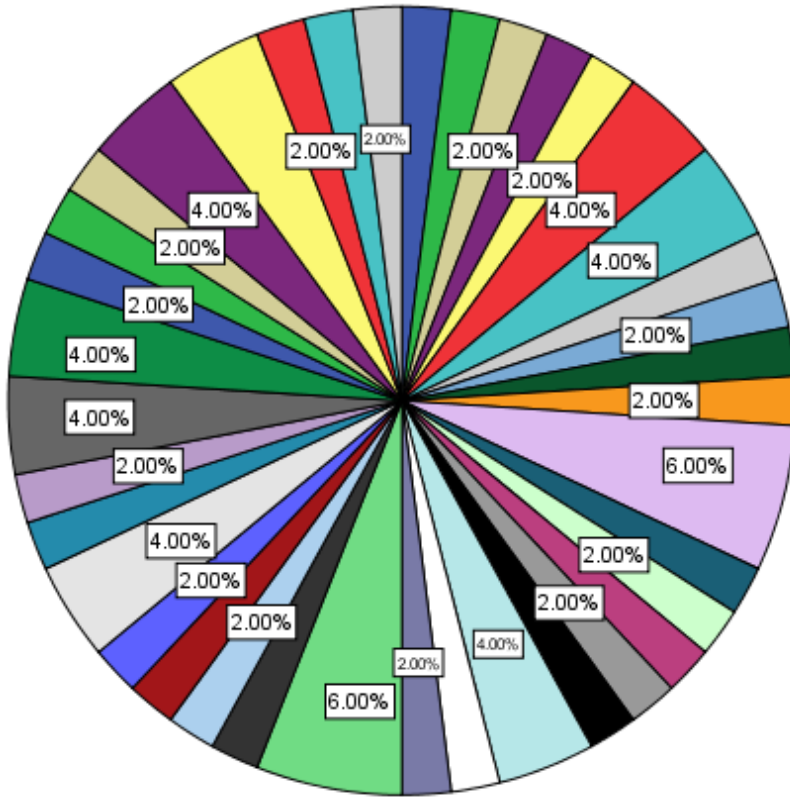
# ROA T



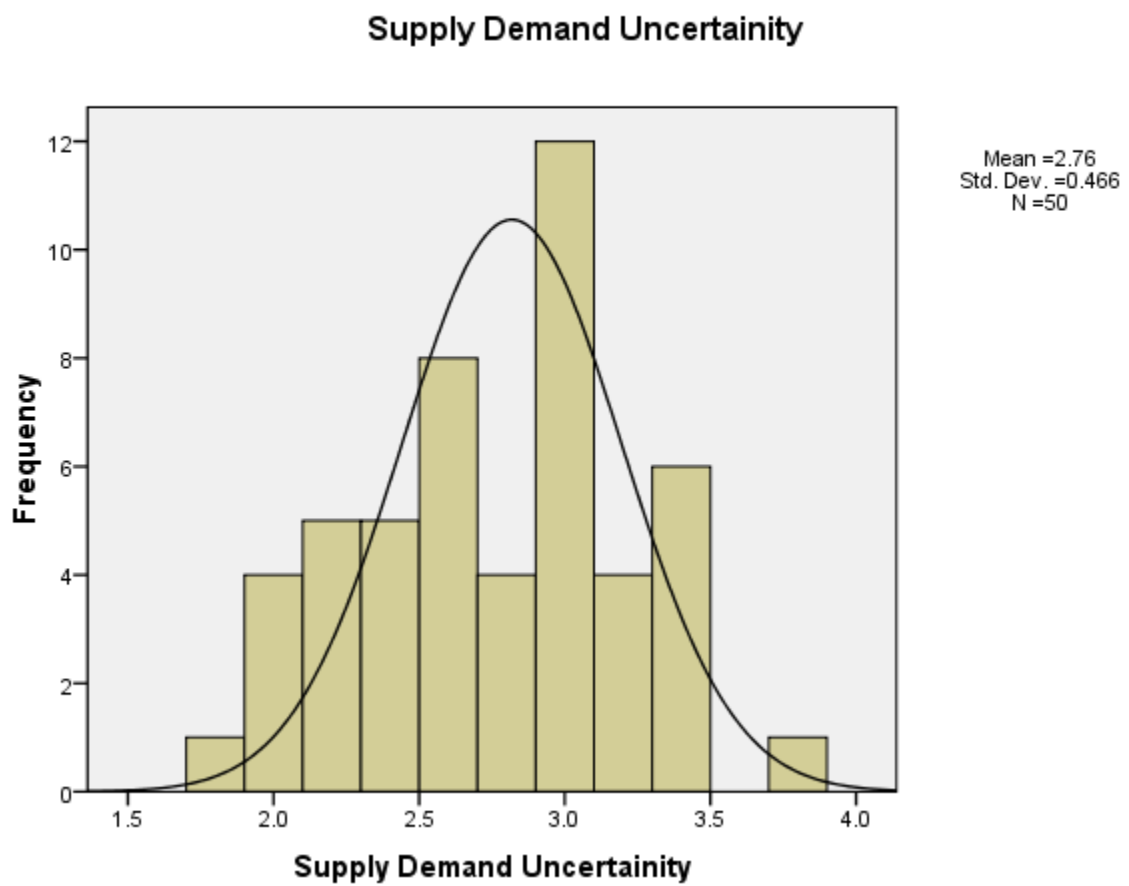
### ROA T-1



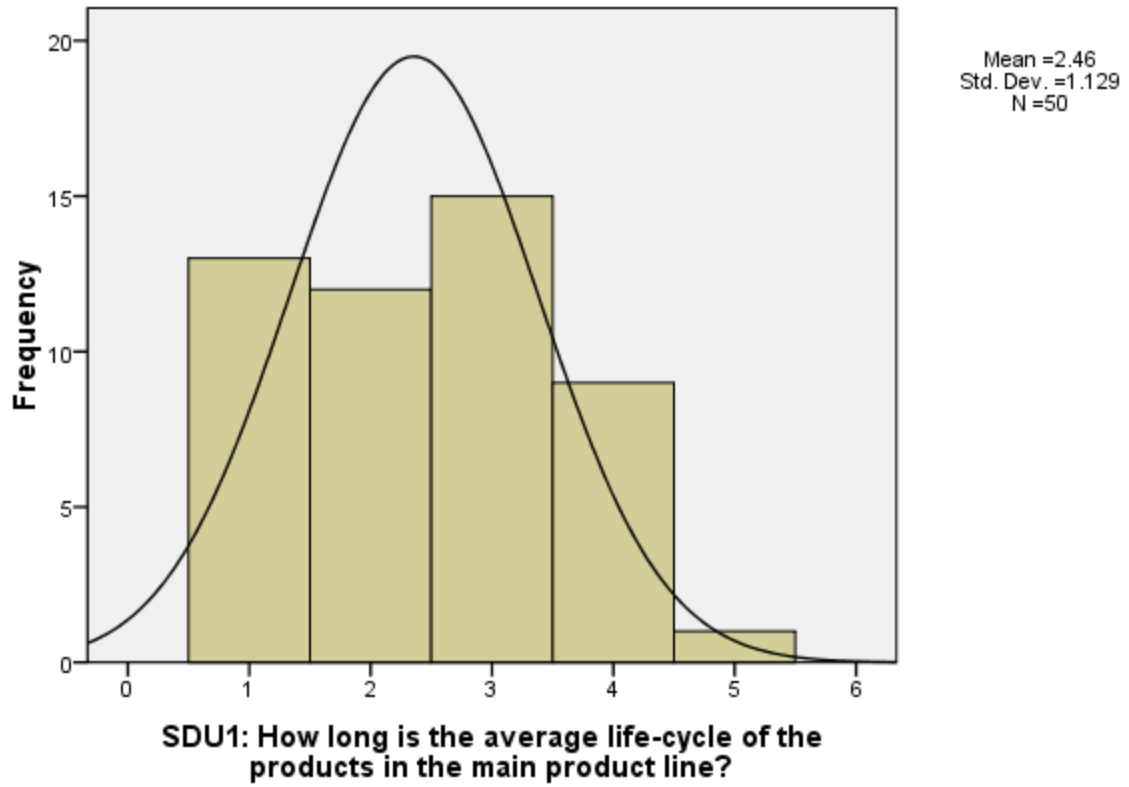
### ROA T-2



3- Histogram

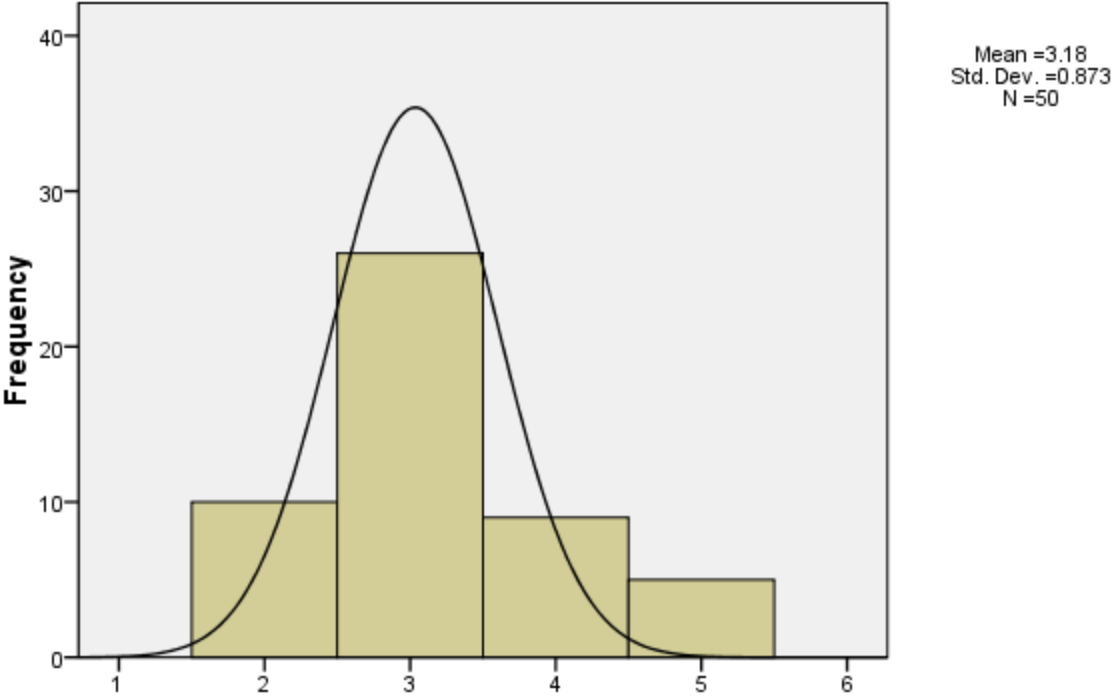


**SDU1: How long is the average life-cycle of the products in the main product line?**



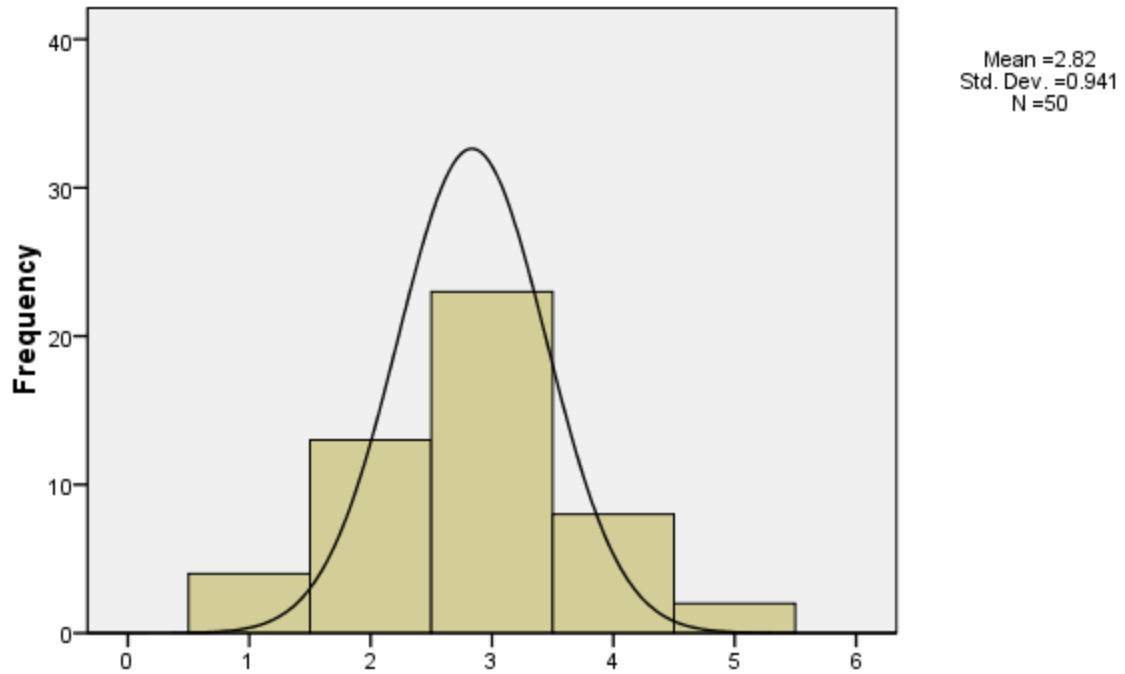


**SDU2: How many different variants are available for the main product line?**



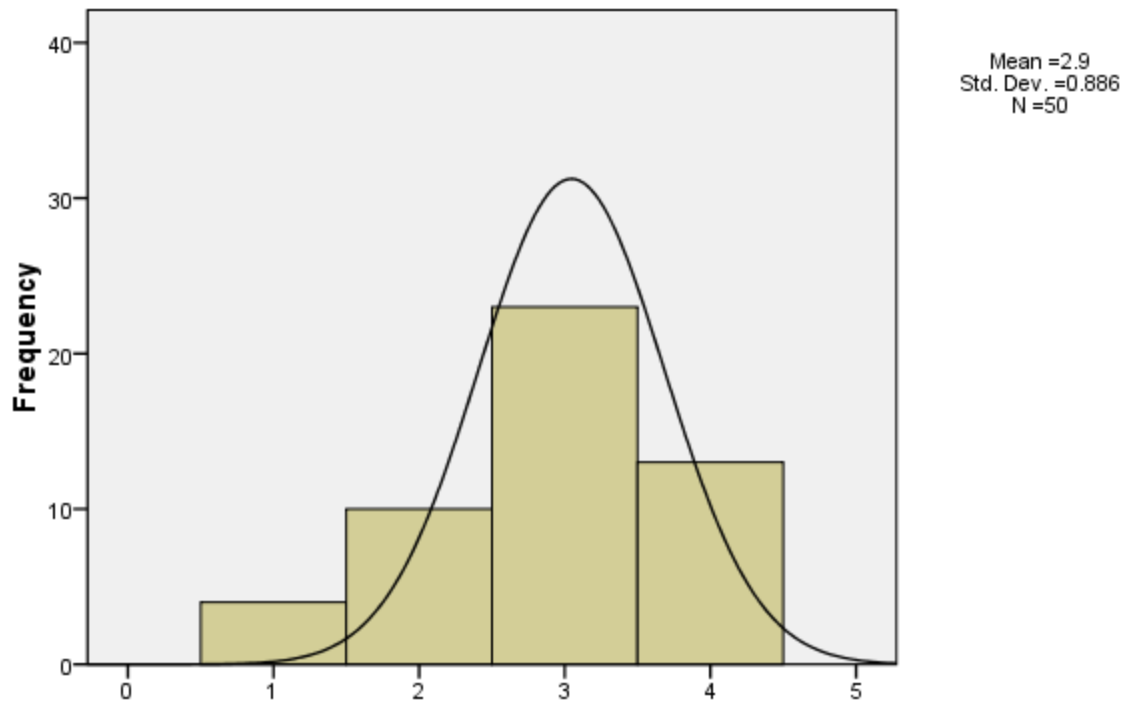
