

Major Project Dissertation Report on

IMPACT OF INFORMATION TECHNOLOGY IN

SUPPLY CHAIN MANAGEMENT

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CERTIFICATE

This is to certify that Mr. Pramod Kumar, Roll No. 2K21/EMBA/32 have completed the Major Project titled “**IMPACT OF INFORMATION TECHNOLOGY IN SUPPLY CHAIN MANAGEMENT**” under the guidance of Mr. Mohit Beniwal, Assistant Professor, DSM (DTU) as a part of Executive Master of Business Administration (EMBA) curriculum of Delhi School of Management, New Delhi. This is an original piece of work and has not been submitted elsewhere.

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DECLARATION

I, hereby declare that this project entitled “**IMPACT OF INFORMATION TECHNOLOGY IN SUPPLY CHAIN MANAGEMENT**” has been prepared by me under the guidance of Mr. Mohit Beniwal, Assistant Professor, Delhi School of Management, Delhi Technological University, Bawana Road, Delhi – 110042 in fulfilment of the Major Project. I hereby declare that this project is based on my own personal work and has not been submitted any time to any University or Institution for award of any Degree or Diploma.

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EXECUTIVE SUMMARY

In today's globalized and interconnected business landscape, supply chain management plays a critical role in the success and competitiveness of organizations across industries. Efficient and effective supply chain management requires the integration and coordination of various activities, processes, and stakeholders involved in the flow of goods, services, and information from suppliers to customers. Information technology (IT) has emerged as a vital enabler in enhancing the performance and agility of supply chains. An overview of the role of IT in supply chain management, highlighting its key contributions and benefits are as follows: -

Connectivity and Integration. IT facilitates seamless connectivity and integration across the entire supply chain network, linking suppliers, manufacturers, distributors, retailers, and customers. It enables real-time information sharing, collaboration, and visibility, enhancing coordination and synchronization among supply chain partners. Through technologies like electronic data interchange (EDI), application programming interfaces (APIs), and cloud computing.

Demand Forecasting and Planning. IT systems provide advanced analytics and forecasting tools that enable organizations to anticipate customer demand accurately. By analyzing historical data, market trends, and external factors, IT assists in demand planning, optimizing inventory levels, and aligning production and procurement activities. This leads to improved customer satisfaction, reduced stockouts, and minimized holding costs.

Inventory and Warehouse Management. IT plays a crucial role in optimizing inventory management and warehouse operations. Through technologies such as barcode scanning, radio frequency identification (RFID), and warehouse management systems (WMS), IT enables real-time tracking, monitoring, and control of inventory movements. It streamlines order fulfillment processes, reduces stock discrepancies, and enhances overall inventory accuracy and visibility.

Transportation and Logistics. IT supports efficient transportation and logistics management by enabling route optimization, load consolidation, and tracking of

shipments. It facilitates the automation of freight management, carrier selection, and customs documentation processes. Real-time tracking systems, GPS, and fleet management software enhance visibility and traceability, reducing transit times, improving delivery accuracy, and minimizing transportation costs.

Supplier Relationship Management. IT tools and platforms enable organizations to manage their relationships with suppliers effectively. Supplier portals, e-procurement systems, and supplier performance management software streamline the procurement process, enhancing transparency, efficiency, and collaboration. IT facilitates supplier evaluation, contract management, and supplier scorecards, promoting better supplier selection, negotiation, and performance monitoring.

Risk Management and Resilience. IT supports supply chain risk management by providing real-time visibility into potential disruptions. It enables organizations to identify, assess, and mitigate risks through predictive analytics, scenario modeling, and supply chain simulation. IT systems facilitate contingency planning, demand sensing, and alternative sourcing strategies, enhancing supply chain resilience in the face of uncertainties and disruptions.

Performance Measurement and Continuous Improvement. IT provides the infrastructure and tools for capturing, analyzing, and reporting key supply chain performance metrics. Through dashboards, key performance indicators (KPIs), and data analytics, organizations can monitor and evaluate their supply chain performance, identifying areas for improvement and making data-driven decisions. IT supports continuous improvement initiatives such as lean management, Six Sigma, and process optimization, driving efficiency, cost reduction, and customer satisfaction.

In conclusion, IT plays a pivotal role in modern supply chain management. It enables connectivity, integration, and collaboration among supply chain partners, enhances demand forecasting, inventory management, and transportation logistics, facilitates supplier relationship management, supports risk management, and enables performance measurement and continuous improvement. By leveraging IT effectively, organizations can achieve a more agile, responsive, and competitive supply chain, delivering greater value to customers and stakeholders.

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CHAPTER 1 INTRODUCTION

1.1 Introduction

Supply chain Management

A supply chains relates to the complete procedure of producing & selling things, beginning with the procurement of raw materials & continuing through the distributions & sales of products to customers. It is a networking of businesses, involving suppliers, manufacturers, shippers, distributors, & retailers, that collaborate to making logistics, inventories managements, transporting, & other processes as efficient as possible. IT performs such a crucial part in supply chains managements or SCM. Information Technology helps to obtain required information/ data in supply chain, break it down further or appropriate analysis and implementation for optimum supply chains efficiency. Data is crucial to the executions of the supply chains since this offers the decision-making foundation for supply chains managers.

Information in real times or close to real times is essential for effective supply chains management. With knowledge of the many phases of the supply chain, decision-makers may plan, manage, & modify procedures to fulfil objectives in procuring, inventories management, manufacture etc. Supply Chain Managements (SCM) is the managements of activities involved in the acquisition of raw materials, its transformations into completed items, & their delivery to the ultimate customer. This most straightforward supply chain consists of Suppliers, the Company & Consumers. Nevertheless, the majority of industrial companies possess a highly complicated supply chains which involves several suppliers & even outsourcing.

- SCM is the unified administration by the company to track movement consignments (goods as well as services), which encompasses every procedure that may turn raw materials into finished goods.
- On successfully optimizing the process variables, enterprise tends to minimize the un-necessary expenditures and thus ensuring faster delivery.

- Products recalls and unnecessary litigations are avoided by following effective chain management initiatives.
- The five more important aspects of SCM were strategy formulation, sourcing of raw materials, manufacturing, distributions, & returns.
- A supply chains manager is responsible for costs management & preventing supply shortages.

Definition

Supply chain management is the coordination and oversight of all activities involved in the flow of goods, services, information, and finances from the initial sourcing of raw materials to the delivery of the final product to the end customer. It encompasses the design, planning, execution, control, and monitoring of the entire network of interconnected entities, such as suppliers, manufacturers, distributors, retailers, and customers, that collaborate to create and deliver products or services.

1.2 Backgrounds

The phrase named "Supply Chain" was coined by the British Newspaper 'The Independents' in 1905, although the notion of a networks of suppliers, producers/manufacturers, & customers existed for a very lengthy period previous to that. Since, the concept of supply chain was not much popular until 1980s, the discipline was not accorded much attention as compared to other related verticals such as Procurement, Logistics and Manufacturing etc.

Supply Chain Management typically refers to the management & optimizations of systems & procedures included in bringing any items raw material state to the final destination i.e. the consumers. Based to the Council of Supply Chains Managements Professionals, the aim of SCM is to "maximize customers values" and at the same time enable the enterprise to operate full potential. This resulted in the adoption of mass manufacturing concepts in the industry in late 1920s and further opened up avenue for more detailed groundwork in the area of supply chains managements. 'Ford' was the first to effectively execute the concept of creating consistent items on a

wide scale using enhanced efficiency, which fundamentally altered commerce & supply networks. With the introduction of PC to the world as technology of the future in the late 1980s, which considerably changed the supply chain landscape and the way logistics were being managed. Those solutions resolved issues regarding planning, resources management, & forecasting and eased the mechanism to oversee the chain activities and also virtually see the information exchange happening.

