



**KEY MEASURE AND WAYS TO IMPROVE SUPPLY CHAIN  
PERFORMANCE OF B. BRAUN**

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Further, I certify that the work is based on the investigation made, data collected and analysed by him and it has not been submitted in any other University or Institution for award of any degree. In my opinion it is fully adequate, in scope and utility, as a dissertation towards partial fulfillment for the award of degree of MBA/BBA/B.Sc.

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## EXECUTIVE SUMMARY

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The business environment is changing rapidly and with it the supply chains of original equipment manufacturers (OEMs). Most OEMs no longer compete solely as autonomous corporations. They also compete as participants in integrated supply chains. In response to competitive pressures, U.S. manufacturers are purchasing increasing amounts of goods and services from outside suppliers (i.e., outsourcing), as well as integrating their supply chains to improve performance. A 1998 survey revealed that 80 percent of manufacturers had formal supply chain management programs or planned to start them in the next year. In this context, the National Institute of Standards and Technologies and the Robert C. Byrd Institute requested that the National Research Council conduct a study of the new roles and challenges faced by small and medium-sized manufacturing enterprises (SMEs) in integrated supply chains. The Committee on Supply Chain Integration was formed, under the auspices of the Board on Manufacturing and Engineering Design, for this purpose.



## CHAPTER-1

### INTRODUCTION

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A **supply chain** is the network of all the individuals, organizations, resources, activities and technology involved in the creation and sale of a product, from the delivery of source materials from the supplier to the manufacturer, through to its eventual delivery to the end user. This network includes different activities, people, entities, information, and resources.

#### ***WHY SHOULD A COMPANY UNDERSTAND ITS SUPPLY CHAIN?***

Mapping out a supply chain is one of the critical steps in performing an external analysis in a strategic planning process. The importance of clearly laying out the supply chain is that it helps a company define its own market and decide where it wants to be in the future. In developing corporate-level strategies, a company often needs to make decisions on whether to operate a single line of business or enter into other related or unrelated industries.

Each stage of a supply chain is essentially a different industry, for example, raw material extraction and manufacturing. The supply chain enables a company to understand others that are involved in each of the stages, and therefore provides some insights on the attractiveness or competitiveness in these industries the company might want to enter in the future.

#### ***SUPPLY CHAIN MANAGEMENT***

Supply chain management is the handling of the entire production flow of a good or service — starting from the raw components all the way to delivering the final product to the consumer. To accomplish this task, a company will create a network of suppliers (the “links” in the chain) that move the product along from the suppliers of raw materials to the organizations who deal directly with users.

#### ***Supply Chain Management Features that Give You a Competitive Edge:***

Today’s popular supply chain management can help companies achieve and maintain a competitive edge by empowering them to streamline and enhance their most important supply

chain operations from start to finish. With supply chain management in place, organizations can maximize cost-efficiency, increase productivity, and give their bottom line a big boost.

How does supply chain management software enable the realization of all these benefits? By offering a broad range of robust features, delivered through a comprehensive suite of tightly integrated modules and applications. This functionality is designed to fully automate and support supply chain processes from end-to-end, and includes:

#### □ Inventory Management

With supply chain management, companies can significantly improve the way they track and manage their supplies of raw materials and components needed for production, finished goods to satisfy open sales orders, and spare parts required for field service and support. This eliminates excess and waste, frees up valuable real estate for other important purposes, and minimizes related storage costs.

#### □ Order Management

Supply chain management software can dramatically accelerate the execution of the entire order-to-delivery cycle by helping companies to more productively generate and track sales orders. Supply chain management also enables the dynamic scheduling of supplier deliveries to more effectively meet demand, as well as more rapid creation of pricing and product configurations.

#### □ Procurement

All activities and tasks associated with sourcing, purchasing, and payables can be fully automated and streamlined across a company's entire supplier network with supply chain management software. As a result, businesses can build stronger relationships with vendors, better access and manage their performance, and improve negotiations to leverage volume or bulk discounts and other cost-cutting measures.

#### □ Logistics

As companies expand globally, their supply chains become more and more complex. This makes the coordination of the numerous warehouses and transportation channels involved quite a challenging endeavor without supply chain software in place. With supply chain management,

businesses can improve on-time delivery performance and boost customer satisfaction by achieving complete visibility into how finished goods are stored and distributed, regardless of the number of facilities or partners that participate.

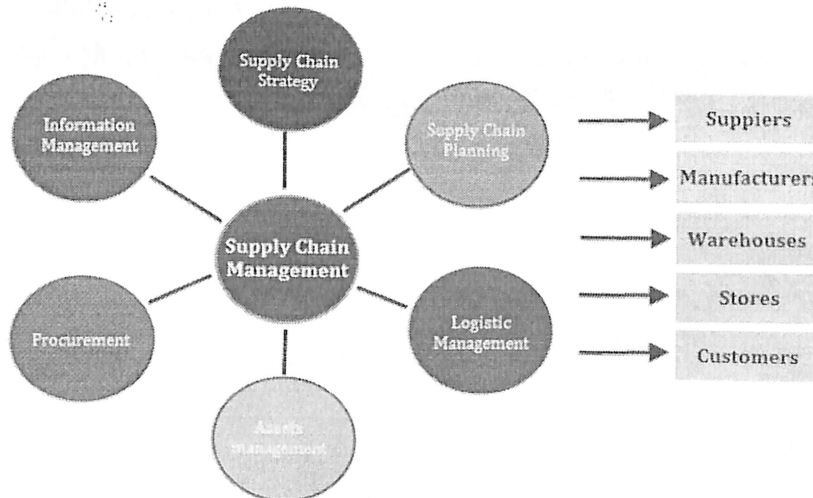
□ Forecasting and Planning

With supply chain management, organizations can more accurately anticipate customer demand and plan their procurement and production processes accordingly. As a result, they can avoid unnecessary purchases of raw-materials, eliminate manufacturing over-runs, and prevent the need to store excess finished goods, or slash prices to move products off of warehouse shelves.

□ Return Management

Supply chain software can simplify and accelerate the inspection and handling of defective or broken goods – on both the buy and sell side of the business – and automate the processing of claims with suppliers and distributors, as well as insurance companies.

Many supply chain offerings also include add-on options or modules designed to enhance related activities. Through these features, support is provided for a variety of important processes such as contract management, product lifecycle management, capital asset management, and more.



**Figure No. 1.1: Supply Chain Management**

## **1.1 OVERVIEW:**

### ***PROFILE OF THE COMPANY (B.BRAUN)***

**B. Braun Melsungen AG** is a German medical and pharmaceutical device company, which has offices and facilities across 64 countries. Its headquarters are located in the small town of **Melsungen**, in central **Germany**. The company was founded in 1839 and is still owned by the Braun family. B. Braun is one of the world's leading providers and manufacturers with 61,583 (2017) employees across 64 countries and has revenue of .(2017) EUR 6,788.9 million. These include solutions and the consumable materials required for infusion, nutrition and pain therapy, infusion pumps and systems, disinfection products, surgical instruments, suture materials, hip and knee implants, dialysis equipment and accessories, and stoma, diabetes and wound care products. Also included are own dialysis centers, as well as services and consulting for optimizing hospital processes and making them safer and more efficient, in the global healthcare market. Every service that B. Braun provides incorporates the entirety of our knowledge and skills, the company's deep understanding of users' needs, and extensive expertise since 1839. With its constantly growing portfolio of effective medical care solutions, B. Braun makes a substantial contribution towards protecting and improving people's health. In total, the B. Braun product range comprises 5,000 different products, 95 percent of which are manufactured by the company. By offering supplementary services and consulting, B. Braun is a system supplier that develops the best solution for patients in close partnership with our customers, making a significant contribution to medical advancements.

## **1.2 BACKGROUND:**

### ***HISTORY***

The company originated in the year 1839 as a pharmacy in Melsungen, where it started to sell medical herbs by mail to customers in Germany.

Later, a manufacturing plant was built, where production of several medical products began, mainly surgical sutures. With this product, Braun started to supply to hospitals, and added in the following decades other product lines to its manufacturing program, like intravenous solutions, monitoring apparatus and other medical devices. In the 1960s Braun became highly specialised

in plastics for pharmaceutical and medical uses, and developed the first plastic container for I. V. solutions in 1956, as well as many other products for patient care in hospitals.

As the company grew, manufacturing facilities were acquired or established in the United Kingdom, France, Italy, Spain, Switzerland, Hungary, Slovakia, Czech republic, the United States, Brazil and Malaysia. B. Braun acquired **Aesculap AG**, a Germany-based manufacturer of surgical instruments. B. Braun and its subsidiaries employ more than 54,000 people in more than 60 countries as of 2014.

In 2009 the company was named the best company in Germany to work for.

### ***Division***

On an international level, B. Braun is separated into several divisions:

- Hospital Care Division, which handles products related to infusion and injection and other disposable hospital supplies.
- Aesculap Division, which handles products and services related to surgery.
- OPM (Out Patient Market) Division.
- B. Braun Avitum Division which handles products and services related to extracorporeal blood treatment.
- Tran scare, a home healthcare service operating in Germany, Austria, and the United Kingdom.
- B. Braun Sterilog, a service based in the United Kingdom for the cleaning, decontamination and sterilising of surgical instruments. Sterilog facilities are located in Pudsey, Yardley Green and King's Norton.

The United Kingdom headquarters are located in Chapeltown, just north of Sheffield, in South Yorkshire. The United States headquarters are located in Bethlehem, Pennsylvania, where the subsidiary company is known as B. Braun Medical, Inc. It sells pharmaceutical and medical products.

### ***Aesculap***

B. Braun's Aesculap division, which includes Aesculap, Inc., its American unit, is a manufacturer of surgical equipment. It derives its name from Aesculapius, the Greek and Roman

god of medicine and physicians. It manufactures a range of equipment including sutures, handheld surgical instruments, implants, and electrosurgical devices and powers systems. It also provides training to healthcare workers through its Aesculap Academy.

Aesculap was founded in 1867 in Tuttlingen, Germany by Gottfried Jetter. Aesculap, Inc., its American division, was founded in 1977 in Center Valley, Pennsylvania. Aesculap AG was incorporated into the B. Braun Group in 1998.

### ***Sustainability***

Sustainability is an important guiding principle of B. Braun's corporate activities. In addition to economic responsibility, which we pursue with long-term growth, for us this also includes ecological and social responsibility, which we demonstrate with numerous projects.

It is important to us to create sustainable values for our employees, society and the environment. As a "citizen of society" and a globally operating, family-owned company, B. Braun supports regions, promotes the expansion and exchange of knowledge, and creates perspectives – both for the people of today and for future generations.

### ***OBJECTIVE OF B.BRAUN REGARDING SUPPLY MANAGEMENT***

- **Supply chain management is concerned with the efficient integration of suppliers, factories, warehouses and stores so that merchandise is produced and distributed:**
  - ✓ In right quantities
  - ✓ To the right locations
  - ✓ At the right time
  
- **In order to**
  - ✓ Minimize total system cost
  - ✓ Satisfy customer service requirements
  - ✓ Face global competition
  - ✓ Improve standardization

### ***PERFORMANCE LEVEL OF SUPPLY CHAIN IN B.BRAUN***

Medical devices are comprised of an assortment of components that work together to deliver a desired function. The final device is only as strong as its weakest component. Ensuring the highest-quality material and components for a device starts with a robust supply chain management system that mitigates risk, which is a natural consequence of the purchasing process.

By applying quality system principles to supply chain management, medical device manufacturers can establish best practices for (1) selecting and qualifying suppliers, (2) segmenting them into categories based on potential risk and (3) monitoring them over the short and long term to drive continuous improvement. Considering that supplier controls have been among the most frequent causes of Quality System observations and warning letters, it's imperative to have confidence that the quality of a supplier and its products will not adversely impact your finished device.

The medical device market is one of the most regulated industries in the world, and the bar only gets higher every year. "It continues to be more rigorous," says Michael Stammherr, vice president of strategic procurement at B. Braun Medical. "As an industry, we continue to see more regulations and requirements."



**Figure No. 1.2: B. Braun Medical Inc.'s strategic procurement department cultivates a base of reliable and high-quality suppliers.**

Keeping up with those requirements is a constant challenge. Government agencies, customers, as well as B. Braun Medical itself continues to demand more transparency regarding its products and manufacturers must keep careful track of every material and compound to ensure they meet standards. "Our customers are constantly asking for product attribute information because they are being asked by their customers and agencies for this information," Stammer says.