**SDU2: How many different variants are available for the main product line?**

**SDU3: What is the average margin of error in the forecast based on unit s at the time production is committed?**



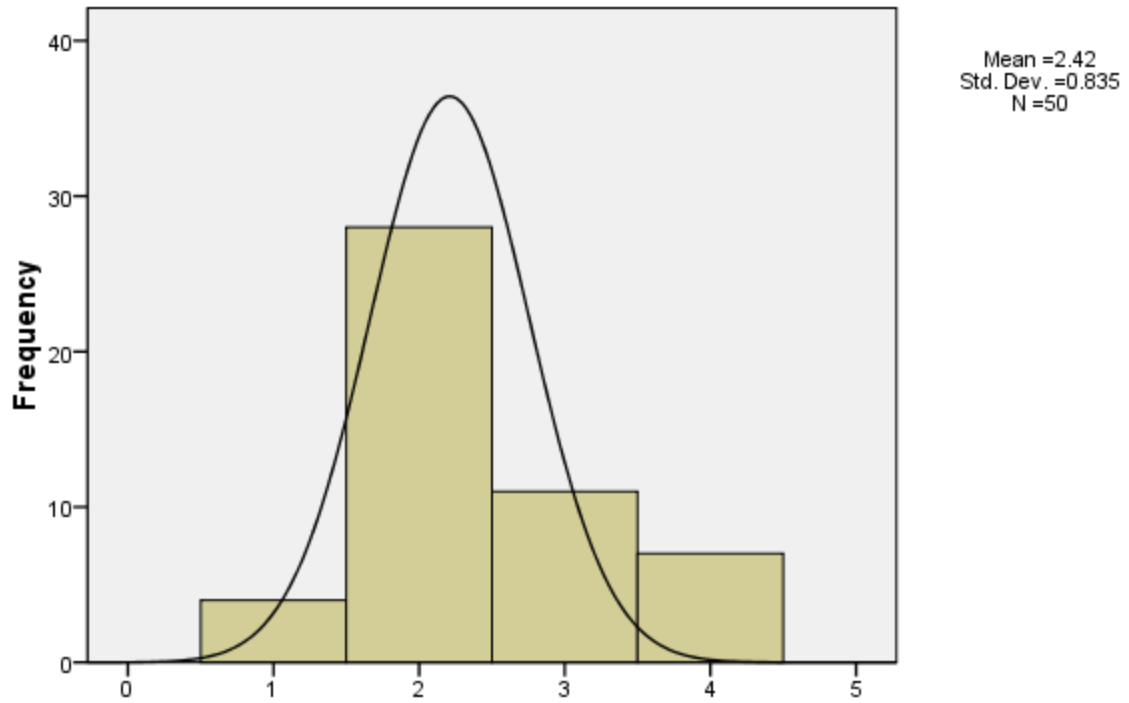
**SDU3: What is the average margin of error in the forecast based on unit s at the time production is committed?**

**SDU4: What is the number of sales locations for the main product line?**



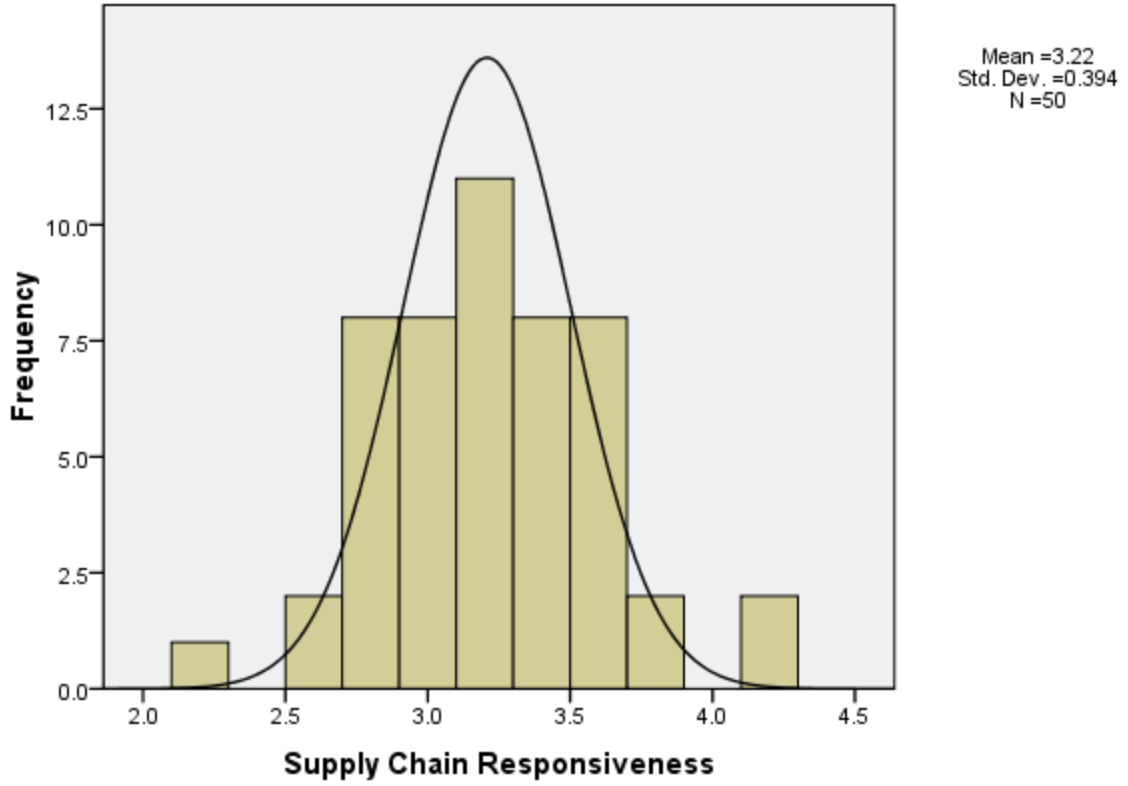
**SDU4: What is the number of sales locations for the main product line?**