1.3 The Role of IT in Supply Chain Management

IT leaves a footprint everywhere. Nobody is left unaffected. It is no surprise that it currently controls each facet of a firm! These following points show the importance of IT to Supply Chains Management.

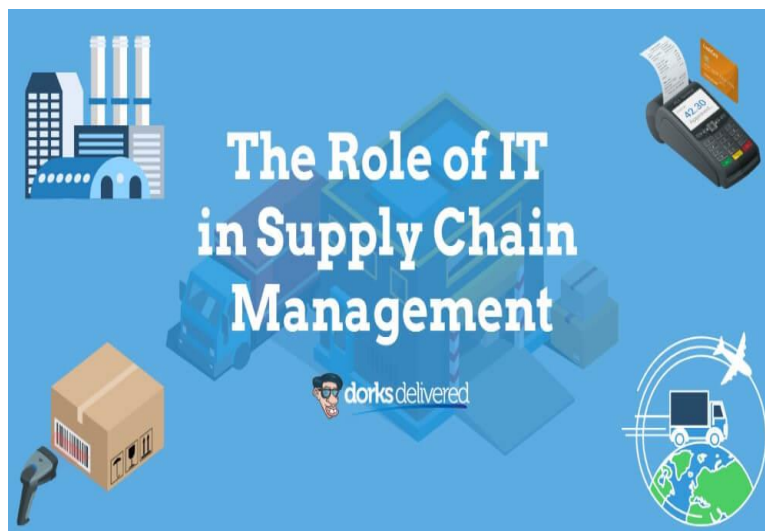


Fig 1. 1 The Role of IT in Supply Chain Management

1. Integrated & Coordinated Supply Chain

A supply chains could function effectively only when they are coordinated & well integrated. Information Technology provides that essential function through integrating diverse technologies & optimizing the supply chains. Those technologies make data

collecting feasible, simpler, & precise. In turn, these enables accurate & comprehensive data analysis, resulting in solid business choices.

2. Increased Productivity

The supply chain is more productive when data flows smoothly, newer technologies are used, & there is better communications. It acts as a catalyst for products mobility, rather than passing information back & forth. IT offers a constant data relationship.

3. Cost Reduction

IT enables optimal exploitation of assets & resources. For the purpose of studying trends, historical data is analysed using technologies to enhance performances. When resources were utilised properly, costs were reduced.

IT plays a greater position in a supply chain since it encourages all stakeholders to utilise its individual resources in the greatest cost-effective way. When IT is utilised properly, there is a huge reduction in total expenditures.

4. Product Improvement

IT comprises of tools & programmes that may be utilised for early detection of flaws in the existing system. In a market where customers continuously want something fresh, the products must either change or become obsolete. To remain in business, you need to implement products improvement & innovation strategy as quickly as possible. IT allows for the validation of the nature & scope of products development.

5. Supply Chain Visibility

Information enables supply chains managers to see the complete supply chains. Managers utilise the method in that information travels through one collaborator to another & its influence on others when making strategic choices.

1.4 Benefits of Technology In Supply Chain Management (SCM)

Implementing Supply Chain Managements (SCM) best practises & technologies may provide substantial values to an organisation. Costs optimization, revenue growth & a decrease in times to values were a few of the advantages vendors & manufacturers may anticipate. The effect of supply chains innovations may be both direct & indirect. In others words, it is beneficial in both apparent & less obvious, nevertheless never the less important ways. Let's examine five significant advantages of utilising technology in supply chains management.

1. Improved Access to Information

Effective supply chains technologies link previously separated data. There is informational silo when each and every part of the supply chains do not transmit data in a constant, seamless, & and the way we expect them for further processing. When exchange of information within an organization (such as sales, manufacturing & distributing) doesn't happen seamlessly, silos may emerge. These leads to erroneous projections, faulty executions, & lengthier response time.

2. Improved Insight

Insight is the basis for important decision-making. Using technology we can examine the data, form perceptions (on issues such as customer demands, transportations/warehouse capabilities, & lead times from supplier end) & making decisions which have immediate bearings on the entire chain of events in the overall logistical performances.

Additionaly, supply chain technology provides decisions assistance capabilities that enable individuals to makes better judgments greater quickly. That enables firms to manipulate data & conduct real-time simulations depending on a variety of situations, enabling them to evaluate numerous options. By gaining a deeper grasp of the costs associated with every scenario response, one may make wiser choices.

3. Improved agility

Agility is well supported and increased by Technology. When the channel partners have greater accessibility to statistical evaluation to make including simulations study, it is significantly easier to identify emerging issues and address them. If your processes, systems, or organisations contains impediments (or silos), agility will not be possible. You must see events throughout the whole supply chain, assess its effect, & devise proactive solutions. The best supply chains technologies would likely propose the "best" tasks, that you may modify if they become accessible. In today's fast-paced corporate environment, that skill is essential. Service providers which could integrate planning & executions excel at keeping the whole organisations on the similar pages & informed of fresh choices.

4. Collaboration

Through Collaborations two or more persons or organizations come to a common point for achieving similar objectives. Effective supply chain includes structures & know-how which allow the user to continuously monitor/ control & assess cooperation across people, departments & organisations to ensure a continuous flow of data, analysis & decisions.

Collaboration is essential as the needs of Omni channels customers for choice, quickness & adaptability rise. Successfully addressing those expectations requires the agility & responsiveness which only organisations empowered by technology could offer.

5. Customer loyalty

With the difficulties posed by the consumers, mapping the customer's satisfaction & loyalty towards any product or services become very obnoxious. While visiting a store to make a purchase, customers want to know whether or not the desired products were in stocks. Challenges before the retailers are to ensure time bound and un-interrupted supply. Consequently, customer experiences & loyalty were improved. These will never be feasible without the visibility, precision, & adaptability of supply chains technology.

1.5 Impact of Technology on Supply Chain Management

Using technologies, supply chain performances could be considerably improved by many ways such as inventory planning and management, tracking of shipments etc. Further, we can reduce the overhead expenses and at the same time increase the customers satisfaction level. This article discusses the influence that technologies have on supply chains characteristics.

In regards of adoptions of latest technology, the industry is lagging behind in many others sectors and there have been some continual improvement with the adoption of new technological solutions and models in Supply chain management. Also company can achieve considerable cost advantages by incorporating technologies into the existing logistical operations.



Fig 1. 2 Impact of Technology On Supply Chain Management

The below were a few advantages of using existing supply chains & logistics technologies products to makes freight operations better effective & effective:

1. Shipment Tracking

Given the expanded accessibility of low GPS devices, shippers can verify the position of its freight, as well as delivery timeframes & any delays, swiftly & cheaply. Numerous

shippers still depend on phone calls to their carriers or drivers to get tracking information & change their delivery estimates appropriately. Shippers must definitely be considering transporters that are reputed in the industry and complying with the latest Government regulations like having GPS on all of their vehicles with utmost accuracy. Further, the firm should be able to generate various alerts and SOS.

2. Transportation Management Systems (TMS)

TMS systems were an excellent method for shippers to arrange & combine their inventories. There are several TMS systems which offer document management for shipping documentation & shipping management tools. Freight management was user-friendly computer programmes. Less than 30% of shippers use TMS systems to coordinate inventories & consignments with the help of various other attributes to generate automated alerts, emails connected with freight management.