Manufacturers such as B. Braun Medical must carefully cultivate their supply chains to meet those standards and ensure quality.

### **Strategic Procurement**

Globally, B. Braun is the largest privately held medical device company and 15th largest among all medical device companies in the world. B. Braun is best known as a market leader in regional



anesthesia as well as a supplier of a full-line of IV therapy products including IV solutions, drug delivery systems, vascular access devices and infusion pumps.

B. Braun Medical is the only company Stammer has worked for during his career. He started with the company directly out of college 38 years ago when it was known as Burron Medical Inc. Stammherr has taken on a number of positions that supported the company's growth, including overseeing the implementation of IT systems, construction projects and serving on the transition team that integrated McGaw, a manufacturer of intravenous solutions, that B. Braun Medical purchased in 1997.

The biggest challenge came in 2001 when Stammherr was asked to build a strategic procurement organization from the ground up. Stammherr was tasked with consolidating all of B. Braun Medical's procurement functions under one department, which he ran for eight years. After successfully implementing this strategic procurement group, Stammherr spent the next three years as the head of supply chain, which included strategic procurement, scheduling, distribution and transportation. B. Braun Medical identified a need for earlier supplier identification in conjunction with R&D innovation and stronger supplier management in commodity groups such as resins, packaging materials and active pharmaceutical ingredients.

The team sources all raw materials and most indirect materials used in B. Braun Medical's products, identify and manage suppliers, and negotiate and ensure compliance to all of B. Braun Medical's supplier contracts.

### ***Enterprise Initiative***

At the same time, B. Braun Medical has heightened its supplier focused efforts, the company is moving from transactional relationships with its customers to a more collaborative engagement. The hospital industry is shifting the healthcare model from treatment to prevention and basing critical buying decisions on patient outcomes. Hospitals are looking for suppliers to function as holistic partners that can help them improve overall care and reduce costs.

B. Braun Medical was among the first medical device manufacturers to embrace this change. The company engaged in an innovative program with St. Luke's University Health Network, a nine-hospital network with 300 outpatient sites based in Pennsylvania, which prioritized its products

roles in addressing patient outcomes. This collaborative program is known as B. Braun's Enterprise Initiatives and it has fundamentally changed the way it approaches clients.

### *Supplier Development*

Staying ahead of the curve means knowing what's coming. Understanding the commercial interactions with St. Luke's University Health Network provides B. Braun's procurement and R&D teams with a better understanding of the types of products customers will need in the future.

That enables strategic procurement to begin identifying potential sources for materials before the product development process even begins. "If we want to be quick to market with our products, we don't want to be sourcing materials at the time when we need to begin developing the product," Stammherr notes. "We want to be out ahead looking at quality suppliers.

Getting those suppliers in place early speeds up the first stages of product development and ultimately shortens

B. Braun Medical's go-to-market timeframe. It's a true example of strategic procurement at work. Stammherr has a team that is commodity-focused and their work makes a big difference across B. Braun's North American operations. The company's five manufacturing facilities place the actual orders against agreements negotiated by the strategic procurement group.

Finding a reliable source for new materials is a multi-step process. B. Braun Medical first evaluates its existing supplier base and potential new suppliers to see if any of them are capable of developing and producing the materials. Once it narrows down its list to the suppliers that are capable, B. Braun Medical does a sourcing initiative to solicit quotes. They also perform an in-depth financial analysis of the companies to ensure their stability. Finally an audit is performed to evaluate the company and their systems and procedures. Company representatives will also visit the suppliers' facilities and meet with key leadership and discuss their business.

The strategic procurement team leads the overall process, but R&D, legal, finance and other departments strongly participate in the review. "It's a cross-functional effort. We're working in a heavily regulated industry so we need to make sure there are no surprises down the road." B. Braun Medical's quality team also performs quality reviews and audits to ensure their independent approval of all suppliers.

Once a supplier is approved, B. Braun Medical requests sample materials and performs a product evaluation. If the product meets specifications and the total cost of ownership is favorable, B. Braun Medical will enter into a multi-year supply agreement.

### ***Staying Ahead***

Managing those supplier relationships requires good tools. B. Braun Medical's next big investment will be in SAP enhancements, including an end-to-end automated system that integrates the buying process across entire organizations and delivers insight into millions of suppliers across direct and indirect spend categories.

Keeping up to date on technology is not only important to B. Braun Medical's internal systems, it's a requirement for suppliers as well.

### ***WAYS TO IMPROVE SUPPLY MANAGEMENT OF B.BRAUN***

According to the Council of Supply Chain Management Professionals, the cost of B.BRAUN logistics is over millions a year. The financial health of B.BRAUN depends on networks of smoothly running supply chains. One of the best ways to improve your supply chain strategy is through utilizing ERP (Enterprise Resource Planning) software. Below are the different ways that ERP software can increase your business profits and efficiency while reducing costs and wastes.

#### ***1. Automatic Purchasing***

Continually monitoring inventory levels takes up too much time. Newer ERP systems with Supply Chain Management (SCM) functionality feature automated purchasing. This means that the ERP software can be programmed to automatically place orders with vendors when inventory levels drop below a certain level. A critical part of any supply chain strategy is being able to preemptively maintain inventory levels. Automatic purchasing will free up employees to concentrate on other important duties.

## ***2. Standardize***

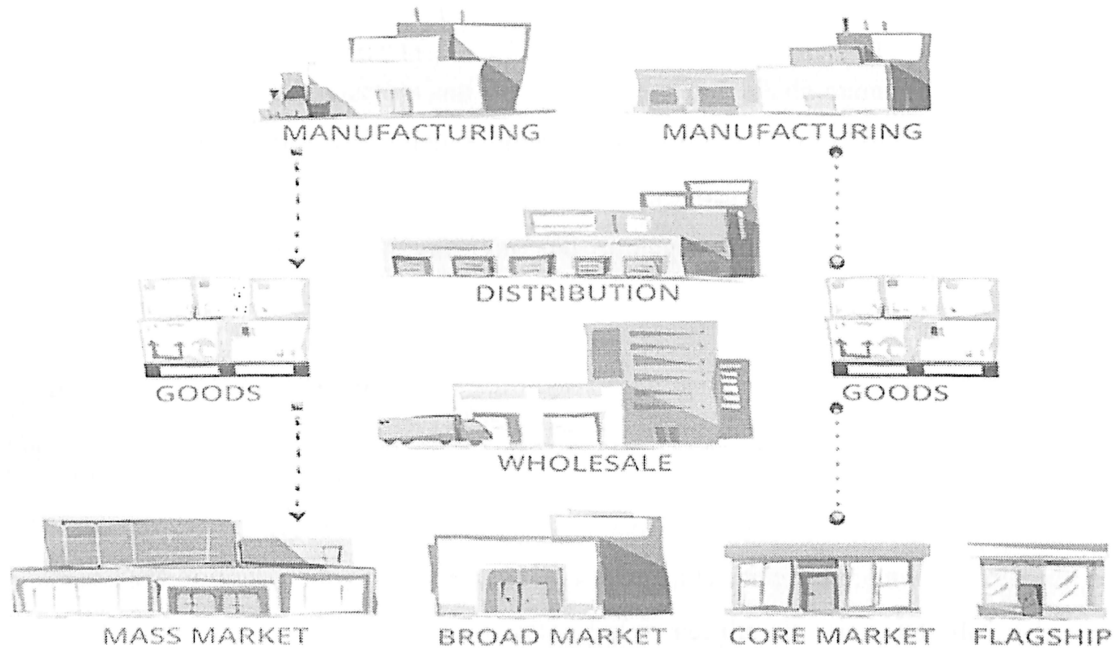
Process standardization is central to the success of any supply chain strategy. Having a standardized ERP system will increase efficiency while saving time and money. Another benefit is that employees will share a standardized system of tools, which will increase accuracy, encourage teamwork and reduce miscommunication.

## ***3. Increase Transparency***

Waste, mistakes and even fraud are permanent supply chain strategy problems that can be fixed with the right ERP system. One of the biggest problems of inventory management is reconciling the software numbers with a physical inventory count. There are always products or units that are forgotten about or simply disappear. Increasing internal SCM transparency is critical to reducing unexplained inventory and financial losses.

## ***4. Gain Data Insight***

Decision making for your supply chain strategy depends on accurate and timely data and information. Having real-time reports available at all times will provide valuable insight into the supply chain health of your manufacturing business. ERP software allows both users and management to be able to instantly access inventory, purchasing and production data for critical decision-making purposes.



**Figure No. 1.3: Supply Chain Strategy**

**5. Real-Time Inventory Management**

Traditional inventory management involves the overuse of spreadsheets and hand checked lists. However, modern ERP software offers inventory features that provide real-time visibility of exact inventory levels. In addition to this, traditional inventory management software has limited scalability, while modern ERP software has unlimited flexibility that will match your businesses' growth and unique needs.

**6. Monitor Vendor Performance**

A smoothly running supply chain system depends on outstanding vendor performance. Therefore, vendor performance needs to be monitored and rated through robust metrics available through ERP systems. With a few clicks of a mouse, management can review vendor cycle times and error rates. This data is invaluable during vendor re-negotiations.

### ***7. Raise Cost Awareness***

There are many uncontrollable factors and variables with supply chain management. As a result, different managers along the supply chain often are unaware of each other's expenses. Having centralized financial data pinpoints exactly when and where the organization spends money. This will encourage cost related communication and strategies for consolidating expenses and streamlining processes.

### ***8. Improve Returns Management***

Every solid supply chain strategy needs an efficient returns management system. Manufacturers must be able to effectively handle returns so they can quickly re-process or re-manufacture returned products or units. Many manufactures understandably focus on continually moving new products out the door and therefore, returns often fail to get the attention they deserve. Being able to better manage returns will reduce waste and identify consistent product problem factors.

### ***9. Just-in-time (JIT)***

ERP systems naturally work well with both just-in-time manufacturing and JIT Inventory Management to decrease inventory costs and increase inventory turn around. As a result, there will be less overhead costs and order fulfillment communication mistakes. Operate at the optimal inventory levels and reduce warehouse costs.

### ***10. Streamline Accounting***

ERP systems are often integrated with different business areas, such as HR, management and finances. An ERP system will reduce excessive paperwork and invoice mix-ups. In addition to this, ERP systems are integrated with Electronic Data Interchange (EDI) and Electronic Funds Transfers (EFT), which will drastically reduce payment processing administration and associated wait times.

### **1.3. PURPOSE OF THE STUDY:**

Supply chain management practices circumscribe perspectives and practices that effectively help all suppliers, manufacturers, distributors and consumers achieve their long-term performance objectives. Similarly, the purpose of the study is to identify the downsides of B. Braun which inhibits their growth and give ways to improve supply chain performance of B. Braun.

### **1.4 RESEARCH HYPOTHESES:**

#### ***Hypothesis 1:***

- **H0:** No changes observed in supply chain management after executing ERP (Enterprise Resource Planning) software.
- **H1:** Changes have been observed in supply chain management after executing ERP (Enterprise Resource Planning) software.

#### ***Hypothesis 2:***

- **H0:** No working strategies of supply chain management department on the basis of the current programs help the organization towards inclusive growth
- **H1:** Working strategies of supply chain management department on the basis of the current programs help the organization towards inclusive growth

#### ***Hypothesis 3:***

- **H0:** There is no support from the suppliers in solving the issues of industry and involvement in standardizing supply chain practices and operations.
- **H1:** There is support from the suppliers in solving the issues of industry and involvement in standardizing supply chain practices and operations.

#### ***Hypothesis 4:***

- **H0:** There are no significant activities and programming strategies helps in the production process of B. Braun.
- **H1:** There are significant activities and programming strategies helps in the production process of B. Braun.

## CHAPTER-2

### LITERATURE REVIEW

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#### **2.1 REVIEW AREA NARROW**

##### ***Introduction***

**R. Dubey et al. (2018).**The purpose of this paper is to examine when and how organizations create agility, adaptability, and alignment as distinct supply chain properties to gain sustainable competitive advantage. The current study utilizes the resource-based view (RBV) under the moderating effect of top management commitment (TMC). To test the research hypotheses, the authors gathered 351 usable responses using a pre-tested questionnaire. The statistical analyses suggest that information sharing and supply chain connectivity resources influence supply chain visibility capability, which, under the moderating effect of TMC, enhance supply chain agility, adaptability, and alignment (SCAAA).