**SDU5: What is the frequency of change in order content for the main product line?**



**SDU5: What is the frequency of change in order content for the main product line?**

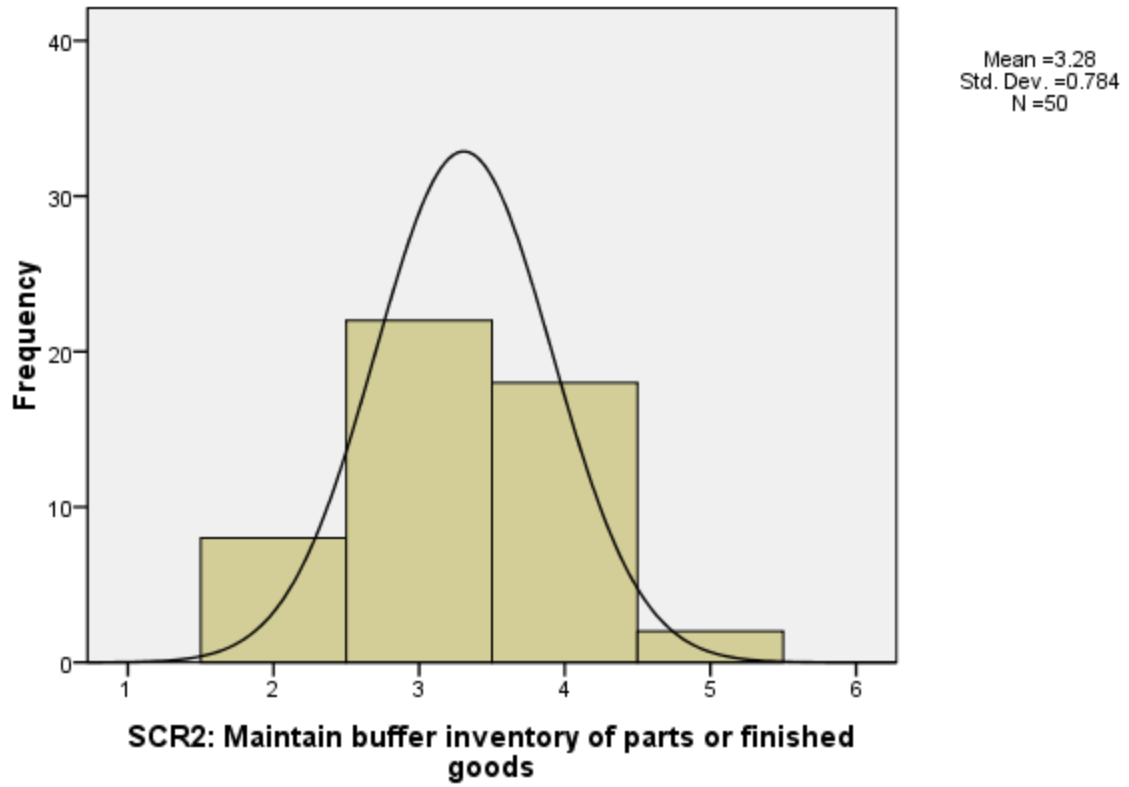
### Supply Chain Responsiveness



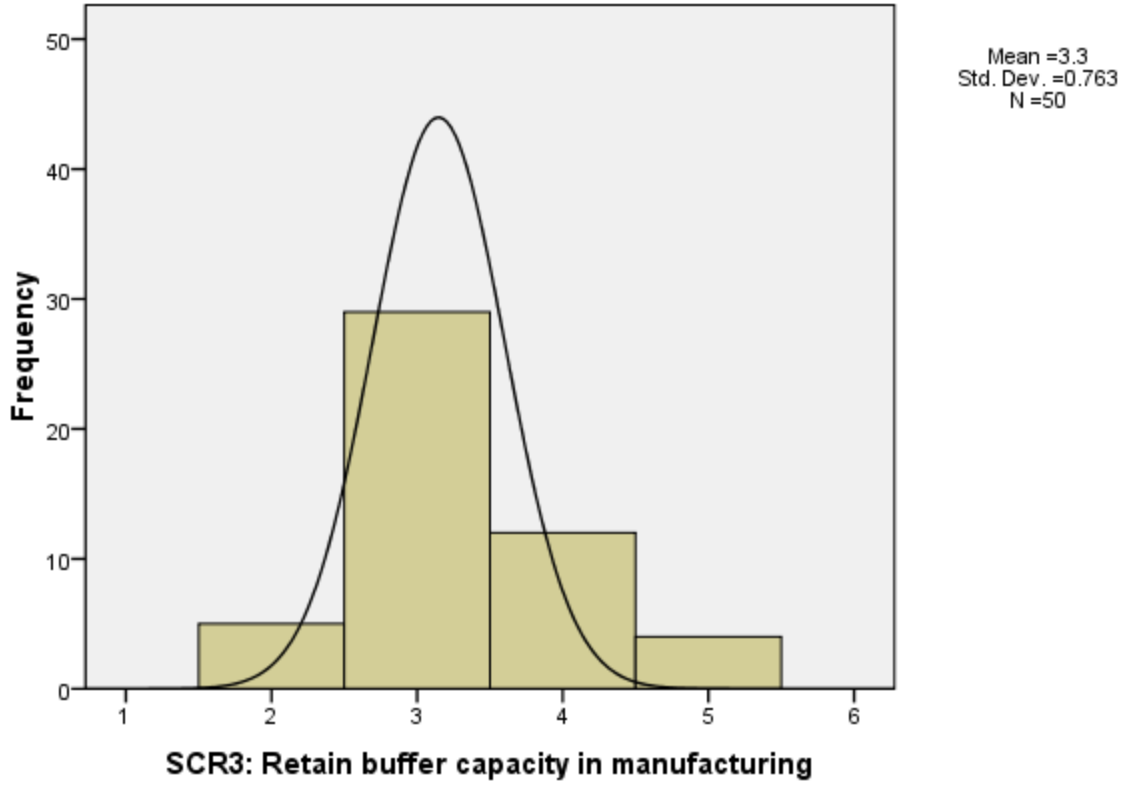
**SCR1: Improve delivery reliability**



### SCR2: Maintain buffer inventory