3. Data Analytics

With the industry embracing latest trends in supply chain using Data Analytics, business has been smooth as was not the case earlier. With the availability of all the business information on finger tips even small companies are benefiting from it. Throughout the course of the year, data collecting & analysis of every lane & mode choice may give valuable insights into the greatest cost-effective & dependable services options presently accessible. Combining shipping data with needed inventory levels determined by constantly monitoring inventories may result in substantial supply chain services improvements & cost savings.

4. Digital Access to Capacity

To schedule cargo inside their carrier networks, most shippers still depend on emails or phone conversations. These frequently result in a disorganized & time-consuming execution of the shipping strategy. New firms with digital platforms have revolutionized the marketplace through providing a completely new space where not only booking can be made but also efficiently manage the consignment through use of analytics. These allow the shipper to spend less time on fundamental operations & to concentrate further on improving their supply chains using information that is readily available.

5. Digital Payments

Accounting & supply chains costs tracking included into a TMS systems or digital providers makes it simple to monitor supply chains expenditures throughout shipping pathways & assess costs levels at the stock-keeping units' levels (SKU). Using cloud-based invoices managements solutions & an easy-to-use payments interface, digital logistics providers simplify payments processing & reduce the times spent on accounts payable. Particularly beneficial for small enterprises is the opportunity to pay transformations bills online.

6. Logistics

Today the way we do the business of Logistics has been completely transformed in supply chain management (SCM) using Information technology as a tool. It has even potential to go further, with the advent of Artificial Intelligence. It is a potent instrument that could makes our lives simpler & our company greater productive.

1.6 Types of Supply Chain Models

Supply chains managements differs from company to company. Every organization's unique objective, limits, & strengths form their SCM processes. Typically, a business might select any one of the six models and implement them into their core activities.

1. Continuous Flow Model:

This model is one of the most conventional and is used frequently by the established companies. The continuously flows approach depends on a company manufacturing the similar product again & anticipating little volatility in consumer demands.

2. Agile Model:

This technique is optimal for businesses having variable demands or items ordered by customers. That approach promotes adaptability, since a firm might have a particular need at any time & should be prepared to pivot appropriately.

3. Fast Model:

That paradigm highlights the rapid turnover of short-lived products. Utilizing fast chain model, a corporation aims to capitalize on a trend, create items rapidly & guarantee that all products are sold before the trends expires.

4. Flexible Model:

The flexible strategy is most effective for seasonal businesses. Some businesses might be having substantially greater demands throughout peak season, while others might be having minimal volumes requirements. A flexible supply chain managements architecture ensures that productions may be rapidly ramped up or scaled down.

5. Efficient Model:

For organisations operating in areas with razor-thin profits, the more efficient supply chains management technique might provide a competitive edge. That comprises the optimal use of equipment & machinery, as well as the management of inventories & processing of orders.

6. Custom Model:

If none of the above discussed model meet a company's requirements, it may always choose for a bespoke model. These are frequently used in case of highly specialised businesses with stringent technological standards, like the Car/ Automotive industry.

1.7 Components of Supply Chain Management

Supply chain management is characterised by five features or elements which must be evaluated to guarantee sustainability & efficacy.

1. Planning.

Planning processes are essential for maximizing the efficiency of supply networks. Inventory & operational resources may be levelled with the help of appropriate planning. Controlling supply via sourcing, planning & controlling demands through demands planning improves the organization's cash flows & capacity to satisfy client demands. The data generated by the planning team enables businesses use its strength by employing economies of scale route & by having predictive analytics for better precise and forward-looking estimates.

2. Sourcing.

In any organizational structure, it is usually preferable to work using suppliers that were never only competent but also able to accommodate the needs and preferences of the client. Vendors must also be able to reliably satisfy demands, particularly during seasonal peaks, & should never expect customers to make orders throughout seasonal lulls. Before the products is supplied to the client, it must be understood by the vendor about the implied needs of the consumers and to be able to recognize/ identify nonconformance to standards at their side. While interacting with the suppliers, this is preferable to negotiate on delivery as well as order lead times, with the help of stated performances objectives.

3. Making.

The manufacturing processes may range from raw materials to final product production through repackaging, re-kitting, bundling, assembling, dressing, and staging. That processes should be improved for minimal result variation in process (increased unpredictability) in order to limit the customers' requirements and non-conformance. However, robust and great sophisticated automated productions lines may be, there is usually chance for further improvements in the design and production processes.

4. Delivering.

The distribution channel must be steady & robust. It needs to have business continuity processes in place for typical logistical issues like port congestion & adverse weather information on real time basis. In numerous firms, the supply chain functions have a lower priority than the sales functions, yet it needs to have financing authorities delegated to them in order to absorb the varying company demands.

5. Returning.

Unavoidably, a consumer would want to return a product. This could be due to many factors like damages, non-adherence to objectives/ requirements, use if damaged tools, items approaching their expiry dates, or shipment of the wrong products/quantities. This return procedure is an integral part of the customers experience & is directly tied to the refund procedure.

1.8 Five Functions of Supply Chain Management

The five functions of SCM include the following:

1. Purchasing

In SCM, Purchasing is the first activity any enterprise can choose to have. Purchasing can be of raw materials or finished goods. Effective and timely purchase of stores are always desirable so that the delay at production stage can be avoided. There should be effective communication between the suppliers and clients etc of schedule and dispatch planning.

2. Operations

Before any store are purchased it is imperative to have thorough planning on demand using any of the forecasting tools so that the quantity demanded are judicious and neither less nor excess the requirement. Such functions are essential to supply chains management because firms need proper demands predictions to avoids under of excess inventories, since excess inventory carry holding cost. In order to streamline the

same, inventory management to be clubbed with the planning of stores and demand forecasting.

3. Logistics

Logistics management is the portion of SCM that effectively systematizes all parts of planning, buying, production, storage, & transportations to see that the product reaches the end customer without any interruptions. It is advantageous to have appropriate communications with several vertical in order to distribute items to clients rapidly & at the lowest possible costs.

4. Resource Management

Production processes require the raw material, knowledge, lead time & labour. Team responsible for resources optimization to make sure that the suitable resources are available and optimally allocated for the appropriate activity. These would guarantee that a production schedule that maximizes operational efficiency is developed. When assessing the available capacity, you must take into account the capabilities of every resources & evaluate whether they are capable of doing the planned job. These would guarantee that you do never overpromise orders and that your manufacturing schedule is precise and reasonable.

5. Information Workflow

It is the responsibility of the enterprises to keep track on all important communications happening and also to disseminate the flow of information to maintain a two-way communication exchange mechanism. In the event of information breakdown in the supply chain, there are high chances that the whole chain might fail. By increasing visibility & communication, numerous supply chain problems may be avoided. Having a system and accessed by all the departments would guarantee that all concerned is accessing the similar data and eliminate mis-communications.

1.9 Major Issues Facing Supply Chain Managers

Every day, supply chains managers are confronted with situations that demand immediate attention & a prompt reaction. This might vary in terms of intensity and intricacy. Considering the current emphasis on robust and dependable supply chains, those concerns are now of paramount relevance. After all, supply chains are the backbone of effective business operations, and problems would inevitably affect a company's bottom line. Here, we will discuss the most pertinent concerns supply chain managers faces I day to day operations.

1. Managing customer expectations

Managing client expectations is one of the obstacles to good supply chain managements. Supply Chains Managers offer a service. They offer services for indirect procurement, projects & production requirements, as well as requests from external customers. Therefore, Supply Chain Managers must implement effective procedures to ensure requests are met on times, each times.