**B. B.Flynn et al. (2016).**This article develops a theoretical conceptualization of supply chain uncertainty, based on the foundation provided by contingency theory, classical organization theory, and information processing theory. We develop a theoretical analogy between a supply chain and an organization, then highlight key differences, which leads us to hypothesize that there are three key types of supply chain uncertainty. Micro- level uncertainty is based on the variability of inputs to the technical core of a supply chain, corresponding to the traditional operationalisation of uncertainty in the supply chain and operations management literature. Meso level uncertainty is the lack of information needed by a supply chain member, corresponding to the information processing theory perspective. This is often due to the conflicting pressures of differentiation and interdependence in a supply chain, where members may withhold information that they feel could compromise their interests. Macro- level uncertainty, based on the equivocality construct, is related to unclear and ambiguous situations faced by supply chain members in rapidly changing external environments. We propose that all three types of uncertainty coexist in a supply chain and may interact with each other. Based on contingency theory's focus on alignment of process and structure with the environment, we test the



relationship among supply chain integration (process), centralization, formalization and flatness (organization structure) and the dimensions of uncertainty (environment). Hypotheses are tested using hierarchical regression on data collected from 339 globally distributed manufacturing plants. It reveals that, as hypothesized, micro- level and meso- level uncertainty are positively related to SCI and that macro- level uncertainty is inversely related to it. The organization structure variables of centralization and formalization had a moderating effect, strengthening or reducing the main effects of uncertainty. The results are discussed in terms of their consistency with the theoretical foundation, implications for decision makers facing supply chain uncertainty and future research opportunities.

**F.Jia et al. (2019).**Sustainable Supply Chain Management (SSCM) has been considered increasingly important by both industry and academia in recent years. Among the main streams of SSCM research, little is known on how multi-national corporations (MNCs), assuming leadership in their supply chain, have been able to facilitate their supply chain members to learn sustainability practice in an emerging economy context. To answer this research question, a multiple-case study was designed. Multi-tier supply chains of three MNCs were selected to investigate their proactive sustainability projects in China. A framework was proposed based on the constructs of supply chain leadership, multi-tier supply chain governance, multi-tier supply chain structure and supply chain learning. We found that the combined effect of supply chain leadership and governance mechanisms affects both supply chain structure and supply chain learning and MNCs change their supply chain structure to facilitate supply chain learning. Three sets of propositions are advanced and implications for future research are elucidated.

## **2.2 REVIEW AREA BROAD**

### ***Importance of Supply Chain in Pharmaceutical Companies***

**A.Moosivand et al. (2019).**In today's competitive market environment, pharmaceutical companies have learned that improving supply chain performance is critical to maintain competitive advantages. Forecasting, planning, procurement, financing, stock levels, and marketing strategies are some of the areas in which managers have to decide about them and balance their enter-related effects simultaneously, to achieve organizational goals. This study is

based on the results of literature review, experts' opinion acquisition, and qualitative system dynamics modeling. So, according to method, triangular researches have been considered. The purpose of this research is to explore pharmaceutical supply chain (PSC) challenges and the dynamics behavior of variables playing a special role in PSC. Also, it provides different policies to overcome the challenges. For the first step to reach this goal, several semi-structured interviews with expert supply chain managers are conducted to explore the main challenges. Inaccuracy in forecasting, long lead times, lack of optimum target inventory, and high SC costs are the most important PSC problems. Then, qualitative system dynamics methodology is used to demonstrate the inter-relationship between variables that have impact on challenges. Finally, three strategic policies are recommended including: Collaborative relationship with suppliers, Investment in new technologies, and Information technology (IT) establishment. Consequently, the results can give PSC managers a comprehensive view for decision making and bringing their attention to the importance of feedback behavior of variables in long term and their effects on organizational decisions and goals.

**K. Sahu & A. K. Sahu (2019).**Pharmaceuticals companies manufacture and maintain the stocks of several medicines. Presently, hospitals maintain stock to supply the appropriate medicine to patients under their care. The availability of medicines is dependent on the service level of suppliers. In last decade, the pharmaceutical supply chains have been an increasingly important topic. Pharmaceutical supply chains of the medicine manufacturing firm are based on traditional supply chain strategies. But, the concept became obsolete, replaced by modern supply chain strategy. The modern supply chain better analyzes pharmaceutical architectures such as green, service, agile, resilient, flexible manufacturing and is called the pharmaceutical G-F-A-L-R supply chain. To evolve a new model for the pharmaceutical supply chain, a 2nd second level pharmaceutical hierarchy G-F-A-L-R supply chain module structure has been constructed, where a Fuzzy Performance Index model has been applied on the module to compute the overall performance of individual pharmaceutical companies.

**K. Sahu, &S. Kohli (2019).**It is observed that the pollution of hospitals is escalated due to the propagation of diseases across the world. The medicine production companies are known as pharmaceutical companies; reserve the different kinds of drug stocks to be supplied to their partners. It is investigated that presently, the patient deaths are hiked due to the delay in drug

delivery to hospitals by pharmaceutical companies. It became necessary for pharmaceutical companies to map own supply chain practices, so that the death cases of patients can be eliminated. Pharmaceutical companies are seeking the decision support model with computing technique, which can improve their future performance. The authors propose a model which includes sustainable practices i.e., green, agile, resilient, flexible delivery of medicines. This proposal model is value-added with a weak and strong sustainable practices identification technique. This research deals with an application of a fuzzy-based Incentre of Centroid technique on proposed sustainability and is an assessment model for identifying the ill and strong chief indices, so that pharmaceutical companies can improve performance. An empirical research case of a pharmaceutical firm is presented to exhibit the real-life application of the research work.

**N. Trokanas&J. S. Srail (2017).**Pharmaceutical supply chains are becoming increasingly intricate and more and more vital for all actors of the supply chain. From suppliers and pharmaceutical companies to healthcare providers and patients, the benefits stemming from an integrated supply chain are numerous. This paper presents an ontological infrastructure aiming to facilitate end to end supply chain integration.

### **2.3. FACTORS CRITICAL TO SUCCESS OF STUDY**

**R. B. D. Silva&C. A. D. Mattos (2019).**The general objective of this study was to identify and prioritize the critical success factors required for the adoption of a system to create value for pharmaceutical supply chain stakeholders, and the pharmaceutical supply network as a whole, by using a multi-perspective framework that combines elements of the technology–organization–environment (TOE) contexts for enterprises. The methodology is based on a literature review and expert interviews following the analytic hierarchy process (AHP). This paper identifies and prioritizes 18 critical success factors from three categories: technological, organizational, and environmental. From a practical point of view, this research contributes to the literature by providing expert insight on the topic of drug traceability, especially in terms of how possible values can be captured by companies.

**A. Abedini et al. (2019).** In our country because of the security of production and distribution of medicine, Pharmaceutical producers and distributors are known for profitability. The weaknesses in this industry include low productivity in the raw material supply, inefficiency in Pharmaceutical distribution and increasing corporate finance costs. Therefore, the purpose of this research is to identify and prioritize the critical success factors in SCM and distribution of the pharmaceutical industry in the country to provide effective decision making in this field.

The research consists of two phases of library and surveying. In the first phase, by searching in scientific databases, CSFs in the supply chain and distribution were identified and were categorized in 25 dimensions. Based on the Pareto principle 9 dimensions out of 25 divided dimensions became the pairwise comparison in DEMATEL method to determine the impact and effectiveness. The statistical Society of this research is pharmaceutical producers and distributors in 2018. We have used 13 experts in marketing, SCM, and distribution of pharmaceuticals companies as samples. For data analysis, Excel and MATLAB software were used. Senior management commitments, use of information technology and government intervention were the first three influential factors and processes, service quality and trust were the first three effective factors. Also, the most challenging factor was the senior management commitment and the least interactive factor was government intervention. Managers can not consider all the factors; they should invest in influential and challenging factors.

**E. García-Villarreal et al. (2019).** This paper investigates Critical Success Factors that affect the performance of organizations involved in Medical Technology supply chains (MTSCs) in Germany. The Medical Technology sector in Germany is considered an innovative, fast-growing and promising industry, being third behind the USA and China as the biggest market in the world, worth 29.9 billion euros in 2017. MTSCs in this country are under pressure from health service funding and cheaper imports, primarily from China. Consequently, supply chain success is of high importance and OEM operational improvements are critical. This exploratory study involved a multiple case study approach where 15 OEMs within German MTSCs were investigated. Following within-case and cross-case analysis, empirical results led to the development of testable propositions, which constitute a foundation for further research investigation. The findings show that there are six, prioritized Critical Success Factors for MTSCs that include *sales and operations planning*, *product development process* and *quality*

*and compliance.* These findings challenge existing assumptions about Critical Success Factors within MTSCs, providing practitioners with strategies showing that re-prioritized CSFs should improve the operational performance of OEMs.

**A.Mishra et al. (2020).** Indian pharmaceutical industry is witnessing enormous challenges due to varying patent laws, increasing demand, and continuous pressure from the government to provide medicines at a lower price. To overcome these challenges, there is a need for a more robust supply chain (SC) which will help in information sharing and reduce overall cost. The chapter determines the key drivers of Indian pharmaceutical SC, and draws the attention of industry, stakeholders, and top management to emphasise on these drivers to enhance the performance and profitability of SC. An interpretive structural modelling-based approach has been employed to model the pharmaceutical SC key drivers. The 16 key parameters have been identified across all major dimensions such as SC, HR, & organizational, market, technology, and reverse logistics. Further fuzzy MICMAC analysis is done to categorize based on their driving and dependence power. The factors like collaborative relationship among SC partners, quality regulations, third party logistics, and end-to-end responsive SC are found to be more important enablers.

## **2.4. SUMMARY**

The review of literature presents the theoretical perspectives given by authors which is divided into three sections; first is introduction which presents how organization create agility, adaptability, and alignment as distinct supply chain properties to gain sustainable competitive advantage.

Secondly, literature presents the importance of supply chain in pharmaceutical companies and last one consider the critical success factors of supply chain in pharmaceutical companies which has adopted the different measures to run the effective supply chain management.

## CHAPTER3

### RESEARCH DESIGN, METHODOLOGY AND PLAN

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A research design is purely and simply the basic frame work or plan for study that guides the collection and analysis of the data. The researcher adopted the descriptive and comparative research design in the collection and analysis of the data.

#### **3.1 DATA SOURCES**

To complete the objectives for the study, both primary and secondary data adopted for the study.

##### ***Primary data***

It refers to that data which has been obtained by the researcher directly from the respondents for specific research work."

Primary data is collected from the suppliers of B. Braun to examine the downsides of the company and growth after executing the current working strategies. Structures questionnaire method used for the collection of information.

- A "**questionnaire**" is the most general method of data collection. The procedure may seem very easy because after having a "sample or a focus group, we simply ask the questions and record the answers". The hard part is finding the "perfect group and questions". To ask questions, "we can use our survey, which can be completed online or in a personal format. Another way of asking questions is through interviews". The main benefit of this data collection method is that we can obtain plenty of data. It will contain 12 questions for the study helps to get conclusion for the study.
- **Interview Procedure** is the tool which helps to know the perceptions of the suppliers on how technology helps to make supply chain management smoother, effective and efficient.

#### **3.2 RESEARCH DESIGN**

As the study, aim to assess the key measure and way to improve supply chain, so the study considers the expressive study design to show the objective of the study.

## ***Methodology***

The section 3 of the study represents the methodology adopted to take up the study. The chapter discusses the sampling methods, sample size selection, methods of information collection, data analysis tools and technique acquired to fulfill the objectives of the study. The detailed description of same is presented in next sections.

### **3.3 INTERVIEW PROCEDURES**

#### ***Sampling Technique and Size***

Sampling refers to the way that observations are selected from a population to be in the sample for a sample survey.

- **Sample size**

The sample related to the present study basically includes the suppliers of B. Braun as 100 sample size; technology implemented to make supply chain management smoother and effective.

- **Sample technique**

Convenience sampling method was used for this research.

### **3.4 DATA ANALYSIS PROCEDURES**

The collected data was analyzed by using SPSS and statistical tests were applied based on hypothesis and matching variables (Karl Pearson's coefficient of correlation).