of parts or finished goods

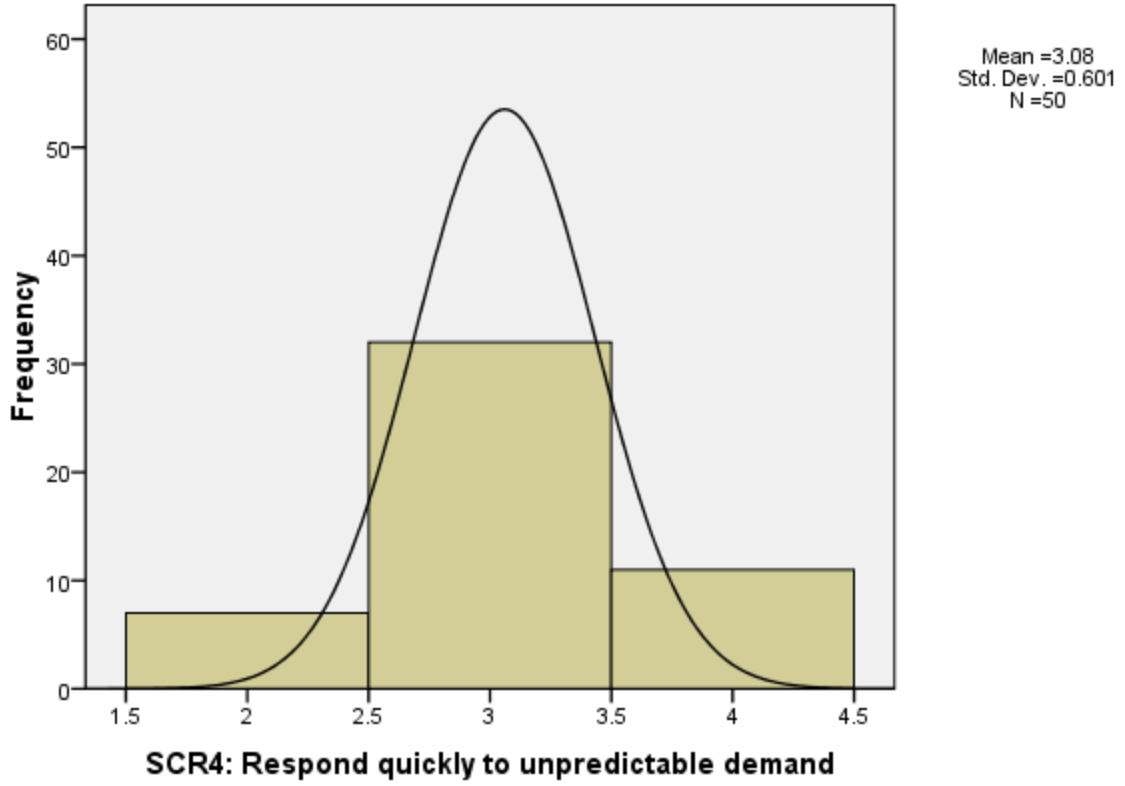


### SCR3: Retain buffer capacity in manufacturing

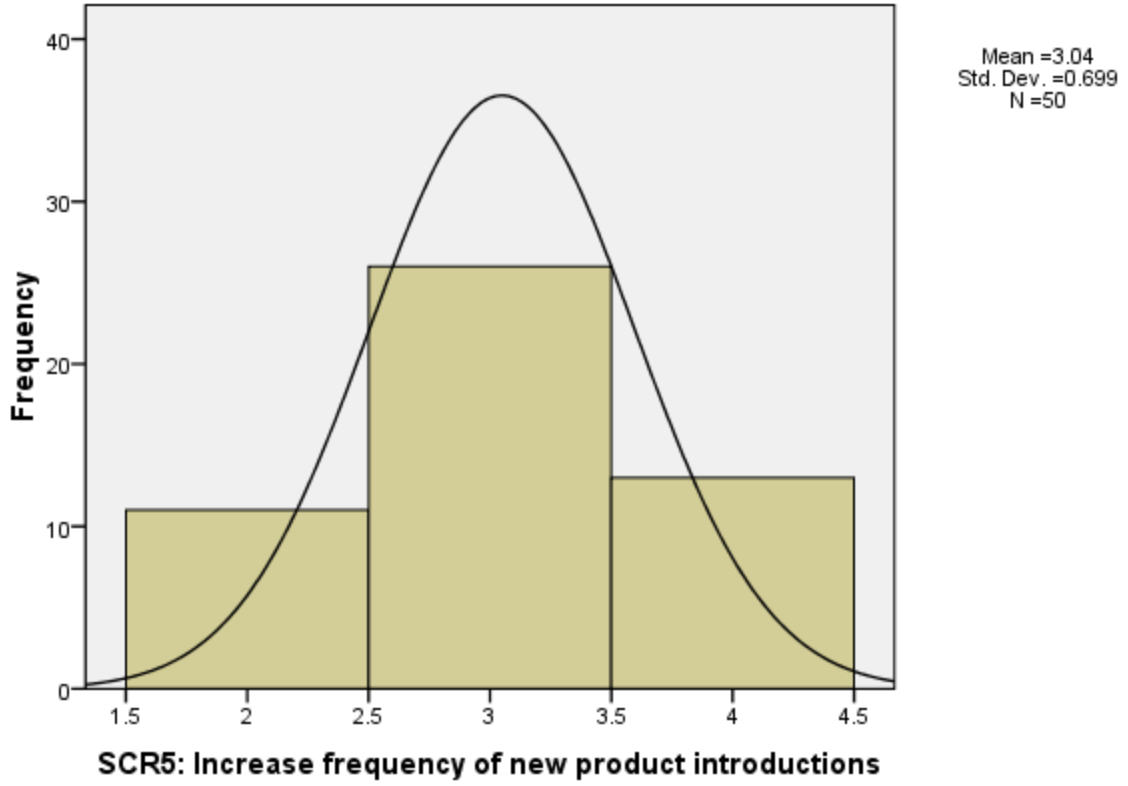




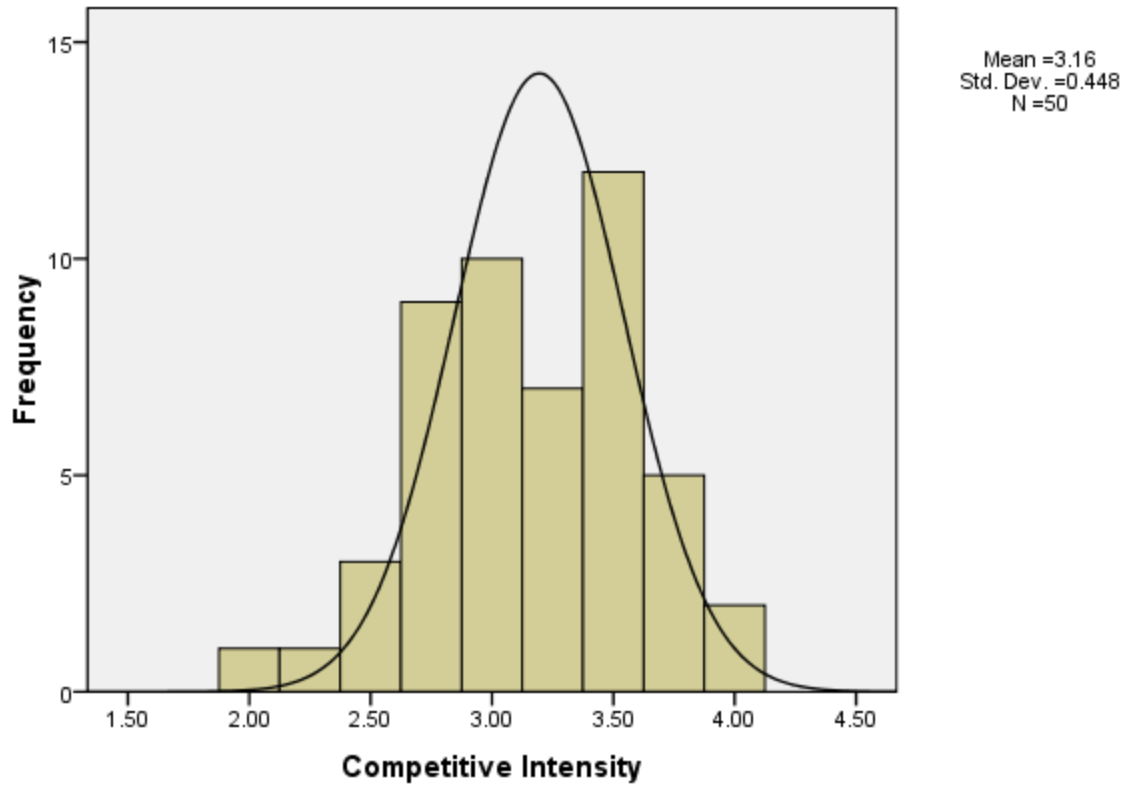
### SCR4: Respond quickly to unpredictable demand



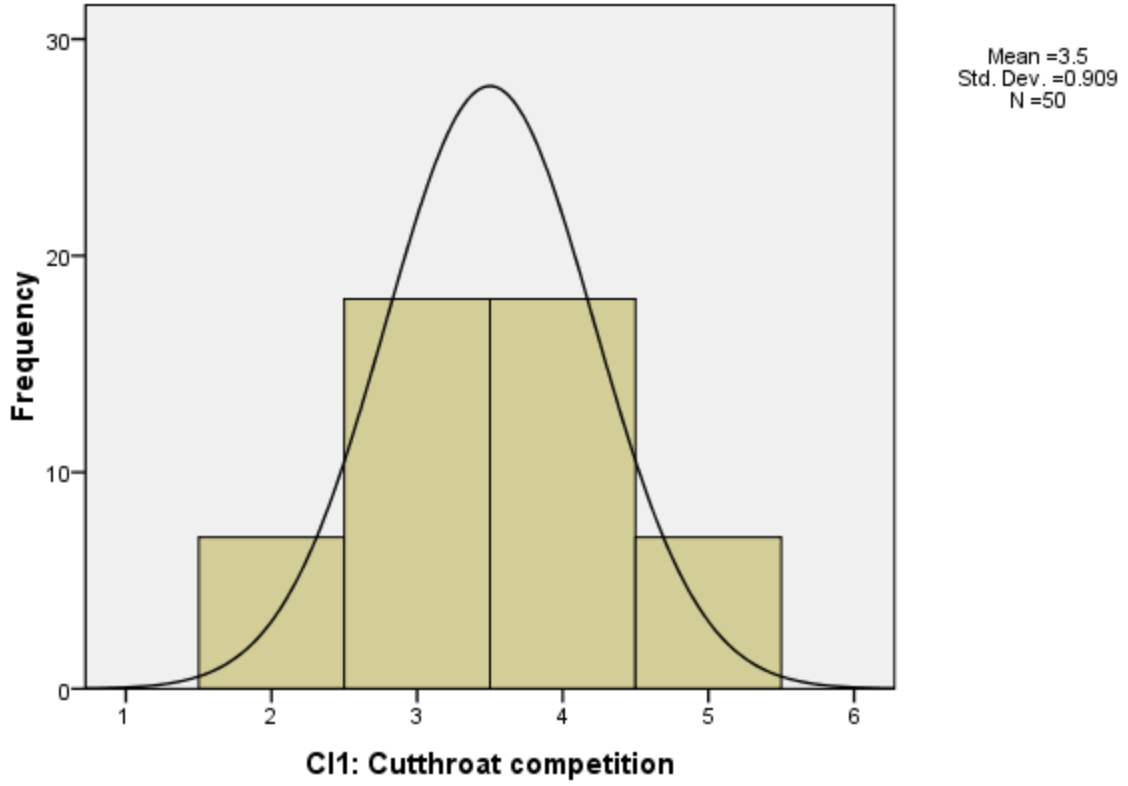
**SCR5: Increase frequency of new product introductions**