2. Managing suppliers

In addition to managing client expectations, one must also manage suppliers. Effective supply chains management requires fostering positive connections between suppliers. In a perfect world, you would engage suppliers proactively via Supplier Relationships Management.

3. Maintaining quality and sustainability

One of the difficulties of global supply chains is the issue of quality, reliability & durability of products produced by other countries. This aspect is relatively more important since the elements of a products must comply with regulatory requirements.

4. Access to data

Accessibility of the data in supply chain is one of the more crucial criteria in a modern supply chain. Accessibility to data enables better efficient supply chain management and

in the absence of that any enterprise may not make informed decisions on changes in supply chain or decrease in the risk potentials.

1.10 Principles of Supply Chain Management Explained

1. Adapt Supply Chain to Customer's Needs

Both business professionals & experts of supply chains processes were educated to prioritise client demands. In order to better comprehend our consumers, they separate them into several categories, which they refer to as "segmentation." ABC analysis, which separates customers based on sales volumes or profitability, is the greatest fundamental technique to segment customers. Additionally, segmentation may be performed by products, sector, & trade channel.

2. Customize Logistics Network

When customers are segmented/ separated based on their requirements, it is also important to customize each section to suitably accommodate each section of logistic network. Unfortunately, that is not sacrosanct and therefore not applicable in all circumstances.

For instance, if there is a manufacturer based in China, the company must have a distinct logistical network every client. Every client in the United States or the European Union may already manage the sources of raw materials, request specific manufacturing lines, & designate third-party enterprises and air/ sea carriers. Therefore, design of logistics networks is mostly a customer-driven endeavor.

3. Align Demand Planning Across Supply Chain

Practitioners of the supply chain were instructed to transfer demands data with their counterparts so that no one must maintain surplus inventory. That idea holds true in general. However, only few companies like Walmart shares demands information with trading partners.

4. Differentiate Products Close to Customer

In order to maximise products diversity, Dell is renowned for storing components & assembling them only following a consumer puts an order. That concept is still valid, but you need also examine another principle.

5. Outsource Strategically (Make or Buy decisions)

Make or buy decisions refer to the strategic choice between producing goods or services internally (make) or purchasing them from external suppliers (buy). Organizations consider several factors when making this decision, including cost, quality, expertise, control, and capacity utilization. Making in-house can provide control, customization, and better coordination, but it may require substantial investments and expertise. Buying can offer cost savings, access to specialized skills, and flexibility, but it may lead to reduced control and potential dependency. Ultimately, the decision depends on the specific circumstances and objectives of the organization, and a thorough analysis of costs and benefits is essential.

6. Adopt Both Service and Financial Metrics

Anderson et al. recommended using Activity-Based Costing (ABC) to estimate the profitability of customers. The ABC (Activity-Based Costing) method is a costing system that assigns costs to products or services based on the activities involved in producing them. Unlike traditional costing methods that rely on a single cost driver such as direct labor or machine hours, ABC identifies multiple cost drivers associated with different activities.

ABC involves the following steps: identifying activities, determining cost attributes to each activity, finding the cost driver rates, and allocating costs to products based on their usage of the cost drivers. This approach provides a more accurate understanding of the costs incurred by various activities and enables better cost control and decision-making.

ABC is particularly useful in complex production environments with diverse activities and cost drivers, where traditional costing methods may not accurately reflect the true costs.

CHAPTER 2 LITERATURE REVIEW

1. Elisa F. Beitzel-Heineke et.al. “The prospects of zero-packaging grocery stores to improve the social and environmental impacts of the food supply chain”

Increasing customer awareness of the environmental & social externalities of foods supply chains in industrialised nations leads to the creation of grocery shops which refuse to utilize throwaway plastic packaging for its full products line. The prospects that those unique outlets provide for transitioning to an alternate, better sustainable retail systems were little recognised at present. To address this gap, semi-structured interviews was performed using representatives of seven European retailers & six food supply chain specialists. Due to the elimination of packing & food waste, those businesses might encourage better resource-efficient behaviour among suppliers & customers. Social advantages vary between assisting small, regional farmers to increasing food chain transparency & educating customers. However, those advantages come at the sacrifice of customer convenience as a result of slower shopping processes and restricted products selection.

2. Zeplin Jiwa Husada Tarigan.et.al.(2021) “Impact of Internal Integration, Supply Chain Partnership, Supply Chain Agility, and Supply Chain Resilience on Sustainable Advantage”

Due to the COVID-19 epidemic, the world order had abruptly shifted. To prevent the spreading of COVID-19, a number of nations, notably Indonesia, have implemented lockdown rules. Lockdown regulations have impacted both the supply and demand for raw resources & finished commodities. The manufacturing industry had had to reorganize its internal & external supply chains network & relationship, since it is one of the most affected industries. This research investigated the effect of internal integrating, supply chains partnership, supply chains agility, & supply chains resilience on sustainable competitive advantages Participants in these research was representing Indonesian industrial businesses. For data collection, a questionnaire using a five-point Likert scale were administered to respondents.

3. Michael Paul Kramer.et.al.(2021) “Blockchain and Its Impacts on Agri-Food Supply Chain Network Management”

Blockchain is an emergent meta-technology which is seen as a new and vibrant tool and has the capability to change the way the Governance is done of integrated supply chains. These research analyses the implications of implementing various blockchain technology platform types on coordination mechanism in vertically collaborating agri-food networks (BCTPT). The application of the results is shown by the presentation of experimental use examples of BCTPT implementations in the agri-food business. Our study demonstrates that BCTPT distinguish themselves primarily via coordination mechanisms that exercise authority, information exchange, decision-making, & collective learning advantages. In addition, they demonstrate show blockchain usage cases with strong success rates generally function in a vertical ecosystem in which a central organization accepts responsibility for coordinating supply chains network operations. Those used cases were often used in tracking and tracing apps including provenance-based data provision, that run on either vertically co-ordinated private blockchain systems or consortium-based blockchain platforms.

4. U. Sonesson.et.al.(2001) “Environmental impact of future milk supply chains in Sweden: a scenario study”

The purpose of these research were to assess the environmental effect of future dairy supply networks. Since scenarios may provide information about the environmental effects of particular courses of action or system advances, the scenario approach was selected. In order to evaluate the consequences of future systems, mathematical models of the milk supply chain were developed & utilised to simulate potential scenarios. This model relied heavily on life cycle assessment (LCA) techniques. These findings demonstrate that any evaluation of the environmental consequences of the milk supply chain needs take the full chain into account. Significant factors include the quantity of packing materials utilised and the delivery of dairy products to homes.

6. Young M. Lee.et.al.(2018) “Exploring the Impact of RFID on Supply Chain Dynamics”

As a developing technology, radio-frequency identification (RFID) had created tremendous interest in the supply chains sector. Using RFID technologies, inventory could be monitored precisely and on real time basis that can even reduce processing times and utilized manpower. Importantly, the total prominence of precise inventory data across the whole supply chain, through the manufacturer's shop floor to the warehouses to the retails outlets, provides chances for improvement & transformations of different supply chain operations. Modeling the influence of RFID technologies in a manufacturers-retailer supply chain context, we constructed a simulation model to examine how RFID may enhance supply chain performances. Our research offers a quantitative examination of the possible inventories reductions & services levels improvements advantages of RFID.