Data analysis forms the crux of any research, particularly those which involve primary data collection. To analyze the data obtained through the questionnaire, it firstly be coded numerically to prepare the data sheet in MS-Excel. To further analyze the tabulated data, descriptive and inferential statistics was employed. Descriptive statistics refer to a meaningful presentation of data that enables a simpler interpretation of the data. It presents a quantitative description in manageable form. Usually, mean (a common measure of location or central value), Standard Deviation (commonly used measure of spread or dispersion of scores in a distribution or variability) etc., are used to carry out a descriptive analysis. The same was employed in this study. For processing Content analysis, questionnaires were coded and the data was entered in

the latest version of SPSS 21. Interpretation: After completion of all process of the analysis mentioned above, evolving learning from analysis was carefully observed and recorded. The meaning and reflection of categories and the pattern was clearly described. Thus the final result will be recorded for drawing conclusion of the study.

### **Analysis of Data**

Expressive research devise is acquired to reply the questionnaire and complete the study objectives. The tabulation, graphical analysis and single sample t-test are use to watch the role of IT in b2b marketing and branding.

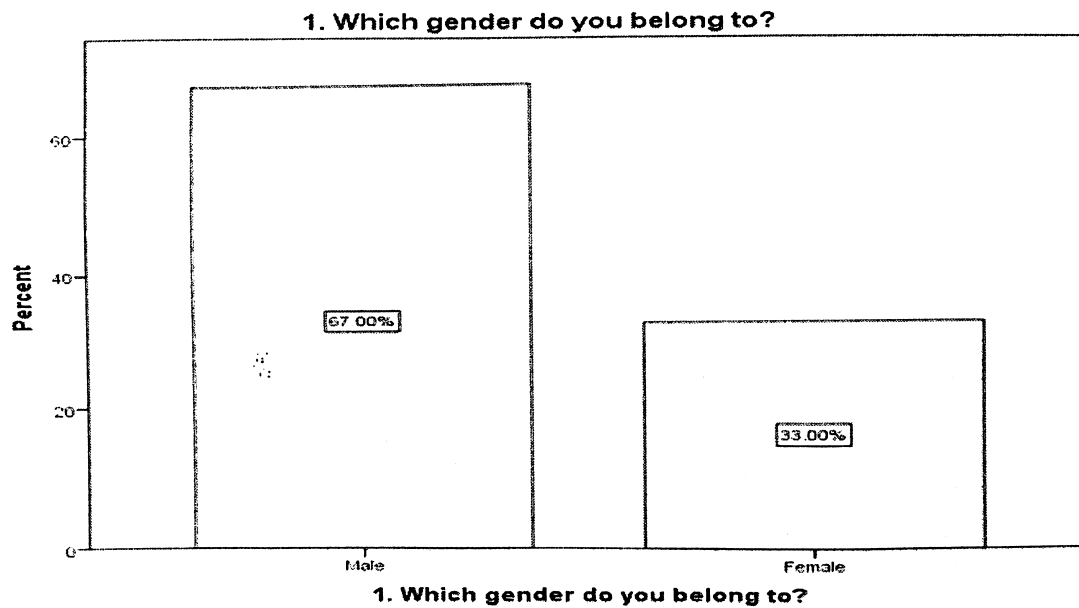


## CHAPTER 4

### FINDING AND ANALYSIS

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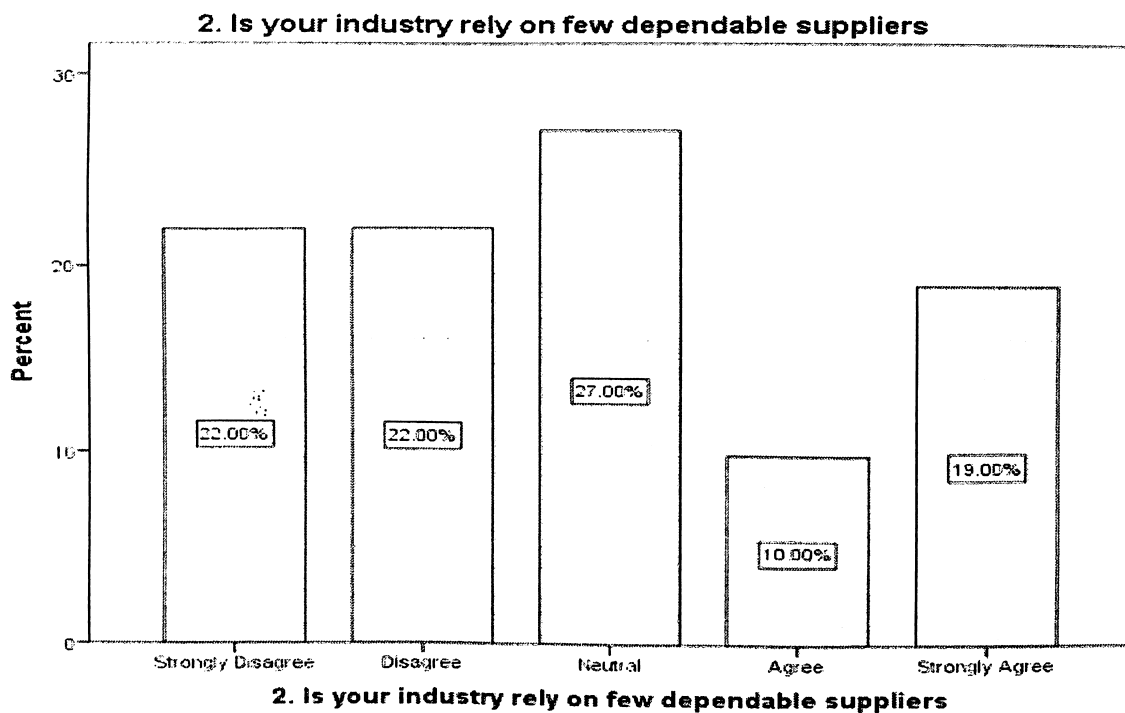
<b>Table No. 4.1. Which gender do you belong to?</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	67	67.0	67.0	67.0
	Female	33	33.0	33.0	100.0
	Total	100	100.0	100.0	



**Figure No. 4.1 Gender**

From the above chart and shape, it is visible that in the sample of 100 respondents, there are 67.00% male respondents while the percentages of female respondents are 33.00%.

Table No. 4.2 Is your industry rely on few dependable suppliers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	22	22.0	22.0	22.0
	Disagree	22	22.0	22.0	44.0
	Neutral	27	27.0	27.0	71.0
	Agree	10	10.0	10.0	81.0
	Strongly Agree	19	19.0	19.0	100.0
	Total	100	100.0	100.0	

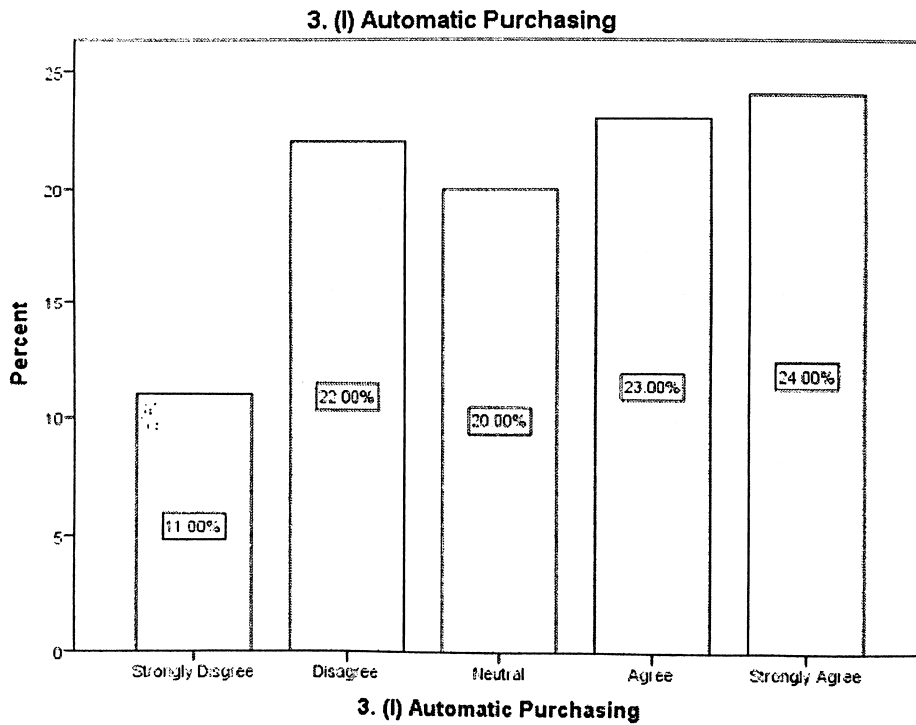


**Figure No. 4.2 Is your industry rely on few dependable suppliers**

From the above chart and number of, it is visible that in the sample of 100 respondents, there are 22.00% respondents are strongly disagree, 22.00% respondents are disagree, 27.00% respondents are neutral, 10.00% respondents are agree, and 19.00% respondents are strongly agree.

**3. Do you agree with the changes observed in supply chain management after executing ERP software in terms of-**

<b>Table No. 4.3 (I) Automatic Purchasing</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	11	11.0	11.0	11.0
	Disagree	22	22.0	22.0	33.0
	Neutral	20	20.0	20.0	53.0
	Agree	23	23.0	23.0	76.0
	Strongly Agree	24	24.0	24.0	100.0
	Total	100	100.0	100.0	



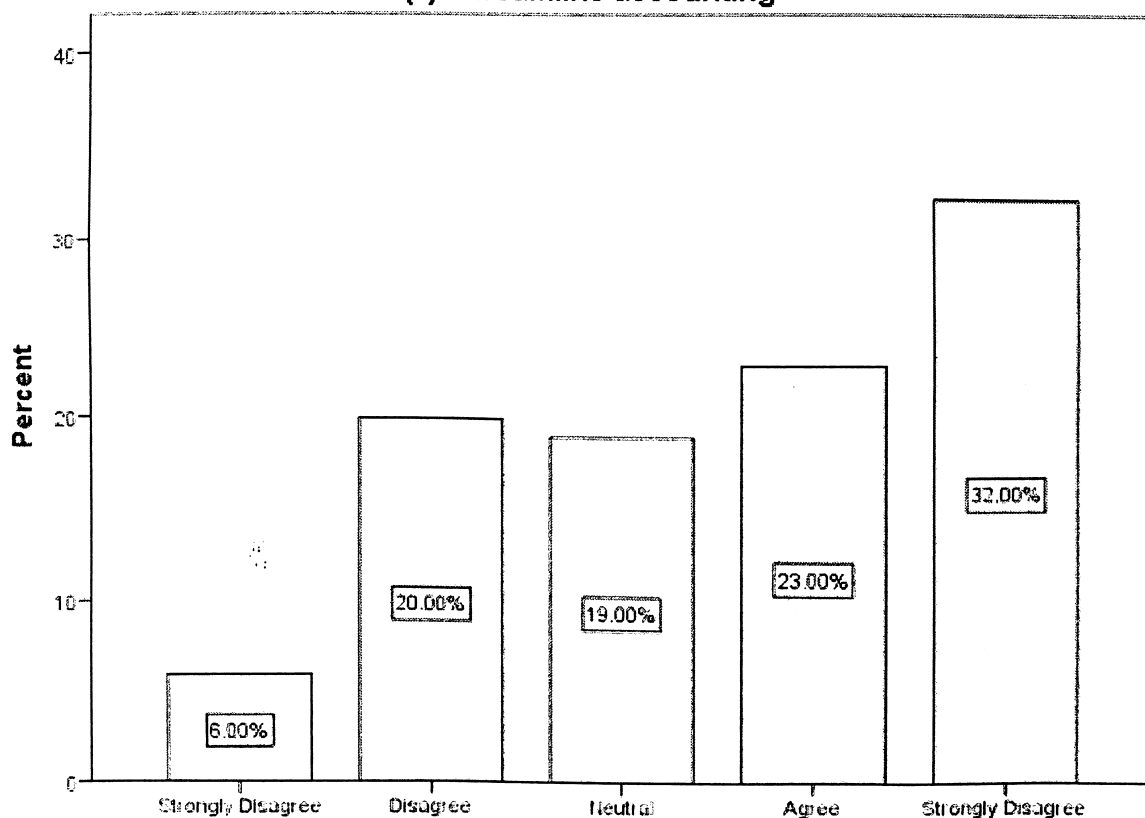
**Figure No. 4.3 (I) Automatic Purchasing**

From the above chart and number of, it is visible that in the sample of 100 respondents, there are 11.00% respondents are strongly disagree, 22.00% respondents are disagree, 20.00% respondents

are neutral, 23.00% respondents are agree, and 24.00% respondents are strongly agree.