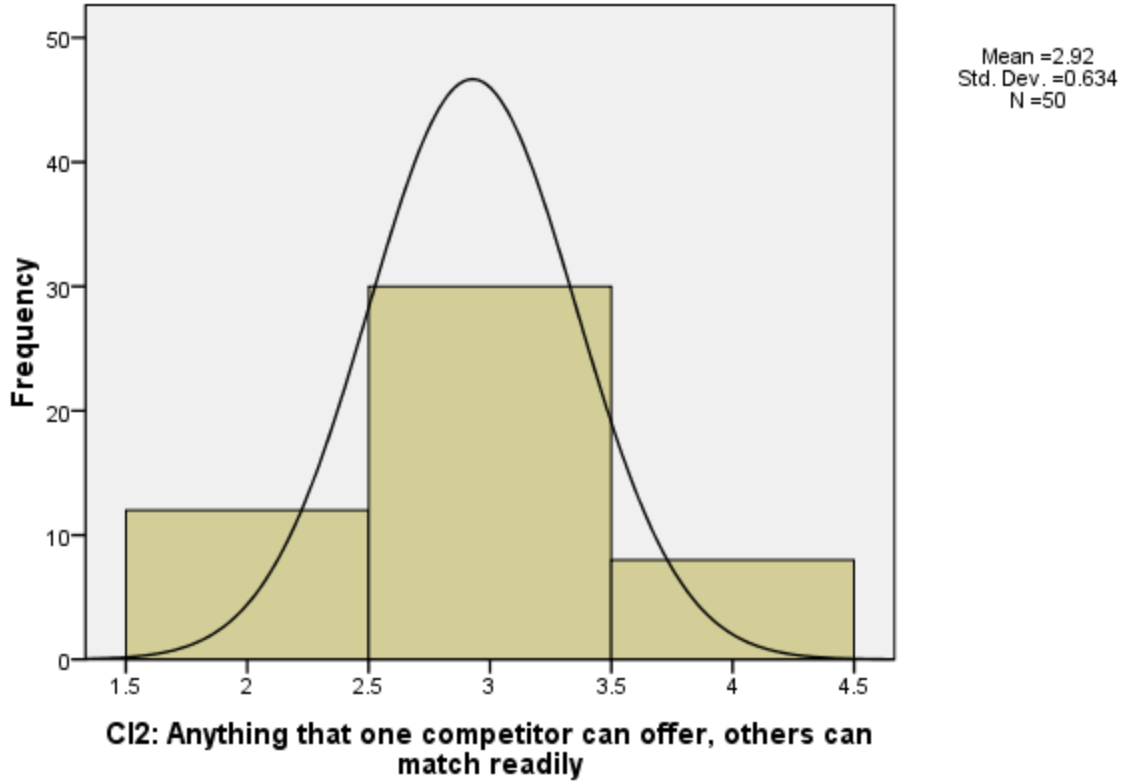
### Competitive Intensity



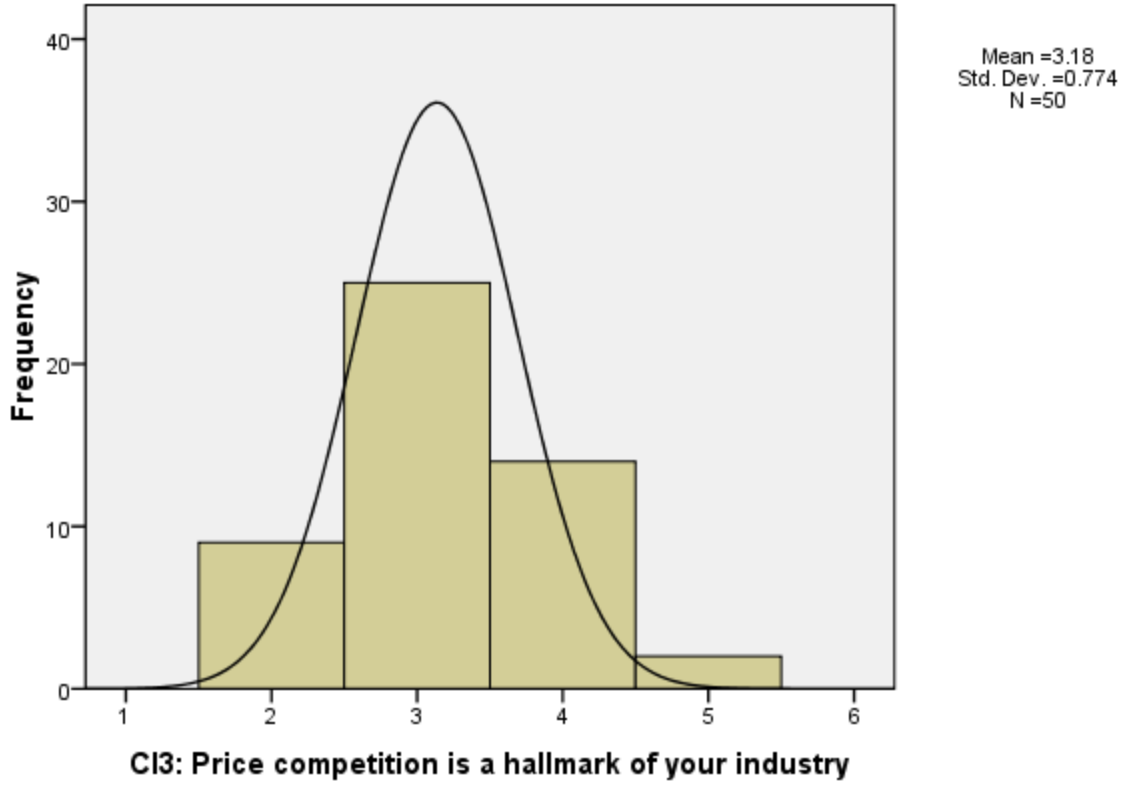
### CI1: Cutthroat competition



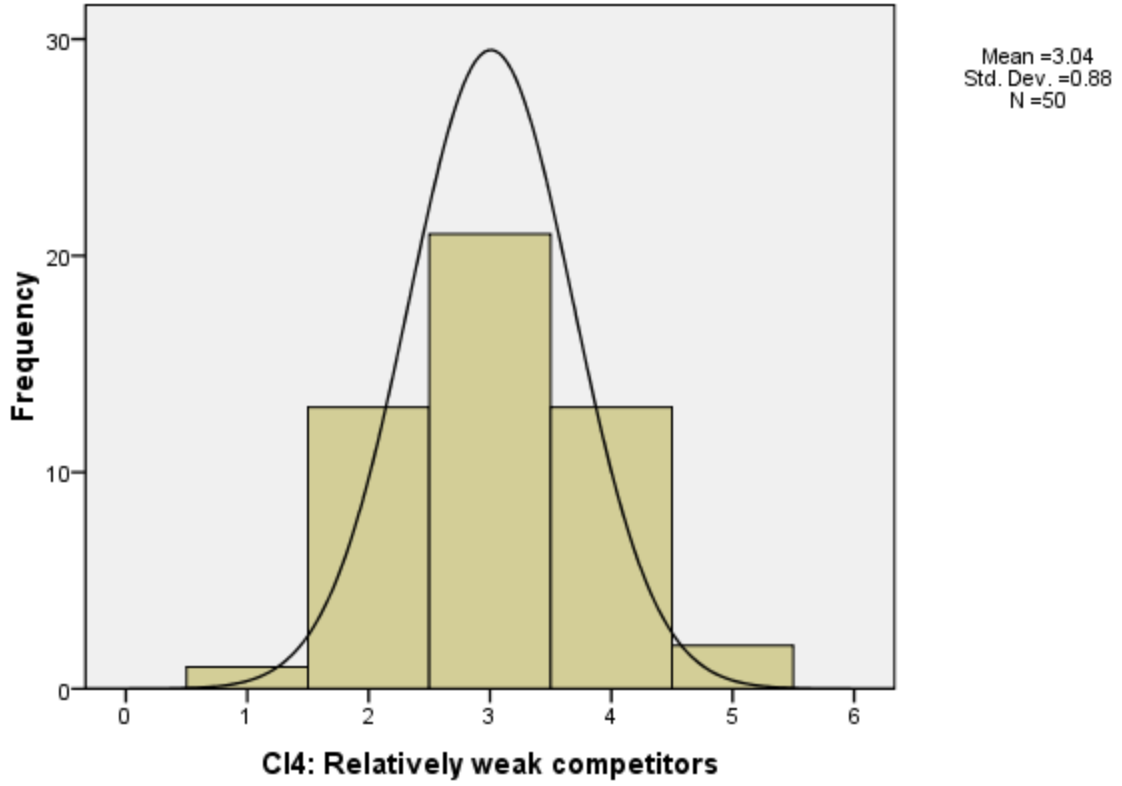
**CI2: Anything that one competitor can offer, others can match readily**



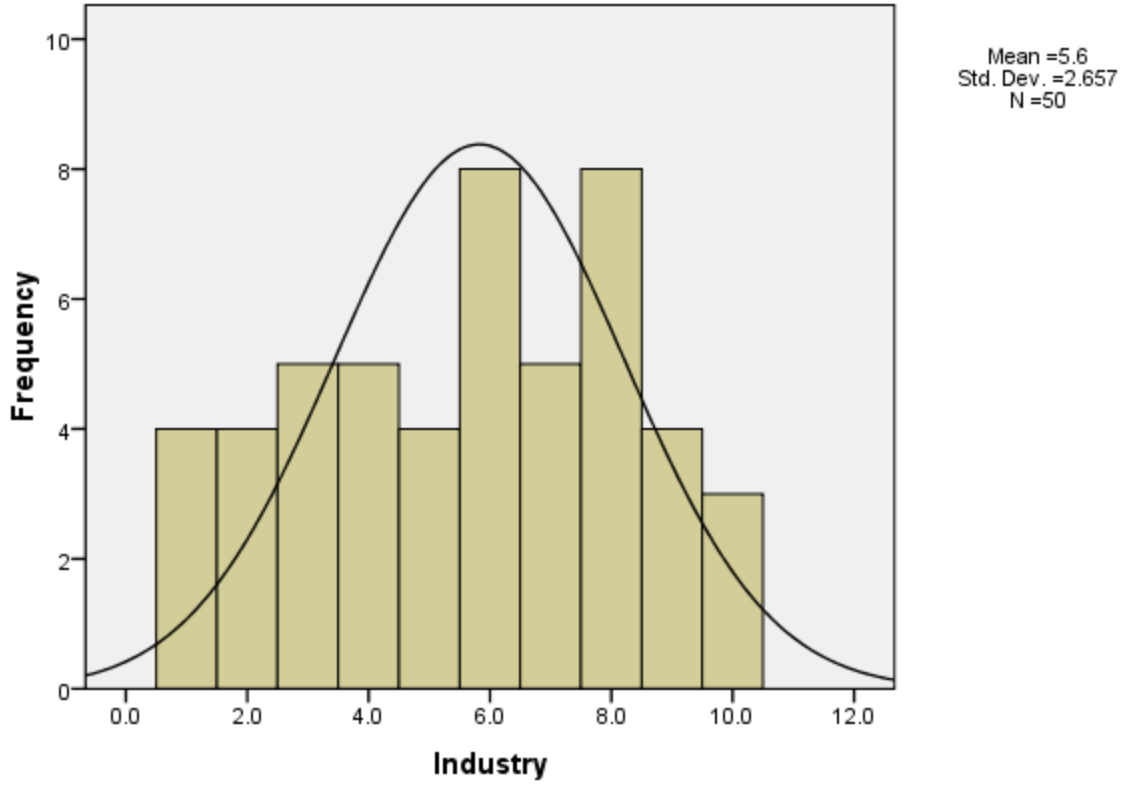
**CI3: Price competition is a hallmark of your industry**