7. Iñaki Arto.et.al.(2011) “Global impacts of the automotive supply chain disruption following the Japanese earthquake of 2011”

This research describes an input-output technique for estimating the global economics effects of supply chain interruptions. This approach is utilized to analyse the worldwide economic impacts of the automobile sector disruptions which followed the March 2011 Japanese earthquake, tsunami, & nuclear disaster. Through merging a hybrid multi-regional input-output model, the World Input-Output Databases (WIOD), & factory-level data, the research estimates the country-by-country economics effects of the disruptions. The findings indicate that such disruptions had a worldwide economic impact (in terms of values added) of US\$139 billion.

8. Rommert Dekker.et.al.(2012) “The impact of greening on supply chain design and cost: a case for a developing region”

Environmental concerns have arisen as a matter of significant relevance for globalized supply networks in the present day. These study aims to construct a strategic-tactical decisions support models to aid managers in analysing the effect of environmental concerns connected to transportations emissions on a region's transport geography.

Particularly, they provide a model that tackles (i) supply chain networks architecture, including port of entry & mode of transportation, and (ii) considerations about the usage of dedicated vs shared warehouses & transportation. Through the creation of a sustainable supply chains network in South-Eastern Europe, the applicability of the suggested technique is investigated. In the majority of instances, leveraging shared warehouses through Third Party Logistics providers enhances a company's financial & environmental performances. In all circumstances, shared usage of transportations operations reduces CO2 and PM emissions while dedicated usage reduces costs.

9. Daniel Rexhausen.et.al.(2012) “Customer-facing supply chain practices—The impact of demand and distribution management on supply chain success”

Distributing had traditionally been seen as the most important (physical) connection among an organization's internal supply chain operations & its consumers. Demands management has arisen as a fresh dimension at the consumer interface in recent years. While it is becoming more prevalent in business, its influence on supply chains performance had never yet been thoroughly examined. Distribution management & demands management both include customer-facing procedures & practises that are connected & (may) collectively impact supply chain success. In this work, they aim to contribute to the literature on supply chain managements by systematically examining the effect of customer-facing supply chain practices on supply chain performances. Particularly, this article investigates the relative effect of pertinent demands & distributions management methods.

10. Usha Ramanathan.et.al.(2012) “Supply chain collaboration: Impact of success in long-term partnerships”

The literature discusses the impact of collaborative planning, forecasting, & replenishment on the performances of supply chains. In these research study, they argue that the success of cooperation in supply chains is influenced by these impacts and others collaborative characteristics. This article seeks to determine the effect of collaborative planning, collaborative decisions making by supply chain partners, & collaborative summary of all supply chains operations on the success of cooperation. To

validate our research paradigm, they performed empirical analysis. A questionnaire surveys of a Textile company's clients was used to get the data. They made usage confirmatory factors analysis & structural equations modelling (using AMOS). The findings of the research demonstrate that cooperation elements influence the performance of supply chains, which would result in future partnerships.

CHAPTER 3 RESEARCH METHODOLOGY

3.1 Research methodology:

This chapter investigates both the research strategy and the research methodology development. Addressing sample, questioning, reliability, & validity issues to achieve the research objectives, the detailed case study technique is best suited to qualitative research methodologies. The procedure for selecting a sample size is purposeful random selection, and data collection will be accomplished through the distribution of questionnaires.

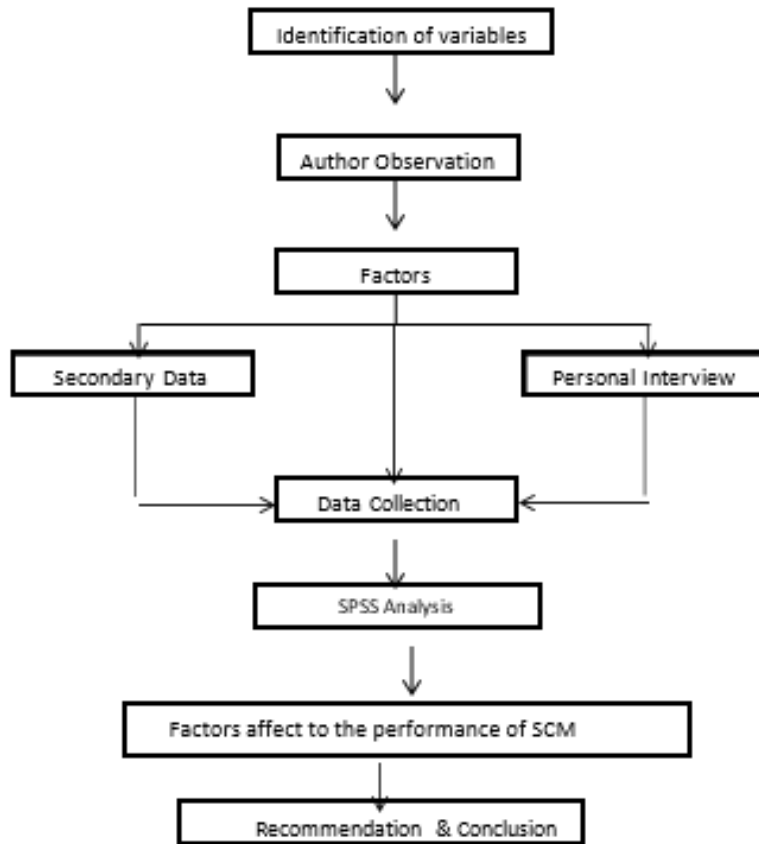


Fig 3. 1 Framework of the study

3.2 Problem statement:

Because supply chains operate as a networked system, failures in one component of the supply chain have an impact on the entire supply chain. This may result in even more massive problems inside this supply chain. To guarantee the best judgments for the supply chain world, more focus must be paid to the influence of decisions and actions made from one area of the production process on the rest of a supply chain. The supply chain serves as an essential aspect of every firm. A flaw in the supply chain will have the same effect as it does in the production network. Supply chain breakdowns operations are caused by a lack of awareness or understanding of the character of demand. Because supply systems have gotten more varied, the harshness and frequency of disruptions look

to be growing. These situations might represent the worst-case scenario for organizations that do not achieve supply chain responsiveness. The present economic uncertainty will affect the flow of the government's supply chain, mainly when it affects the distribution network. End-users will be discouraged from acquiring goods since their buying power has reduced drastically.

Moreover, enterprises will lose the dependability of their suppliers. Due to the decrease in the price of the country's currency, they could not maintain an efficient inflow of supply networks. As a result, industry experts must evaluate how to solve these difficulties while adhering to activities and methods for achieving supply chain responsiveness.

3.3 Need for the research

Different specialists and working professionals recognize the necessity of logistics in today's increasingly competitive industry. It is believed that an effective supply chain management infrastructure and the use of appropriate logistics may contribute to a company's performance. The critical part of logistical challenges for business entities necessitates determining what needs and analysis of the different sourcing strategies, preparing, and methods implemented by different companies, such that other organizations could even design or achieve better their future processes for controlling their supply chain quite effectively in light of that examination.

3.5 Objective – objectives of research problem

However, this study has established numerous goals to address all of the research issues. This aim will serve as a foundation for this study's research. The area is as follows:

- To determine the components influencing supply chain responsiveness.
- To ascertain the link between supply chain strategy and supply chain responsiveness.

3.6 Sources of data

The study is based on qualitative data. Both sources are used to obtain information. The information was gathered using an interview method. The sample size for the research will be 100, as well as a random sampling procedure will be used. The intended sample comprised hotel employees and hotel owners. The respondents were surveyed using open-ended & unstructured questions.

3.7 Sampling

The sample size for the research will now be 96, as well as the analysis will be done using a random sampling approach. We will conduct research-using SPSS.