<b>Table No. 4.3. (II) Streamline accounting</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	6.0	6.0	6.0
	Disagree	20	20.0	20.0	26.0
	Neutral	19	19.0	19.0	45.0
	Agree	23	23.0	23.0	68.0
	Strongly Disagree	32	32.0	32.0	100.0
	Total	100	100.0	100.0	

**3. (II) Streamline accounting**



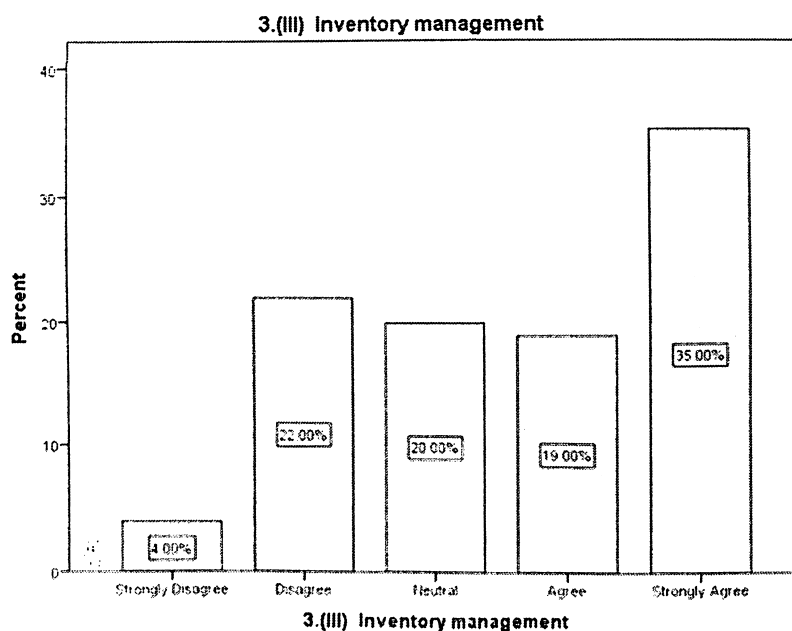
**3. (II) Streamline accounting**

**Figure No. 4.3 (II) Streamline accounting**

From the above chart and number of, it is visible that in the sample of 100 respondents, there are

6.00% respondents are strongly disagree, 20.00% respondents are disagree, 19.00% respondents are neutral, 23.00% respondents are agree, and 32.00% respondents are strongly agree.

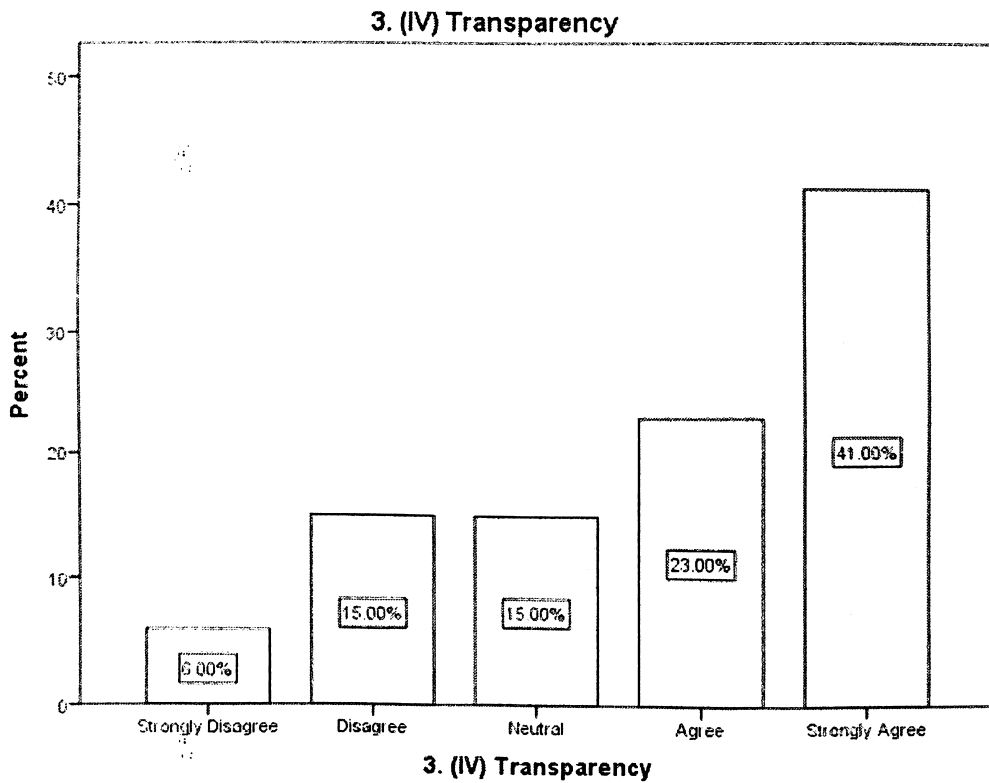
<b>Table No. 4.3. (III) Inventory management</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	4.0	4.0	4.0
	Disagree	22	22.0	22.0	26.0
	Neutral	20	20.0	20.0	46.0
	Agree	19	19.0	19.0	65.0
	Strongly Agree	35	35.0	35.0	100.0
	Total	100	100.0	100.0	



**Figure No. 4.3 (III) Inventory management**

From the above chart and number of, it is visible that in the sample of 100 respondents, there are 4.00% respondents are strongly disagree, 22.00% respondents are disagree, 20.00% respondents are neutral, 19.00% respondents are agree, and 35.00% respondents are strongly agree.

Table No.4.3. (IV) Transparency					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	6.0	6.0	6.0
	Disagree	15	15.0	15.0	21.0
	Neutral	15	15.0	15.0	36.0
	Agree	23	23.0	23.0	59.0
	Strongly Agree	41	41.0	41.0	100.0
	Total	100	100.0	100.0	



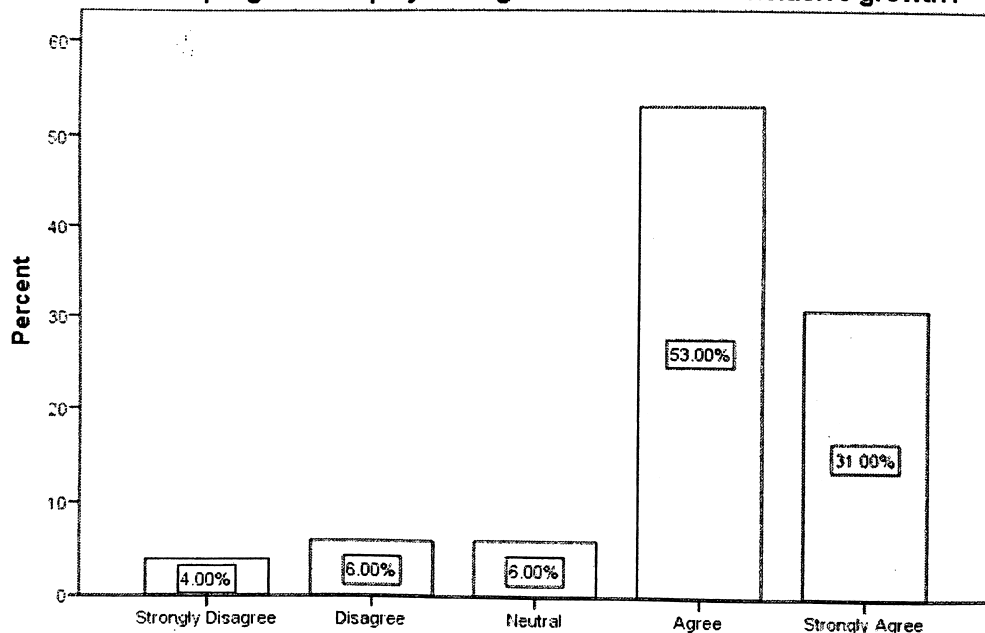
**Figure No. 4.3 (IV) Transparency**

From the above chart and number of, it is visible that in the sample of 100 respondents, there are 6.00% respondents are strongly disagree, 15.00% respondents are disagree, 15.00% respondents are neutral, 23.00% respondents are agree, and 41.00% respondents are strongly agree.

**Table No. 4.4 Are working strategies of supply chain management department on the basis of the current programs helps your organization towards inclusive growth?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	4.0	4.0	4.0
	Disagree	6	6.0	6.0	10.0
	Neutral	6	6.0	6.0	16.0
	Agree	53	53.0	53.0	69.0
	Strongly Agree	31	31.0	31.0	100.0
	Total	100	100.0	100.0	

**4. Are working strategies of supply chain management department on the basis of the current programs helps your organization towards inclusive growth?**



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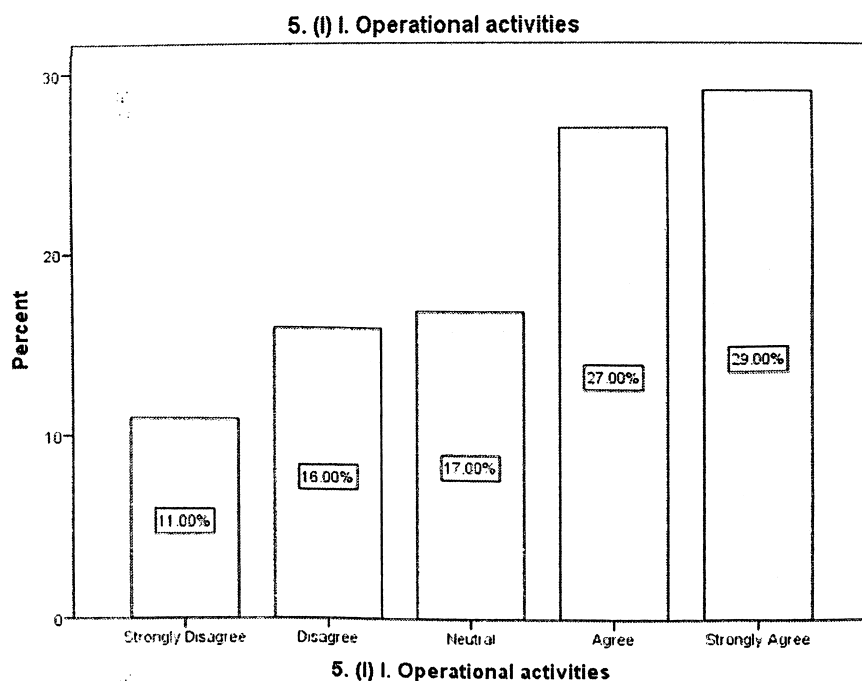
**Figure No. 4.4 The current programs helps your organization towards inclusive growth**

From the above chart and number of, it is visible that in the sample of 100 respondents, there are

4.00% respondents are strongly disagree, 6.00% respondents are disagree, 6.00% respondents are neutral, 53.00% respondents are agree, and 31.00% respondents are strongly agree.