### CI4: Relatively weak competitors

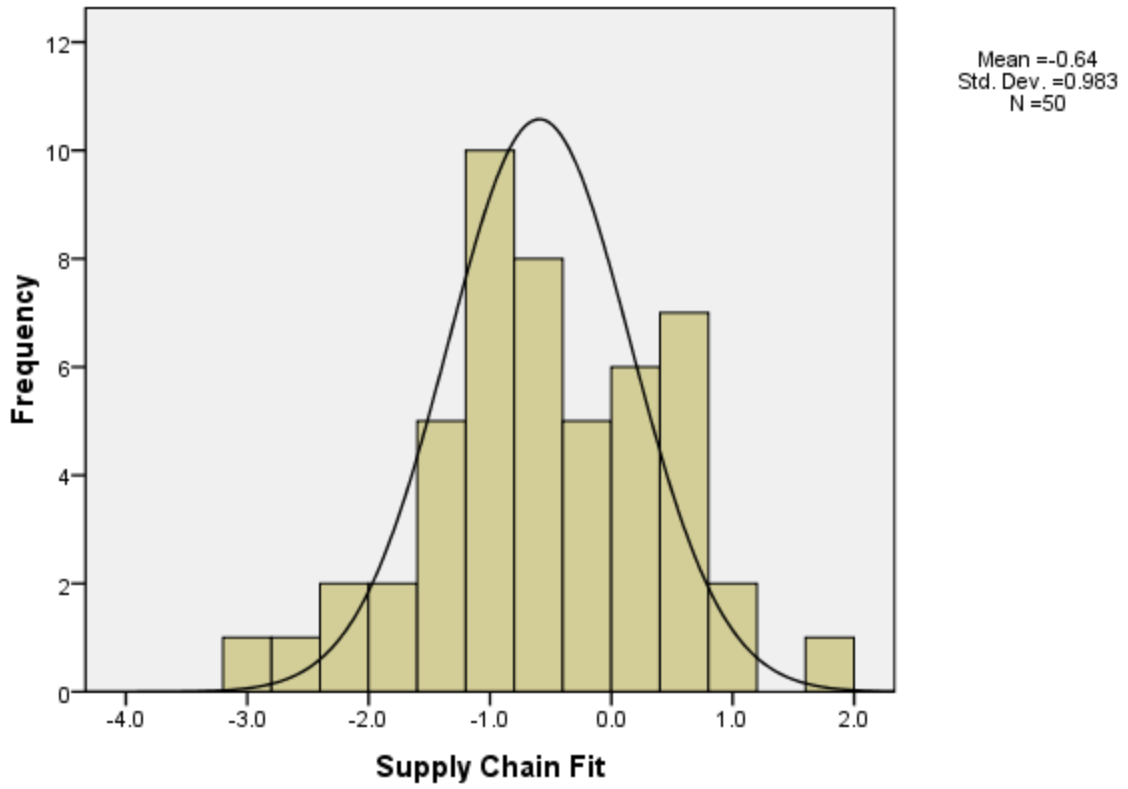


### Industry

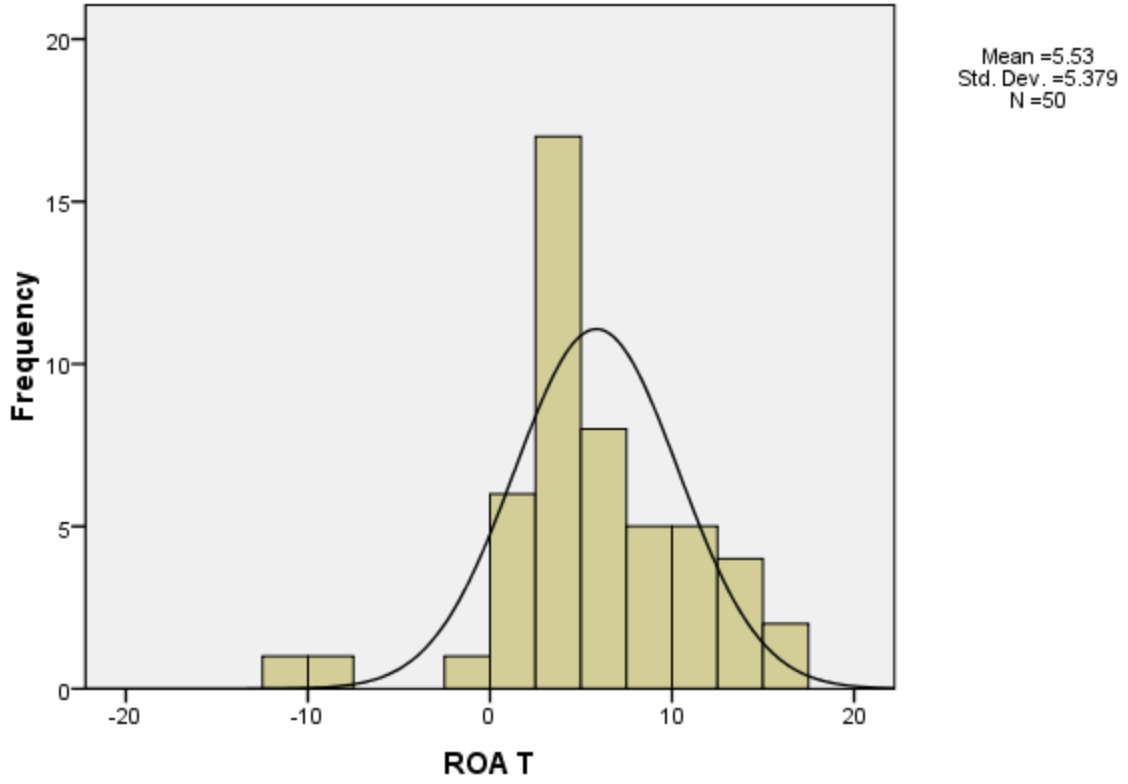




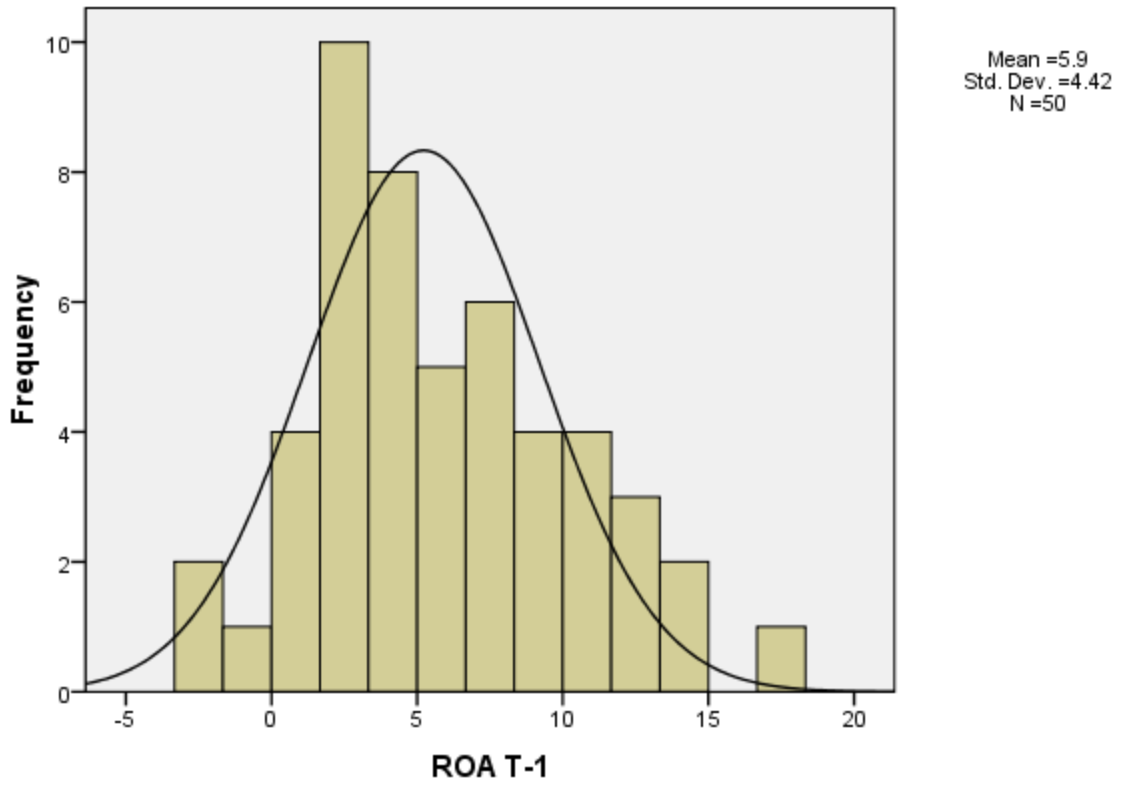
### Supply Chain Fit



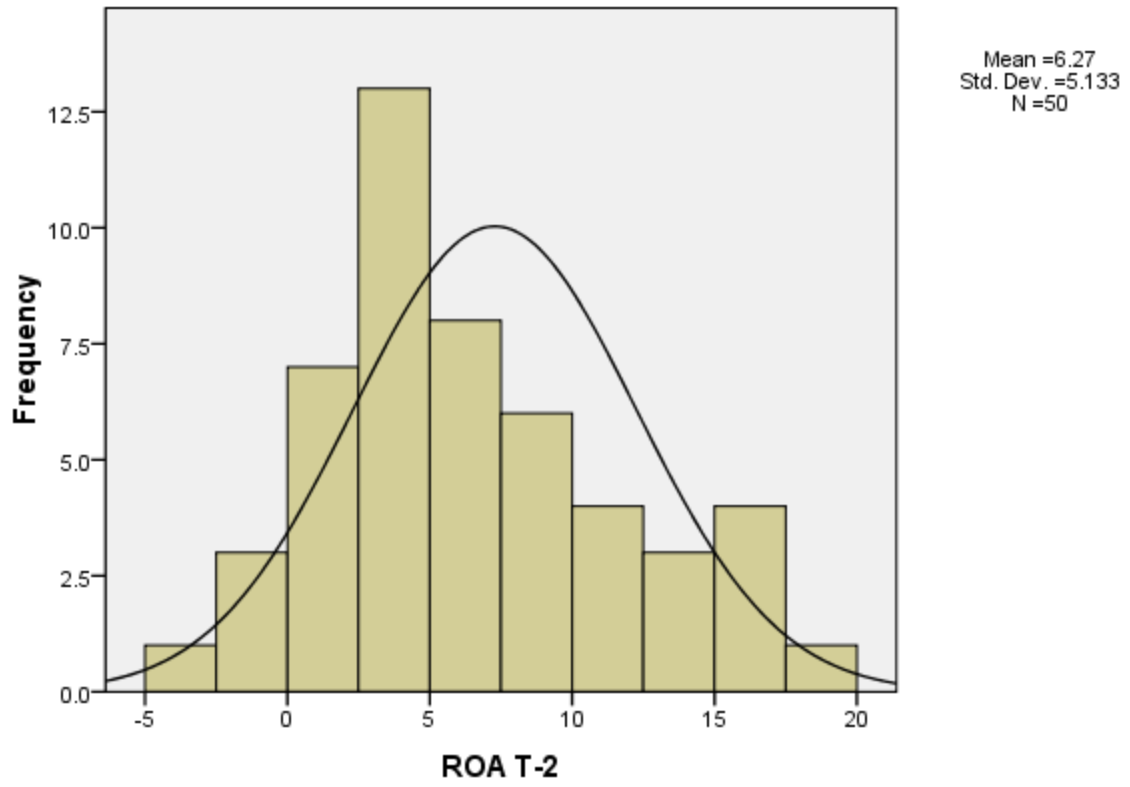
# ROA T



### ROA T-1



### ROA T-2



**4- Industry Wise Data**

**Case Processing Summary**

		Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
Industry							
Supply Chain Fit	Electronic Equipment	3	100.0%	0	.0%	3	100.0%
	Stationary	4	100.0%	0	.0%	4	100.0%
	Pharmaceutical	5	100.0%	0	.0%	5	100.0%
	Automotive Parts	5	100.0%	0	.0%	5	100.0%
	Textiles	4	100.0%	0	.0%	4	100.0%
	Food and Beverage	9	100.0%	0	.0%	9	100.0%
	Construction and Industrial Works	5	100.0%	0	.0%	5	100.0%
	Cement and Construction Materials	8	100.0%	0	.0%	8	100.0%
	Poultry and Livestock	4	100.0%	0	.0%	4	100.0%
	Other	3	100.0%	0	.0%	3	100.0%
ROA T	Electronic Equipment	3	100.0%	0	.0%	3	100.0%
	Stationary	4	100.0%	0	.0%	4	100.0%
	Pharmaceutical	5	100.0%	0	.0%	5	100.0%
	Automotive Parts	5	100.0%	0	.0%	5	100.0%
	Textiles	4	100.0%	0	.0%	4	100.0%
	Food and Beverage	9	100.0%	0	.0%	9	100.0%
	Construction and Industrial Works	5	100.0%	0	.0%	5	100.0%
	Cement and Construction Materials	8	100.0%	0	.0%	8	100.0%
	Poultry and Livestock	4	100.0%	0	.0%	4	100.0%
	Other	3	100.0%	0	.0%	3	100.0%