CHAPTER 4 DATA ANALYSIS AND INTERPRETATION

Table 4. 1 Gender

Valid	Frequency	Percent
Male	21	21.9
Female	75	78.1
Total	96	100.0

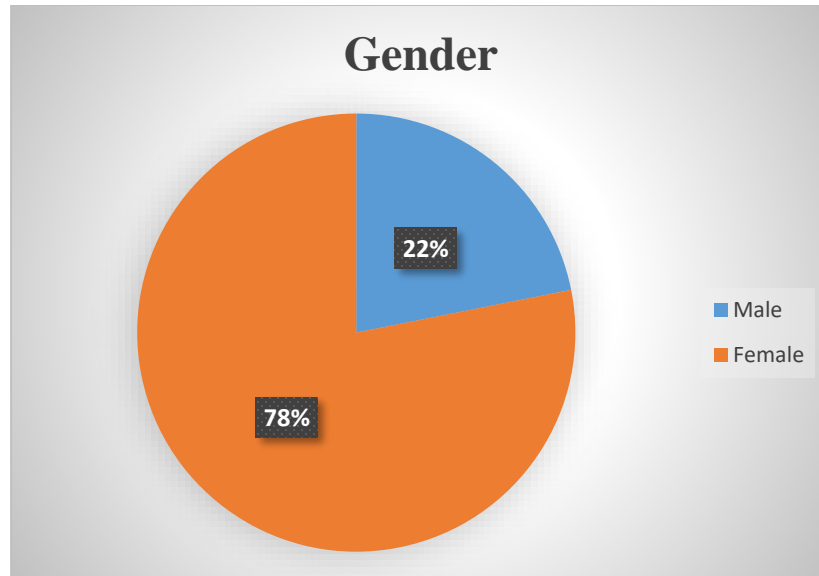


Fig 4. 1 Gender

Interpretation

In the above table we have taken the analyses the Gender of the respondent so we have observe that, total responded are the 96, that the responded are from the Gender, male they are 21 frequency with 21.9% then female 75 frequency with 78.1%.

Table 4. 2 How old are you

Valid	Frequency	Percent
Below 25	50	52.1
26-35	31	32.3
36-45	15	15.6
Total	96	100.0

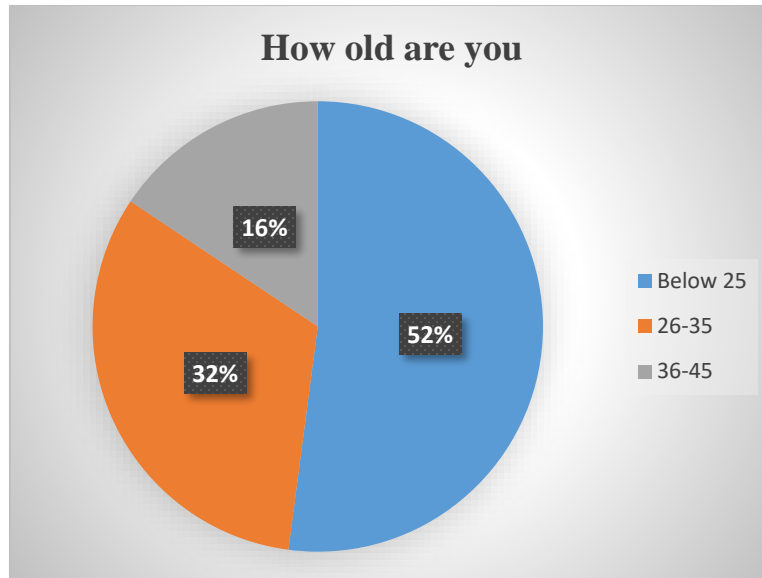


Fig 4. 2 How old are you

Interpretation

In the above table we have taken the analyses the How old are you of the respondent so we have observed that Total responded are the 96, that the responded are from the How old are you, Below 25 years they are 50 frequencies with (52.1%) then 26-35 they are 31 frequencies with 32.3%. After that 36-45 they are 15 frequencies with 15.6%.

Table 4. 3 Level of education

Valid	Frequency	Percent
Masters	19	19.8
Degree	50	52.1
Diploma	14	14.6
Other	13	13.5
Total	96	100.0

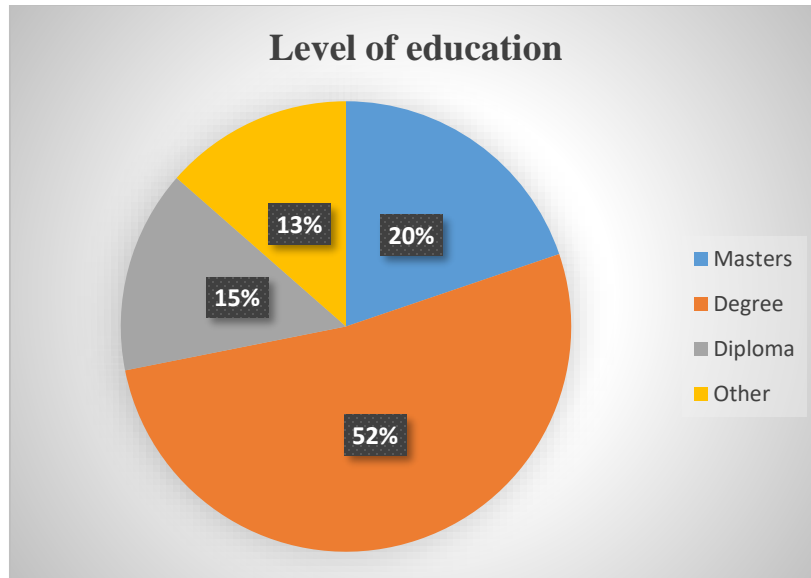


Fig 4. 3 Level of education

Interpretation

In the above table we have taken the analyses the Level of education of the respondent so we have observed that the total responded are the 96, that the responded are from the masters they are 19 frequency with 19.8% secondly degree they are 50 frequency with 52.1% after that diploma they are 14 frequency with 14.6%.then lastly other they are 13 with 13.5%.

Table 4. 4 Working experience

Valid	Frequency	Percent
Below 1	50	52.1
2 Year	30	31.3
3 Year	16	16.7
Total	96	100.0

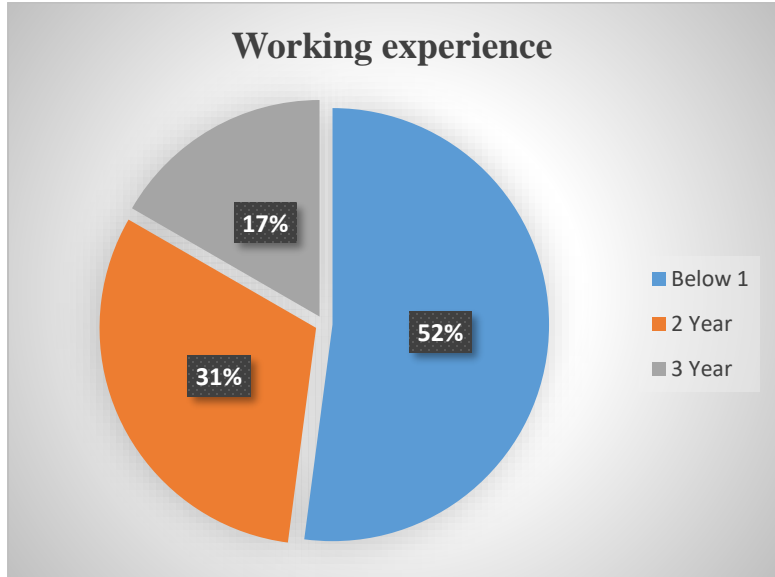


Fig 4. 4 Working experience

Interpretation

In the above table we have taken the analyses the Working experience of the respondent so we have observed that the total responded are the 96, that the responded are from the below 1 they are 50 frequency with 52%, then secondly 2 year they are 30 frequency with 31.3%. after that 3 year they are 16 frequency with 16.7%.