**5. According to the current growth process of the organizations, which of the following help in the production progress?**

Table No. 4.5. I. Operational activities					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	11	11.0	11.0	11.0
	Disagree	16	16.0	16.0	27.0
	Neutral	17	17.0	17.0	44.0
	Agree	27	27.0	27.0	71.0
	Strongly Agree	29	29.0	29.0	100.0
Total		100	100.0	100.0	



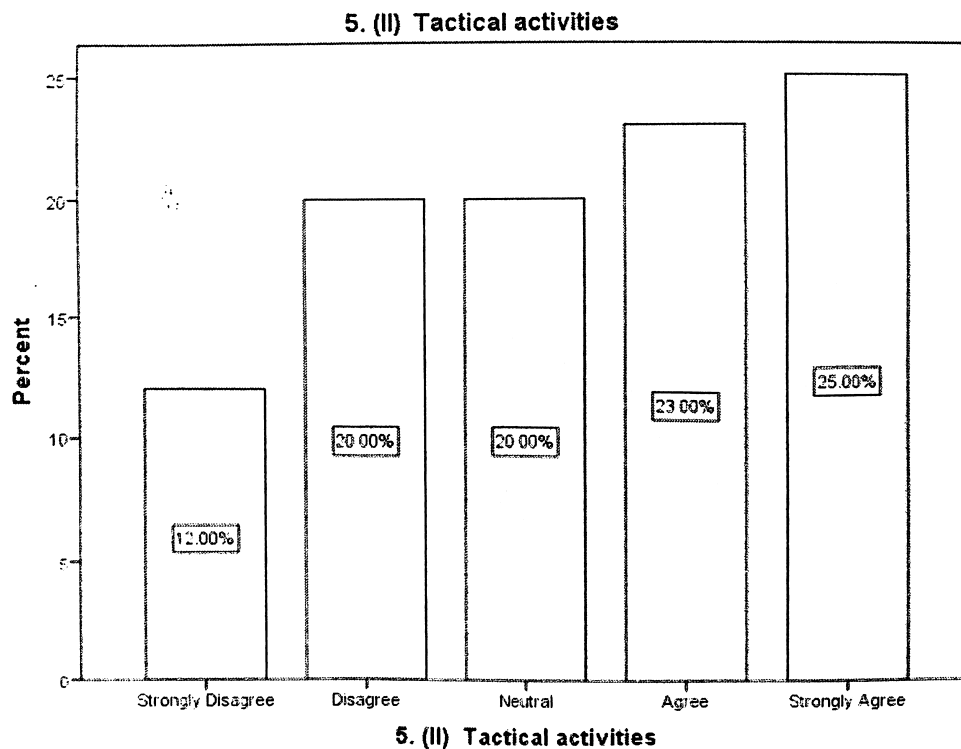
**Figure No. 4.5 (I) Operational activities**

From the above chart and number of, it is visible that in the sample of 100 respondents, there are



11.00% respondents are strongly disagree, 16.00% respondents are disagree, 17.00% respondents are neutral, 27.00% respondents are agree, and 29.00% respondents are strongly agree.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	12	12.0	12.0	12.0
	Disagree	20	20.0	20.0	32.0
	Neutral	20	20.0	20.0	52.0
	Agree	23	23.0	23.0	75.0
	Strongly Agree	25	25.0	25.0	100.0
	Total	100	100.0	100.0	

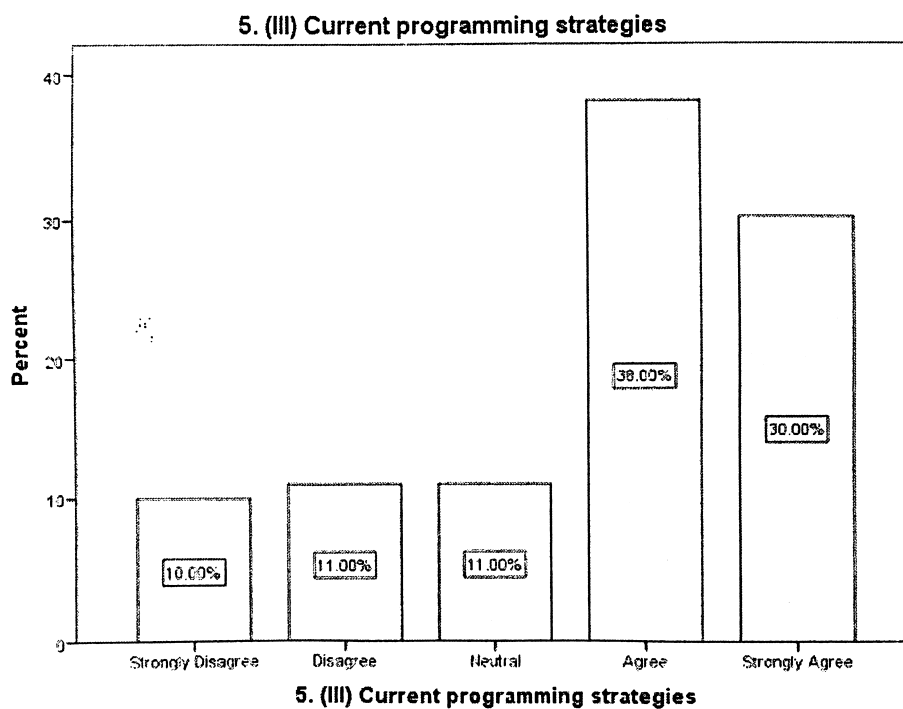


**Figure No. 4.5 (II) Tactical activities**

From the above chart and number of, it is visible that in the sample of 100 respondents, there are

12.00% respondents are strongly disagree, 20.00% respondents are disagree, 20.00% respondents are neutral, 23.00% respondents are agree, and 25.00% respondents are strongly agree.

<b>Table No. 4.5. (III) Current programming strategies</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	10	10.0	10.0	10.0
	Disagree	11	11.0	11.0	21.0
	Neutral	11	11.0	11.0	32.0
	Agree	38	38.0	38.0	70.0
	Strongly Agree	30	30.0	30.0	100.0
	Total	100	100.0	100.0	

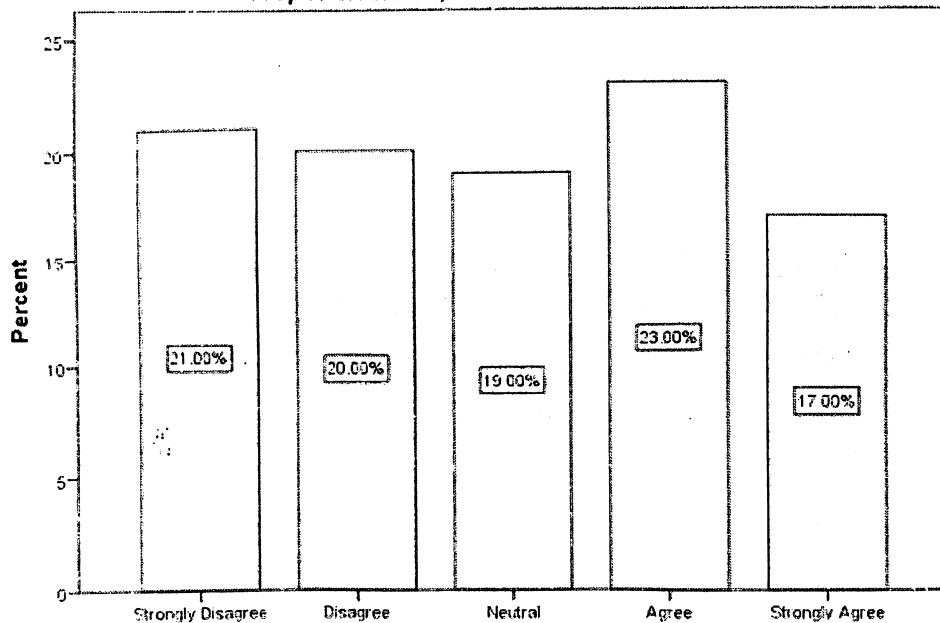


**Figure No. 4.5 (III) Current programming strategies**

From the above chart and number of, it is visible that in the sample of 100 respondents, there are 10.00% respondents are strongly disagree, 11.00% respondents are disagree, 11.00% respondents are neutral, 36.00% respondents are agree, and 30.00% respondents are strongly agree.

<b>Table No. 4.6. Is your industry frequently interacts with customers to set its reliability, responsiveness, and other standards</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	21	21.0	21.0	21.0
	Disagree	20	20.0	20.0	41.0
	Neutral	19	19.0	19.0	60.0
	Agree	23	23.0	23.0	83.0
	Strongly Agree	17	17.0	17.0	100.0
	Total	100	100.0	100.0	

**6. Is your industry frequently interacts with customers to set its reliability, responsiveness, and other standards**



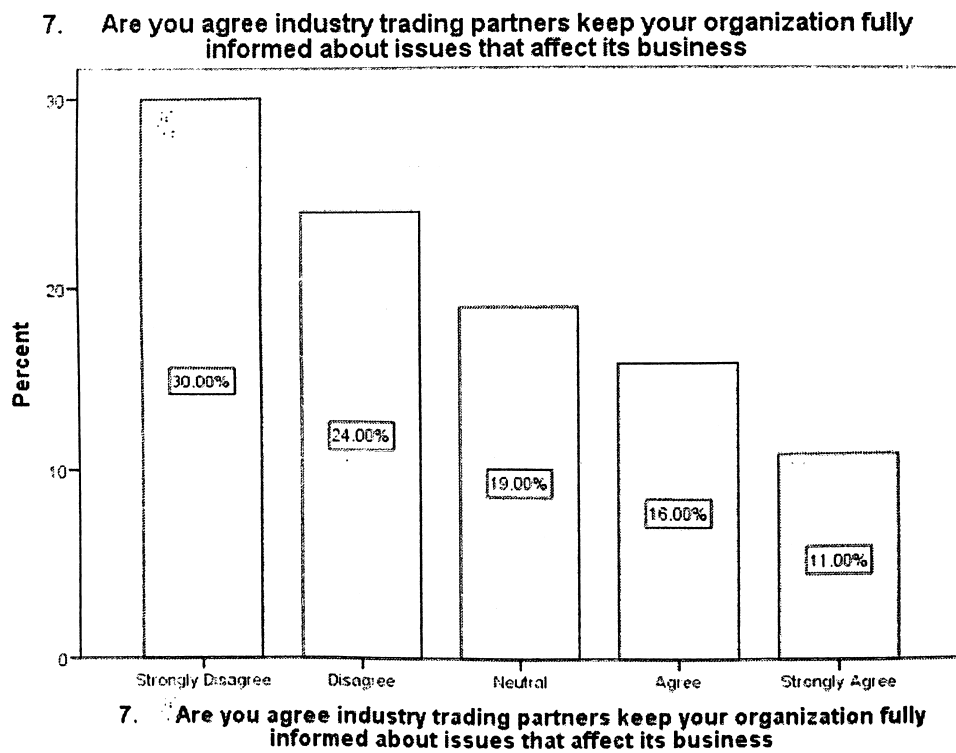
**6. Is your industry frequently interacts with customers to set its reliability, responsiveness, and other standards**

**Figure No. 4.6 Is your industry frequently interacts with customers to set its reliability, responsiveness, and other standards**

From the above chart and number of, it is visible that in the sample of 100 respondents, there are 21.00% respondents are strongly disagree, 20.00% respondents are disagree, 19.00% respondents

are neutral, 23.00% respondents are agree, and 17.00% respondents are strongly agree.

<b>Table No. 4.7. Are you agree industry trading partners keep your organization fully informed about issues that affect its business</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	30	30.0	30.0	30.0
	Disagree	24	24.0	24.0	54.0
	Neutral	19	19.0	19.0	73.0
	Agree	16	16.0	16.0	89.0
	Strongly Agree	11	11.0	11.0	100.0
	Total	100	100.0	100.0	



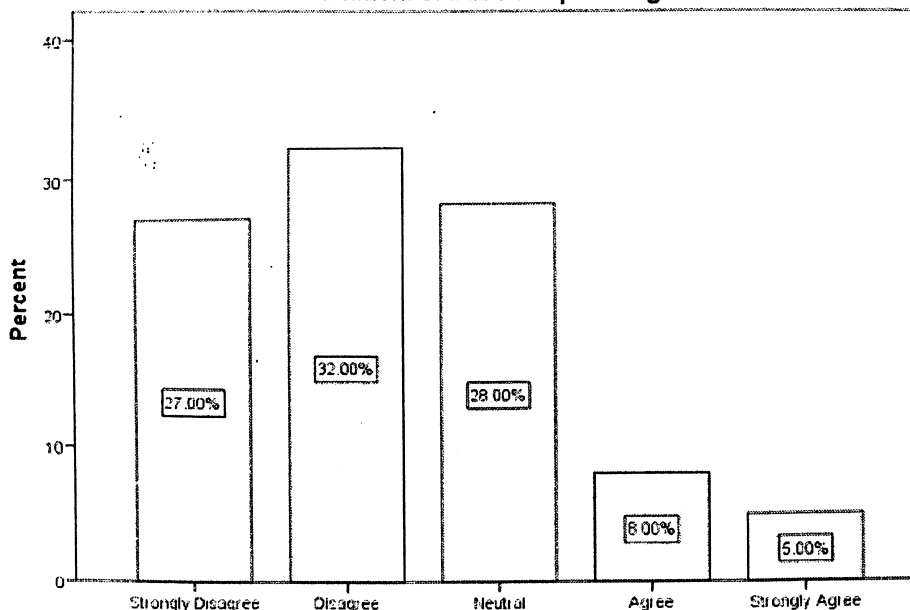
**Figure No.4.7 Are you agree industry trading partners keep your organization fully informed about issues that affect its business**

From the above chart and number of, it is visible that in the sample of 100 respondents, there are 30.00% respondents are strongly disagree, 24.00% respondents are disagree, 19.00% respondents

are neutral, 16.00% respondents are agree, and 11.00% respondents are strongly agree.