**Descriptive**

Industry			Statistic	Std. Error
Supply Chain Fit	Electronic Equipment	Mean	-.800	.7572
		95% Confidence Interval for Mean	Lower Bound align="right">-4.058	
			Upper Bound align="right">2.458	
		5% Trimmed Mean	.	
		Median	-.600	
		Variance	1.720	
		Std. Deviation	1.3115	
		Minimum	-2.2	
		Maximum	.4	
		Range	2.6	
		Interquartile Range	.	
		Skewness	-.670	1.225
		Kurtosis	.	.
		Stationary		Mean
95% Confidence Interval for Mean	Lower Bound align="right">-2.464			
	Upper Bound align="right">-.236			
5% Trimmed Mean	-1.344			
Median	-1.300			
Variance	.490			
Std. Deviation	.7000			
Minimum	-2.2			
Maximum	-.6			
Range	1.6			
Interquartile Range	1.4			
Skewness	-.321			1.014
Kurtosis	-1.598			2.619

Pharmaceutical	Mean		-.040	.5115
	95% Confidence Interval for Mean	Lower Bound	-1.460	
		Upper Bound	1.380	
	5% Trimmed Mean		-.078	
	Median		-.400	
	Variance		1.308	
	Std. Deviation		1.1437	
	Minimum		-1.2	
	Maximum		1.8	
	Range		3.0	
	Interquartile Range		1.9	
	Skewness		1.242	.913
	Kurtosis		1.784	2.000
	Automotive Parts	Mean		-.800
95% Confidence Interval for Mean		Lower Bound	-2.529	
		Upper Bound	.929	
5% Trimmed Mean			-.744	
Median			-.800	
Variance			1.940	
Std. Deviation			1.3928	
Minimum			-3.0	
Maximum			.4	
Range			3.4	
Interquartile Range			2.4	
Skewness			-1.110	.913
Kurtosis			1.158	2.000
Textiles		Mean		-.950
	95% Confidence Interval for Mean	Lower Bound	-1.255	
		Upper Bound	-.645	
	5% Trimmed Mean		-.944	

	Median		-1.900	
	Variance		.037	
	Std. Deviation		.1915	
	Minimum		-1.2	
	Maximum		-.8	
	Range		.4	
	Interquartile Range		.3	
	Skewness		-.855	1.014
	Kurtosis		-1.289	2.619
Food and Beverage	Mean		-.800	.4041
	95% Confidence Interval for Mean	Lower Bound	-1.732	
		Upper Bound	.132	
	5% Trimmed Mean		-.789	
	Median		-1.000	
	Variance		1.470	
	Std. Deviation		1.2124	
	Minimum		-2.8	
	Maximum		1.0	
	Range		3.8	
	Interquartile Range		1.8	
	Skewness		.268	.717
	Kurtosis		.085	1.400
Construction and Industrial Works	Mean		-.480	.2871
	95% Confidence Interval for Mean	Lower Bound	-1.277	
		Upper Bound	.317	
	5% Trimmed Mean		-.467	
	Median		-.400	
	Variance		.412	
	Std. Deviation		.6419	
	Minimum		-1.4	



	Maximum		.2	
	Range		1.6	
	Interquartile Range		1.2	
	Skewness		-.608	.913
	Kurtosis		-.681	2.000
Cement and Construction Materials	Mean		-.400	.2330
	95% Confidence Interval for Mean	Lower Bound	-.951	
		Upper Bound	.151	
	5% Trimmed Mean		-.389	
	Median		-.200	
	Variance		.434	
	Std. Deviation		.6590	
	Minimum		-1.4	
	Maximum		.4	
	Range		1.8	
	Interquartile Range		1.2	
	Skewness		-.383	.752
	Kurtosis		-1.538	1.481
Poultry and Livestock	Mean		-.450	.6021
	95% Confidence Interval for Mean	Lower Bound	-2.366	
		Upper Bound	1.466	
	5% Trimmed Mean		-.422	
	Median		-.200	
	Variance		1.450	
	Std. Deviation		1.2042	
	Minimum		-2.0	
	Maximum		.6	
	Range		2.6	
	Interquartile Range		2.3	
	Skewness		-.762	1.014

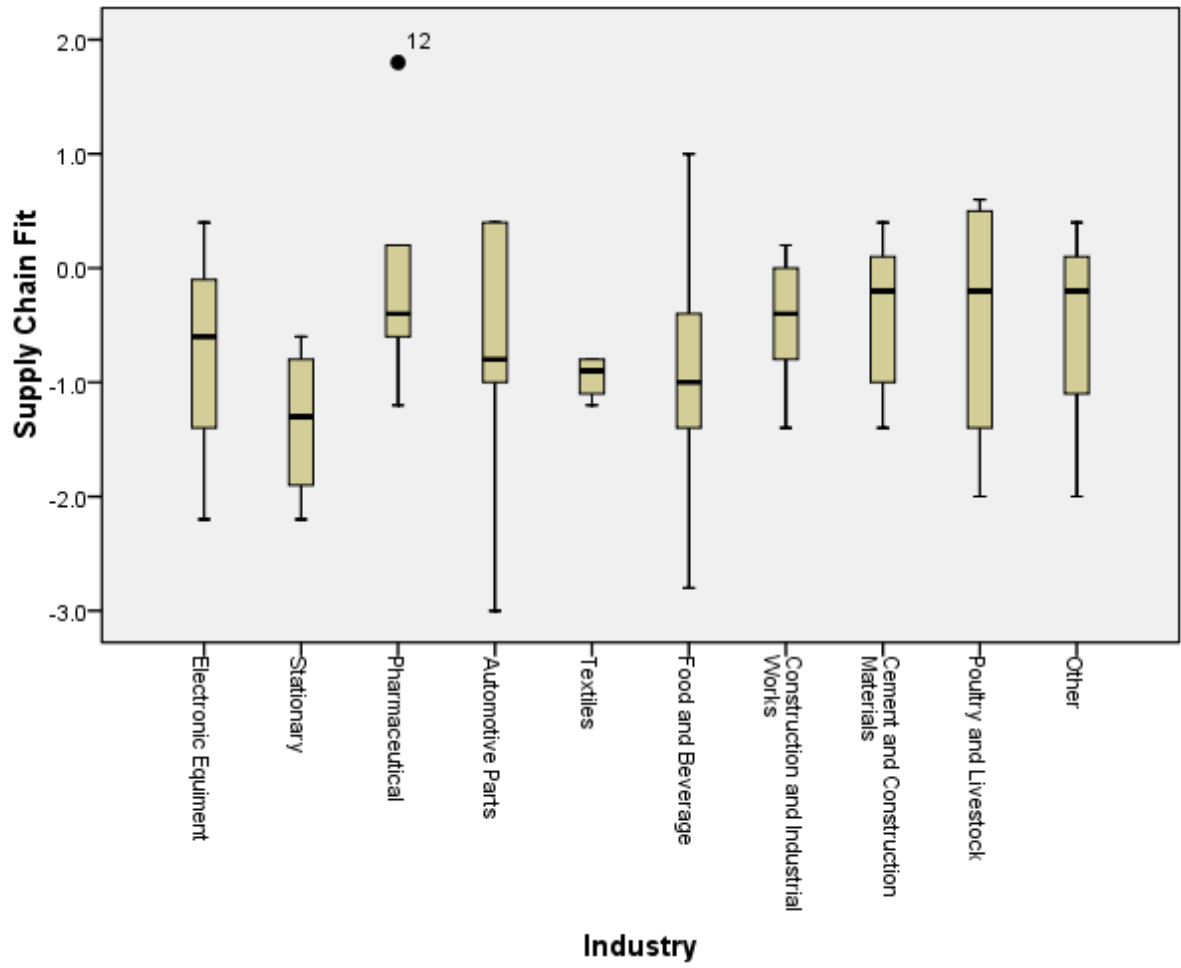
		Kurtosis		-1.571	2.619
	Other	Mean		-.600	.7211
		95% Confidence Interval for Mean	Lower Bound	-3.703	
			Upper Bound	2.503	
		5% Trimmed Mean		.	
		Median		-.200	
		Variance		1.560	
		Std. Deviation		1.2490	
		Minimum		-2.0	
		Maximum		.4	
		Range		2.4	
		Interquartile Range		.	
		Skewness		-1.293	1.225
		Kurtosis		.	.
ROA T	Electronic Equipment	Mean		5.40	.945
		95% Confidence Interval for Mean	Lower Bound	1.33	
			Upper Bound	9.47	
		5% Trimmed Mean		.	
		Median		5.00	
		Variance		2.680	
		Std. Deviation		1.637	
		Minimum		4	
		Maximum		7	
		Range		3	
		Interquartile Range		.	
		Skewness		1.034	1.225
		Kurtosis		.	.
	Stationary	Mean		4.48	.256
		95% Confidence Interval for Mean	Lower Bound	3.66	
			Upper Bound	5.29	
		5% Trimmed Mean		4.48	