Table 4. 5 Showing the Relationships between supply chain management and organizational) Performance

Valid	Frequency	Percent
Yes	22	22.9
No	74	77.1
Total	96	100.0

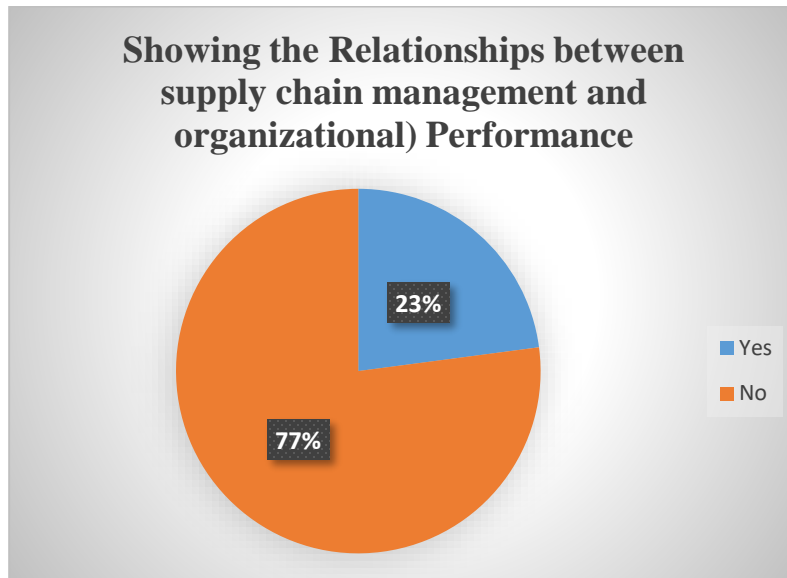


Fig 4. 5 Showing the Relationships between supply chain management and organizational) Performance

Interpretation

We have taken the survey of Showing the Relationships between supply chain management and organizational Performance, So we have observe that the total respondents are 96. That the responded are from the Yes they are 22 frequency with 22.9%.then No they are 74 frequency with 77.1%

Table 4. 6 Challenges facing supply chain management in the organizations

Valid	Frequency	Percent
Yes	21	21.9
No	75	78.1
Total	96	100.0



Fig 4. 6 Challenges facing supply chain management in the organizations

Interpretation

We have taken the survey of Challenges facing supply chain management in the organizations. We have observed that the total respondents are 96. Firstly the Yes they are 21 frequency with 21.9%.then No they are 75 frequency with 78.1%.

Table 4. 7 Shows responses on supply chain management’s impact on organizational performance

Valid	Frequency	Percent
Yes	22	22.9
No	74	77.1
Total	96	100.0

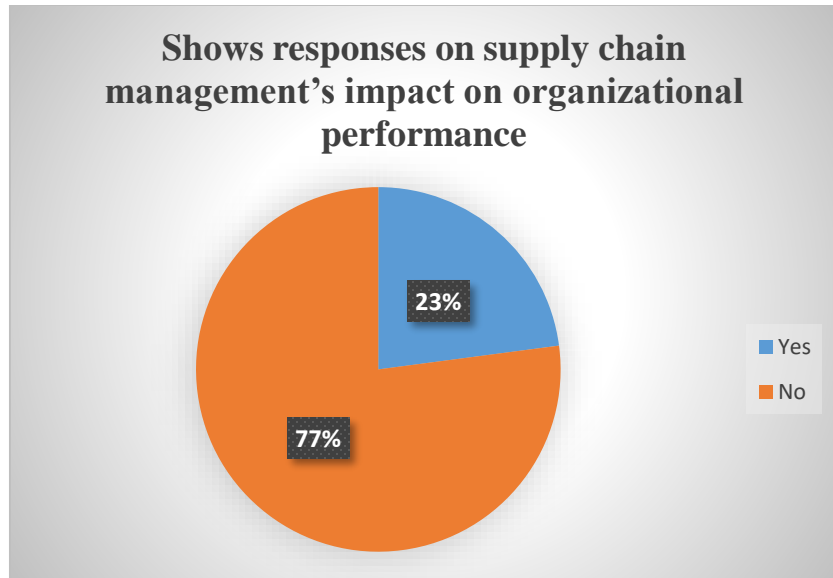


Fig 4. 7 Shows responses on supply chain management's impact on organizational performance

Interpretation

We have taken the survey of Shows responses on supply chain management's impact on organizational performance. We have observed that the total respondents are 96. Firstly, the Yes they are 22 frequencies with 22.9%. Then No they are 74 frequencies with 77.1%.

Table 4. 8 Environmental Audit for suppliers

Valid	Frequency	Percent
Yes	22	22.9
No	74	77.1
Total	96	100.0

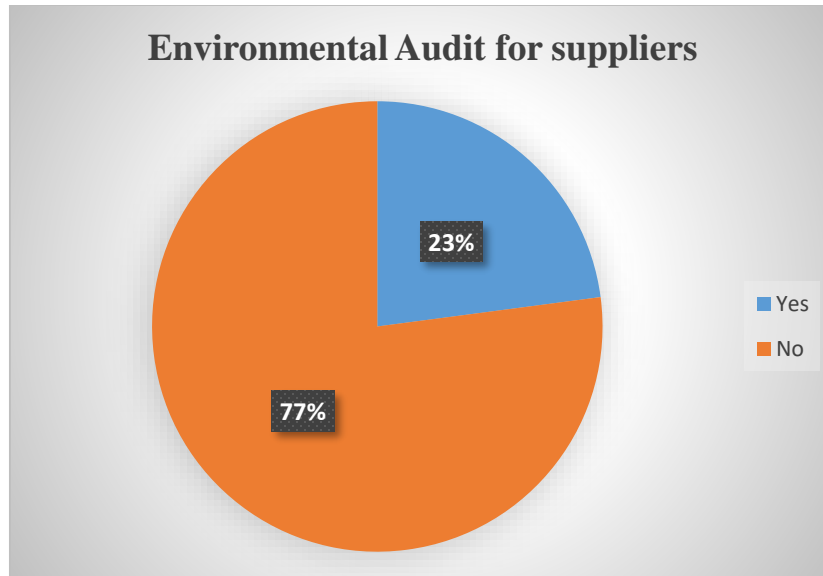


Fig 4. 8 Environmental Audit for suppliers

Interpretation

We have taken the survey of Environmental Audit for suppliers. We have observed that the total respondents are 96. Firstly, the Yes they are 22 frequencies with 22.9%. Then No they are 74 frequencies with 77.1%.