<b>Table no. 4.8. Is your industry and its trading partners exchange information that helps establishment of business planning</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	27	27.0	27.0	27.0
	Disagree	32	32.0	32.0	59.0
	Neutral	28	28.0	28.0	87.0
	Agree	8	8.0	8.0	95.0
	Strongly Agree	5	5.0	5.0	100.0
	Total	100	100.0	100.0	

**8. Is your industry and its trading partners exchange information that helps establishment of business planning**

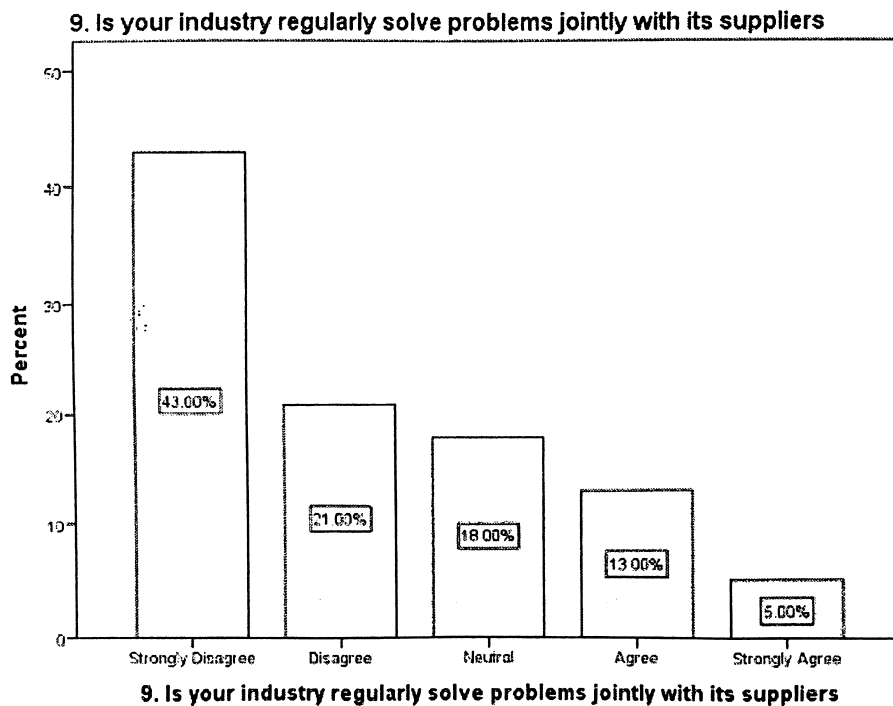


**8. Is your industry and its trading partners exchange information that helps establishment of business planning**

**Figure No. 4.8 Is your industry and its trading partners exchange information that helps establishment of business planning**

From the above chart and number of, it is visible that in the sample of 100 respondents, there are 27.00% respondents are strongly disagree, 32.00% respondents are disagree, 28.00% respondents are neutral, 8.00% respondents are agree, and 5.00% respondents are strongly agree.

<b>Table No. 4.9. Is your industry regularly solve problems jointly with its suppliers</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	43	43.0	43.0	43.0
	Disagree	21	21.0	21.0	64.0
	Neutral	18	18.0	18.0	82.0
	Agree	13	13.0	13.0	95.0
	Strongly Agree	5	5.0	5.0	100.0
	Total	100	100.0	100.0	

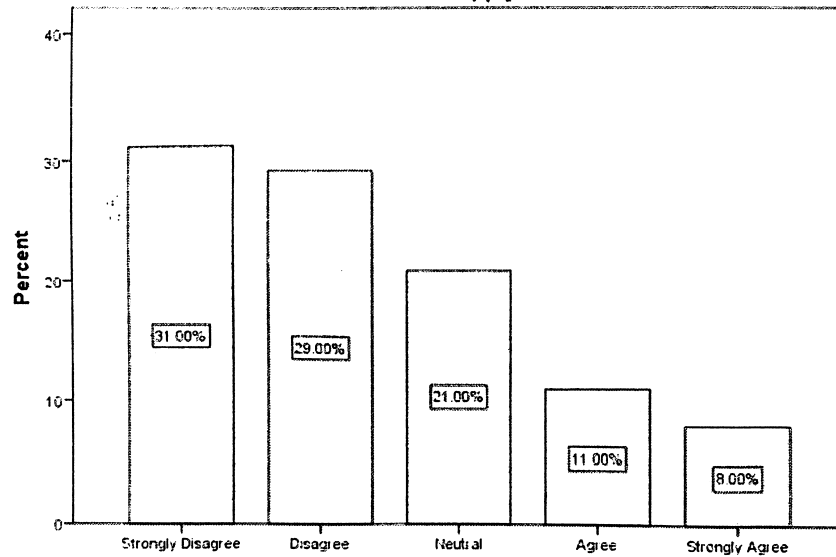


**Figure No. 4.9 Is your industry regularly solve problems jointly with its suppliers**

From the above chart and number of, it is visible that in the sample of 100 respondents, there are 43.00% respondents are strongly disagree, 21.00% respondents are disagree, 18.00% respondents are neutral, 13.00% respondents are agree, and 5.00% respondents are strongly agree.

<b>Table No. 4.10. Are you agree goods are stored at appropriate distribution points close to customers in the supply chain</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	31	31.0	31.0	31.0
	Disagree	29	29.0	29.0	60.0
	Neutral	21	21.0	21.0	81.0
	Agree	11	11.0	11.0	92.0
	Strongly Agree	8	8.0	8.0	100.0
	Total	100	100.0	100.0	

**10. Are you agree goods are stored at appropriate distribution points close to customers in the supply chain**



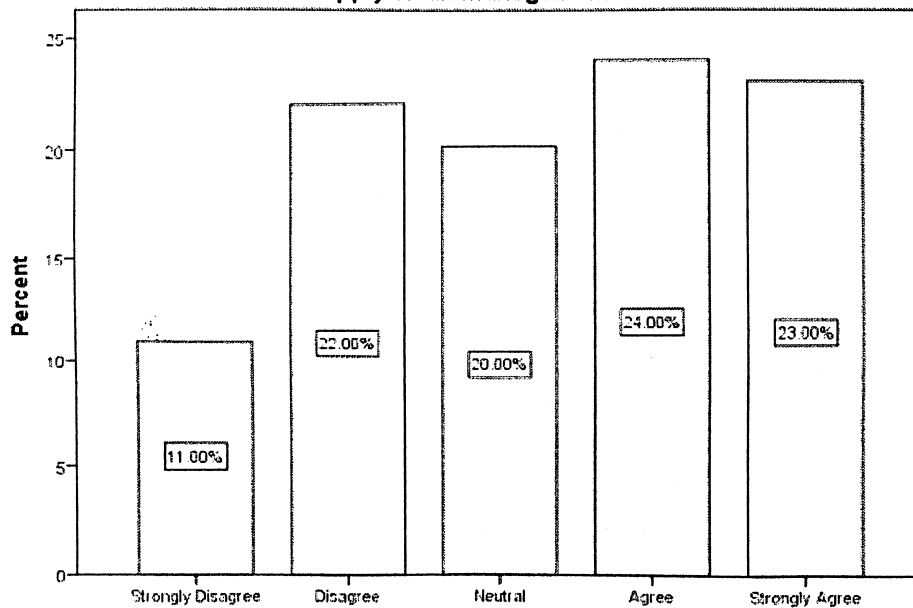
**10. Are you agree goods are stored at appropriate distribution points close to customers in the supply chain**

**Figure No. 4.10 Are you agree goods are stored at appropriate distribution points close to customers in the supply chain**

From the above chart and number of, it is visible that in the sample of 100 respondents, there are 31.00% respondents are strongly disagree, 29.00% respondents are disagree, 21.00% respondents are neutral, 11.00% respondents are agree, and 8.00% respondents are strongly agree.

<b>Table No. 4.11. Are you agree supply chain members have common, agreed to goals for supply chain management</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	11	11.0	11.0	11.0
	Disagree	22	22.0	22.0	33.0
	Neutral	20	20.0	20.0	53.0
	Agree	24	24.0	24.0	77.0
	Strongly Agree	23	23.0	23.0	100.0
	Total	100	100.0	100.0	

**11. Are you agree supply chain members have common, agreed to goals for supply chain management**



**11. Are you agree supply chain members have common, agreed to goals for supply chain management**

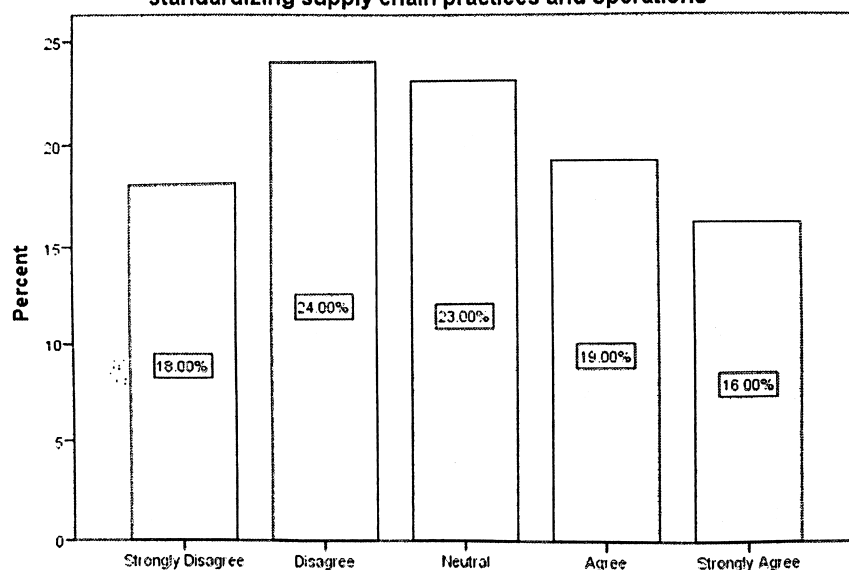
**Figure No. 4.11 Are you agree supply chain members have common, agreed to goals for supply chain management**

From the above chart and number of, it is visible that in the sample of 100 respondents, there are 11.00% respondents are strongly disagree, 22.00% respondents are disagree, 20.00% respondents are neutral, 24.00% respondents are agree, and 23.00% respondents are strongly agree.



<b>Table No. 4.12. Are you agree with supply chain members are actively involved in standardizing supply chain practices and operations</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	18	18.0	18.0	18.0
	Disagree	24	24.0	24.0	42.0
	Neutral	23	23.0	23.0	65.0
	Agree	19	19.0	19.0	84.0
	Strongly Agree	16	16.0	16.0	100.0
	Total	100	100.0	100.0	

**12. Are you agree with supply chain members are actively involved in standardizing supply chain practices and operations**



**12. Are you agree with supply chain members are actively involved in standardizing supply chain practices and operations**

**Figure No. 4.12 Are you agree with supply chain members are actively involved in standardizing supply chain practices and operations**

From the above chart and number of, it is visible that in the sample of 100 respondents, there are 18.00% respondents are strongly disagree, 24.00% respondents are disagree, 23.00% respondents are neutral, 19.00% respondents are agree, and 16.00% respondents are strongly agree.

### Hypothesis 1

**H0:** There is no significant impact effect on automatic purchasing in supply chain management after executing ERP software.

**H1:** There is a significant impact effect on automatic purchasing in supply chain management after executing ERP software..

In order to test the above hypothesis, the one sample t-test is computed. The results of same are reported in following table.