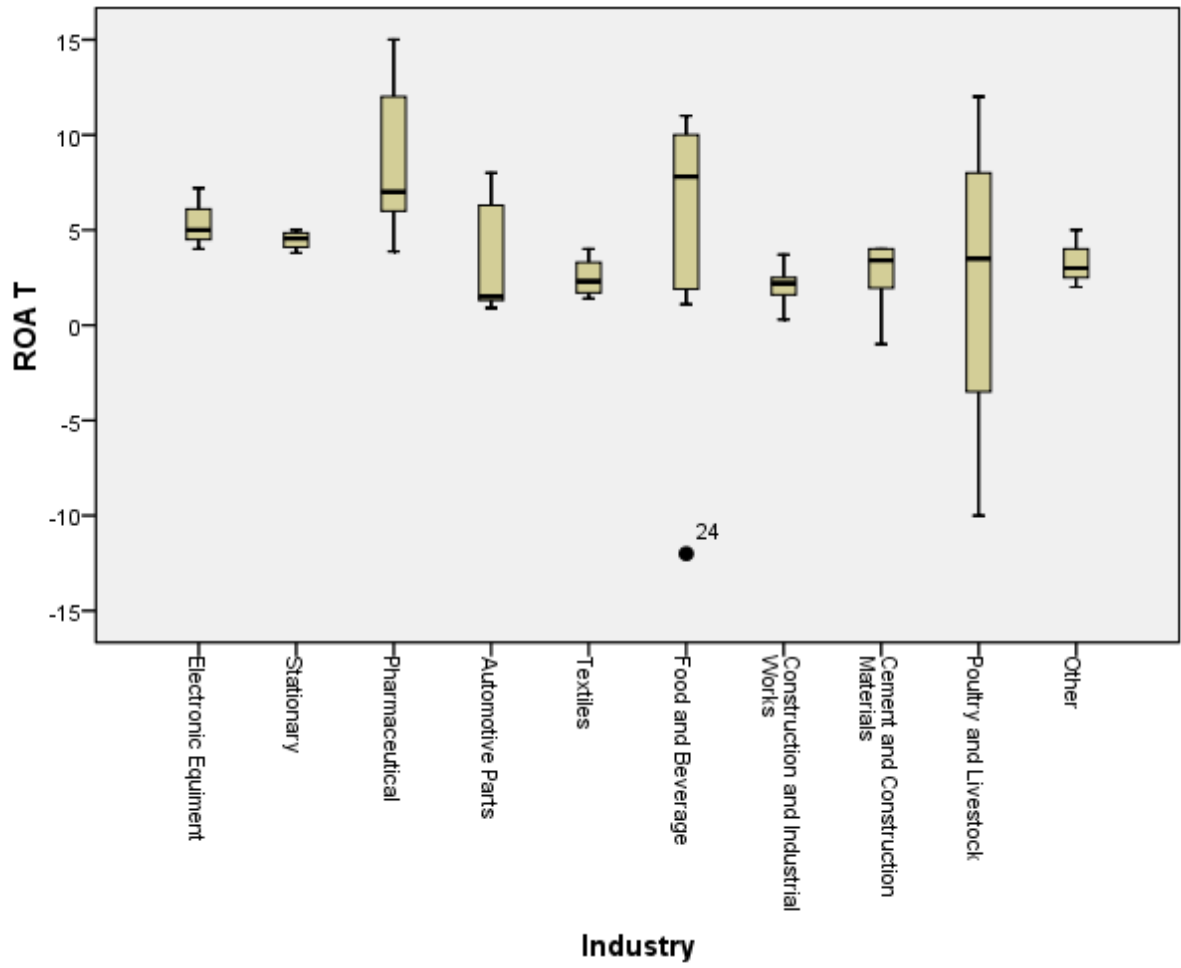
	Median		4.55	
	Variance		.263	
	Std. Deviation		.512	
	Minimum		4	
	Maximum		5	
	Range		1	
	Interquartile Range		1	
	Skewness		-.753	1.014
	Kurtosis		.343	2.619
Pharmaceutical	Mean		8.77	2.050
	95% Confidence Interval for Mean	Lower Bound	3.08	
		Upper Bound	14.47	
	5% Trimmed Mean		8.70	
	Median		7.00	
	Variance		21.015	
	Std. Deviation		4.584	
	Minimum		4	
	Maximum		15	
	Range		11	
	Interquartile Range		9	
	Skewness		.562	.913
	Kurtosis		-1.608	2.000
Automotive Parts	Mean		3.60	1.476
	95% Confidence Interval for Mean	Lower Bound	-.50	
		Upper Bound	7.70	
	5% Trimmed Mean		3.51	
	Median		1.50	
	Variance		10.899	
	Std. Deviation		3.301	
	Minimum		1	
	Maximum		8	
	Range		7	

	Interquartile Range		6	
	Skewness		.737	.913
	Kurtosis		-2.448	2.000
Textiles	Mean		2.50	.557
	95% Confidence Interval for Mean	Lower Bound	.73	
		Upper Bound	4.27	
	5% Trimmed Mean		2.48	
	Median		2.30	
	Variance		1.240	
	Std. Deviation		1.114	
	Minimum		1	
	Maximum		4	
	Range		3	
	Interquartile Range		2	
	Skewness		.927	1.014
	Kurtosis		.785	2.619
Food and Beverage	Mean		5.11	2.451
	95% Confidence Interval for Mean	Lower Bound	-.54	
		Upper Bound	10.76	
	5% Trimmed Mean		5.73	
	Median		7.80	
	Variance		54.049	
	Std. Deviation		7.352	
	Minimum		-12	
	Maximum		11	
	Range		23	
	Interquartile Range		9	
	Skewness		-1.832	.717
	Kurtosis		3.608	1.400
Construction and Industrial Works	Mean		2.06	.557
	95% Confidence Interval for Mean	Lower Bound	.51	
		Upper Bound	3.61	

	5% Trimmed Mean		2.07	
	Median		2.20	
	Variance		1.553	
	Std. Deviation		1.246	
	Minimum		0	
	Maximum		4	
	Range		3	
	Interquartile Range		2	
	Skewness		-.226	.913
	Kurtosis		.765	2.000
Cement and Construction Materials	Mean		2.71	.642
	95% Confidence Interval for Mean	Lower Bound	1.19	
		Upper Bound	4.23	
	5% Trimmed Mean		2.85	
	Median		3.40	
	Variance		3.298	
	Std. Deviation		1.816	
	Minimum		-1	
	Maximum		4	
	Range		5	
	Interquartile Range		3	
	Skewness		-1.590	.752
	Kurtosis		1.703	1.481
Poultry and Livestock	Mean		2.25	4.553
	95% Confidence Interval for Mean	Lower Bound	-12.24	
		Upper Bound	16.74	
	5% Trimmed Mean		2.39	
	Median		3.50	
	Variance		82.917	
	Std. Deviation		9.106	
	Minimum		-10	
	Maximum		12	

	Range		22	
	Interquartile Range		17	
	Skewness		-.800	1.014
	Kurtosis		1.804	2.619
Other	Mean		3.33	.882
	95% Confidence Interval for Mean	Lower Bound	-.46	
		Upper Bound	7.13	
	5% Trimmed Mean		.	
	Median		3.00	
	Variance		2.333	
	Std. Deviation		1.528	
	Minimum		2	
	Maximum		5	
	Range		3	
	Interquartile Range		.	
	Skewness		.935	1.225
	Kurtosis		.	.

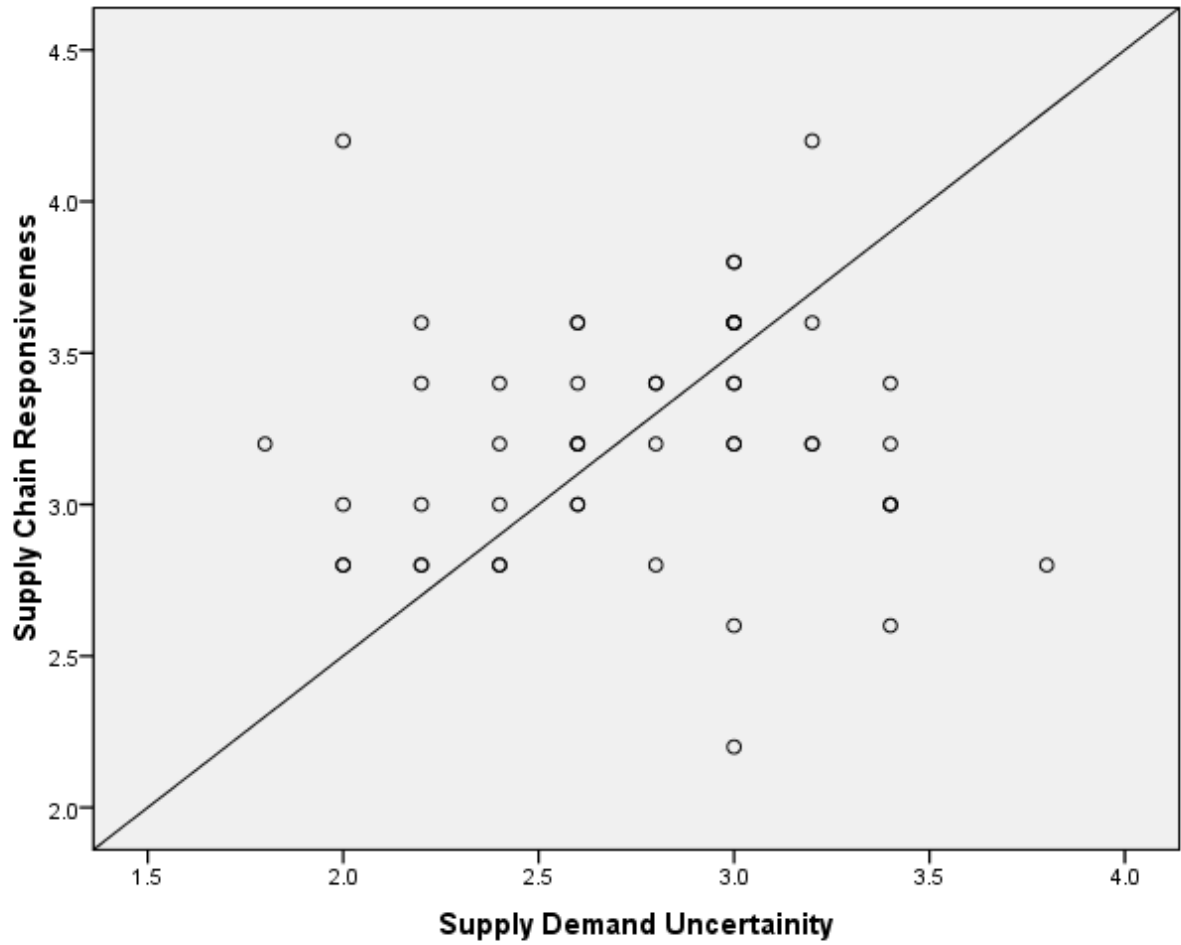






Industry	Supply Chain Fit Sum	ROA T Sum
Electron ic Equipment	-2.4	16
Stationa ry	-5.4	18
Pharmace utical	-.2	44
Automoti ve Parts	-4.0	18
Textiles	-3.8	10
Food and Beverage	-7.2	46
Construc tion and Industri al Works	-2.4	10
Cement and Construc tion Material s	-3.2	22
Poultry and Livestoc k	-1.8	9
Other	-1.8	10

5- Scatter Plot



Companies with negative Misfit		
	SCM	ROA
	-3	1.31
	-2.8	7.8
	-2.2	5
	-2.2	4.7
	-2	12
	-2	5
	-1.6	4.4
	-1.6	10
	-1.4	-12
	-1.4	2.5
	-1.4	3.5
	-1.2	7
	-1.2	2.6
	-1	3.8
	-1	8
	-1	4
	-1	8
	-1	1.9
	-1	7.2
	-1	3
	-1	0.9
	-0.8	0.9
	-0.8	1.4
	-0.8	2
	-0.8	2.2
	-0.8	4
	-0.6	4
	-0.6	5
	-0.6	3.87
	-0.4	12
	-0.4	1.1
	-0.4	3.7
	-0.4	-1
	-0.2	3

Sum	-39.6	132.78
Mean	-1.1647	3.9053

Companies with a positive Misfit		
	SCF	ROA
	0.2	6
	0.2	1.6
	0.2	4
	0.4	7.2
	0.4	1.5
	0.4	6.3
	0.4	3.3
	0.4	-10
	0.4	2
	0.6	3
	1	11
	1	11
	1.8	15
Sum	7.4	61.9
Mean	0.5692	4.7615

Companies with a perfect fit		
	SCF	ROA
	0	6.3
	0	4.7
	0	5.3
Sum	0	16.3
Mean	0	5.4333