From the following table (One sample t-test), the p-value is .000 which is significant at 5% level of significance (as the p-value is less than 0.05). This shows that the null hypothesis of no significant difference will be rejected while we fail to reject the alternative hypothesis of significant differences. Thus the study finds that there is a significant effect on automatic purchasing in supply chain management after executing ERP software.

### One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
3. (I) Automatic Purchasing	100	3.270	1.3398	.1340

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
3. (I) Automatic Purchasing	24.407	99	.000	3.2700	3.004	3.536

## Hypothesis 2

**H0:** There is no significant impact effect on streamline accounting in supply chain management after executing ERP software.

**H1:** There is a significant impact effect on streamline accounting in supply chain management after executing ERP software.

In order to test the above hypothesis, the one sample t-test is computed. The results of same are reported in following table.

From the following table (One sample t-test), the p-value is .000 which is significant at 5% level of significance (as the p-value is less than 0.05). This shows that the null hypothesis of no significant difference will be rejected while we fail to reject the alternative hypothesis of significant differences. Thus the study finds that there is a significant effect on streamline accounting in supply chain management after executing ERP software.

### One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
3. (II) Streamline accounting	100	3.550	1.2900	.1290

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
3. (II) Streamline accounting	27.519	99	.000	3.5500	3.294	3.806

### Hypothesis 3

**H0:** There is no significant impact effect on inventory management in supply chain management after executing ERP software.

**H1:** There is a significant impact effect on inventory management in supply chain management after executing ERP software.

In order to test the above hypothesis, the one sample t-test is computed. The results of same are reported in following table.

From the following table (One sample t-test), the p-value is .000 which is significant at 5% level of significance (as the p-value is less than 0.05). This shows that the null hypothesis of no significant difference will be rejected while we fail to reject the alternative hypothesis of significant differences. Thus the study finds that there is a significant effect on streamline accounting in supply chain management after executing ERP software.

#### One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
3.(III) Inventory management	100	3.590	1.2800	.1280

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
3.(III) Inventory management	28.048	99	.000	3.5900	3.336	3.844

#### Hypothesis 4

**H0:** There is no significant impact effect on transparency in supply chain management after executing ERP software.

**H1:** There is a significant impact effect on transparency in supply chain management after executing ERP software.

In order to test the above hypothesis, the one sample t-test is computed. The results of same are reported in following table.

From the following table (One sample t-test), the p-value is .000 which is significant at 5% level of significance (as the p-value is less than 0.05). This shows that the null hypothesis of no significant difference will be rejected while we fail to reject the alternative hypothesis of significant differences. Thus the study finds that there is a significant effect on transparency in supply chain management after executing ERP software.

#### One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
3. (IV) Transparency	100	3.780	1.2916	.1292

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
3. (IV) Transparency	29.266	99	.000	3.7800	3.524	4.036

#### Hypothesis 5

**H0:** There is no significant impact effect of operational activities on production progress in supply chain management.

**H1:** There is a significant impact effect of operational activities on production progress in supply chain management.

In order to test the above hypothesis, the one sample t-test is computed. The results of same are reported in following table.

From the following table (One sample t-test), the p-value is .000 which is significant at 5% level of significance (as the p-value is less than 0.05). This shows that the null hypothesis of no significant difference will be rejected while we fail to reject the alternative hypothesis of significant differences. Thus the study finds that there is a significant effect of operational activities on production progress in supply chain management.

### One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
5. (I) Operational activities	100	3.470	1.3518	.1352

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
5. (I) Operational activities	25.669	99	.000	3.4700	3.202	3.738

## Hypothesis 6

H0: There is no significant impact effect of tactical activities on production progress in supply chain management.

H1: There is a significant impact effect of tactical activities on production progress in supply chain management.

In order to test the above hypothesis, the one sample t-test is computed. The results of same are reported in following table.

From the following table (One sample t-test), the p-value is .000 which is significant at 5% level of significance (as the p-value is less than 0.05). This shows that the null hypothesis of no significant difference will be rejected while we fail to reject the alternative hypothesis of significant differences. Thus the study finds that there is a significant effect of tactical activities on production progress in supply chain management.

### One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
5. (II) Tactical activities	100	3.290	1.3581	.1358

One-Sample Test						
	Test Value = 0					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
5. (II) Tactical activities	24.226	99	.000	3.2900	3.021	3.559

## Hypothesis 7

**H0:** There is no significant impact effect of current programming strategies on production progress in supply chain management.

**H1:** There is a significant impact effect of current programming strategies on production progress in supply chain management.

In order to test the above hypothesis, the one sample t-test is computed. The results of same are reported in following table.

From the following table (One sample t-test), the p-value is .000 which is significant at 5% level of significance (as the p-value is less than 0.05). This shows that the null hypothesis of no significant difference will be rejected while we fail to reject the alternative hypothesis of significant differences. Thus the study finds that there is a significant effect of current programming strategies on production progress in supply chain management.

### One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
5. (III) Current programming strategies	100	3.670	1.2875	.1288

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
5. (III) Current programming strategies	28.505	99	.000	3.6700	3.415	3.925



## **CHAPTER-5**

### **INTREPRETATION OF RESULTS**

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#### **5.1 FINDINGS:**

In this analysis found that most of the respondents are male candidate and also found that most of the respondents are agreed with industry rely on few dependable suppliers. According to this analysis observed that most of the industries used are automatic purchasing, Streamline accounting, Inventory management and Transparency and also observed that also found that most of the respondents are agreed with working strategies of supply chain management department on the basis of the current programs helps your organization towards inclusive growth.

According to this analysis clear that most of the industries used are Operational activities, Tactical activities and Current programming strategies and also clear that, most of the respondents are agreed with industry frequently interacts with customers to set its reliability, responsiveness, and other standards.

In this study show that, most of the respondents are agreed industry trading partners keep their organization fully informed about issues that affect its business and also found that most of the respondents are agreed with industry and its trading partners exchange information that helps establishment of business planning.

According to this found that, most of the respondents are agreed with industry regularly solve problems jointly with its suppliers and also found that, most of the respondents are agreed goods are stored at appropriate distribution points close to customers in the supply chain.

In this study visible that, most of the respondents are agreed with supply chain members have common, agreed to goals for supply chain management and also visible that, supply chain members are actively involved in standardizing supply chain practices and operations.

## CHAPTER-6

### CONCLUSIONS AND SCOPE FOR FUTURE WORK

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#### **6.1 CONCLUSION:**

Supply Chain Management (SCM) involves joint collaboration between outsourcing partners, suppliers, and customers. It comprises the transformation of goods from raw materials through to the delivery of the finished product; it also includes the management of key information flows. SCM involves the integration of these activities and aims to improve relationships between the various parties, while achieving a sustainable competitive advantage through high quality and lower cost products. SCM is closely linked with enterprise resource planning (ERP) and electronic commerce systems.

Future supply chains are likely to be more dynamic in nature, and consist of collaborative value networks in which productivity and efficiency are constantly maximized. Purchasing firms need to ensure that costs and risks are equitably shared across the supply chain. Risk management has become a strategic imperative – particularly for manufacturers operating global supply chains.

Risk categories include:

- Natural disasters
- Terrorism
- Market risks
- Commodity risks, and
- Transportation risks

Increased security and improved resilience are required to mitigate these risks. Regular testing of infrastructures using simulated disruptions can provide a better understanding of potential issues and possible deficiencies. Organizations that are dependent upon SCM must develop appropriate criteria for the appraisal of supply chain performance, and continuously measure this performance.

## **6.2 SUGGESTIONS:**

The big manufacturing industry has successfully applied material management systems for the last decades and this has been possible by the enabling culture change that exists in this industry. There are movements in the manufacturing sector towards Just in Time (JIT), Total Quality Management (TQM) and enterprise resource planning (ERP), among others, that support the claim that there is an enabling cultural change. Unfortunately, the small scale industry is very resistant to change. The "if it is not broken, don't fix it" attitude is typical in this industry. Implementation of new innovative methods might be difficult in such an environment. However, the industry is being under huge pressure by competition, owners and the market to be more effective, responsive, flexible and to provide more value by reevaluating its methods and processes. Most small scale industries are small business owners who cannot afford to design their own systems. In addition, if every industry is developing their system independently, this would produce many incompatible systems. Standardization and institutionalization of new methods and processes are especially important in the small scale Electrical industry.

It is clear that effective planning is required to keep costs to a minimum and to insure that the material is on site when needed. Poor planning of materials will increase indirect costs associated with delivery and use of materials. In addition, losses in productivity, delays, re-handling, and duplicate orders among other factors can be expected when there is a poor materials management system. The electrical industry need to realize that by improving their material management systems, improvements could be achieved in other areas such as in the effective optimization labor force. The effects of not having material available when needed are could be difficult to measure, but the impact in labor productivity could be noticed and quantified. Indirect labor cost due to absence of materials could be significant. Increases in idle time and/or unproductive time should be expected. Crew members will pretend to be busy even if there is no material to install, which increases the labor cost.

## **6.3 SCOPE OF THE STUDY**

- Monitoring and controlling the activities right from supplier's supplier to customer's customer
- The market change is the driving force which creates disturbance in Indian manufacturing industries.

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## **INTERVIEWER SCRIPT**

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1. Which gender do you belong to?
  - a) Male
  - b) Female
  
2. Is your industry rely on few dependable suppliers
  - a. Strongly Disagree
  - b. Disagree
  - c. Neither Agree nor Disagree
  - d. Strongly Agree
  - e. Agree
  
3. Do you agree with the changes observed in supply chain management after executing ERP software in terms of-
  - I. Automatic Purchasing**
    - a) Strongly Disagree
    - b) Disagree
    - c) Neither Agree nor Disagree
    - d) Strongly Agree
    - e) Agree
  
  - II. Streamline accounting**
    - a) Strongly Disagree
    - b) Disagree
    - c) Neither Agree nor Disagree
    - d) Strongly Agree
    - e) Agree
  
  - III. Inventory management**
    - a) Strongly Disagree
    - b) Disagree
    - c) Neither Agree nor Disagree

- d) Strongly Agree
- e) Agree

**IV. Transparency**

- a) Strongly Disagree
- b) Disagree
- c) Neither Agree nor Disagree
- d) Strongly Agree
- e) Agree

4. Are working strategies of supply chain management department on the basis of the current programs helps your organization towards inclusive growth?

- a. Strongly Disagree
- b. Disagree
- c. Neither Agree nor Disagree
- d. Strongly Agree
- e. Agree

5. According to the current growth process of the organizations, which of the following help in the production progress?

**I. Operational activities**

- a) Strongly Disagree
- b) Disagree
- c) Neither Agree nor Disagree
- d) Strongly Agree
- e) Agree

**II. Tactical activities**

- a) Strongly Disagree
- b) Disagree
- c) Neither Agree nor Disagree

- d) Strongly Agree
- e) Agree

**III. Current programming strategies**

- a) Strongly Disagree
- b) Disagree
- c) Neither Agree nor Disagree
- d) Strongly Agree
- e) Agree

6. Is your industry frequently interacts with customers to set its reliability, responsiveness, and other standards

- a. Strongly Disagree
- b. Disagree
- c. Neither Agree nor Disagree
- d. Strongly Agree
- e. Agree

7. Are you agree industry trading partners keep your organization fully informed about issues that affect its business

- a. Strongly Disagree
- b. Disagree
- c. Neither Agree nor Disagree
- d. Strongly Agree
- e. Agree

8. Is your industry and its trading partners exchange information that helps establishment of business planning

- a. Strongly Disagree
- b. Disagree
- c. Neither Agree nor Disagree
- d. Strongly Agree
- e. Agree

9. Is your industry regularly solve problems jointly with its suppliers
- Strongly Disagree
  - Disagree
  - Neither Agree nor Disagree
  - Strongly Agree
  - Agree
10. Are you agree goods are stored at appropriate distribution points close to customers in the supply chain
- Strongly Disagree
  - Disagree
  - Neither Agree nor Disagree
  - Strongly Agree
  - Agree
11. Are you agree supply chain members have common, agreed to goals for supply chain management
- Strongly Disagree
  - Disagree
  - Neither Agree nor Disagree
  - Strongly Agree
  - Agree
12. Are you agree with supply chain members are actively involved in standardizing supply chain practices and operations
- Strongly Disagree
  - Disagree
  - Neither Agree nor Disagree
  - Strongly Agree
  - Agree