Table 4. 9 Reduce supply chain risks

Valid	Frequency	Percent
Yes	14	14.6
No	82	85.4
Total	96	100.0

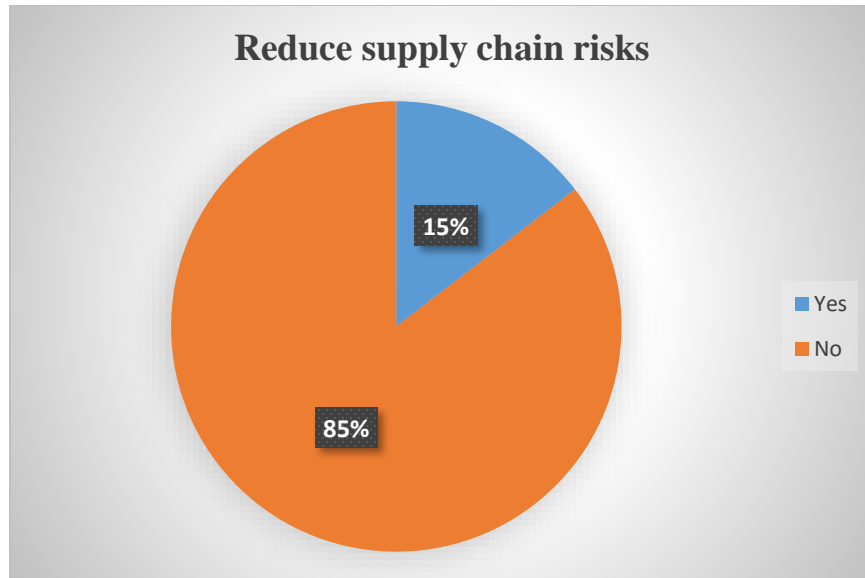


Fig 4. 9 Reduce supply chain risks

Interpretation

We have taken the survey of Reduce supply chain risks. We have observed that the total respondents are 96. Firstly, the Yes they are 14 frequencies with 14.6%. Then No they are 82 frequencies with 85.4%.

Table 4. 10 Short supplier response time

Valid	Frequency	Percent
Yes	24	25.0
No	72	75.0
Total	96	100.0

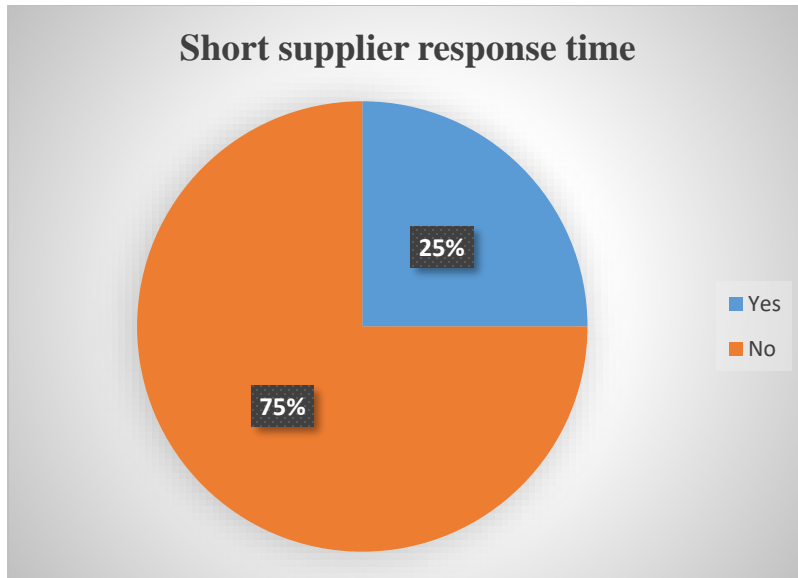


Fig 4. 10 Short supplier response time

Interpretation

We have taken the survey of Short supplier response time. We have observed that the total respondents are 96. firstly, the Yes they are 24 frequencies with 25.0%. then No they are 72 frequencies with 75.4%.

Table 4. 11 Increased stability of supplies

Valid	Frequency	Percent
Yes	22	22.9
No	74	77.1
Total	96	100.0

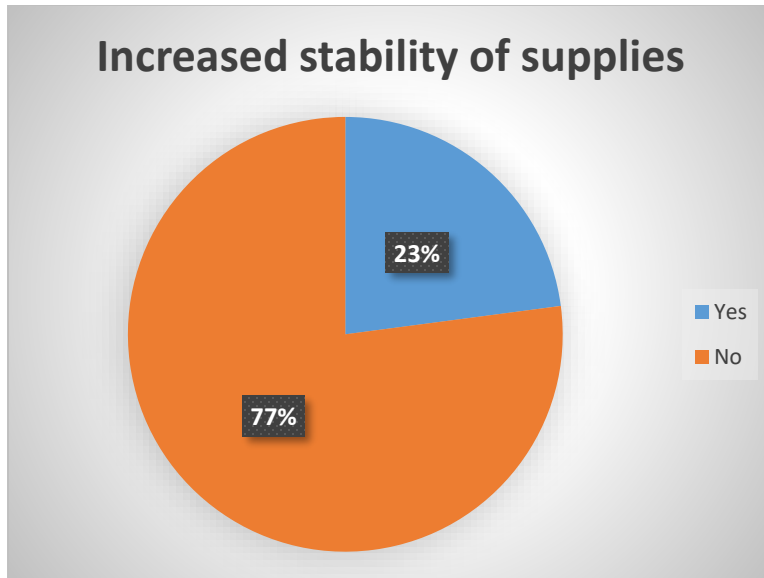


Fig 4. 11 Increased stability of supplies

Interpretation

We have taken the survey of Increased stability of supplies. We have observed that the total respondents are 96. firstly, the Yes they are 22 frequencies with 22.9%. then No they are 74 frequencies with 77.1%.

Table 4. 12 Reduced total cost of owning supplies

Valid	Frequency	Percent
Yes	29	30.2
No	67	69.8
Total	96	100.0

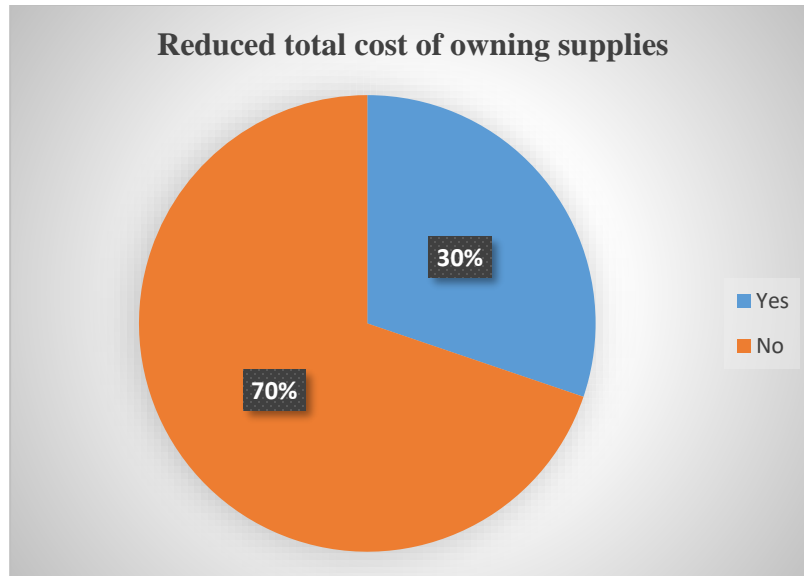


Fig 4. 12 Reduced total cost of owning supplies

Interpretation

We have taken the survey of Reduced total cost of owning supplies. We have observed that the total respondents are 96. firstly, the Yes they are 29 frequencies with 30.2%. then No they are 67 frequencies with 69.8%.

FINDINGS

In the above table we have taken the analyses the Gender of the respondent so we have observed that, total responded are the 96, that the responded are from the Gender, male they are 21 frequencies with 21.9% then female 75 frequency with 78.1%.

In the above table we have taken the analyses the How old are you of the respondent so we have observed that Total responded are the 96, that the responded are from the age group Below 25 years they are 50 frequencies with (52.1%) then 26-35 they are 31 frequencies with 32.3%. After that 36-45, they are 15 frequencies with 15.6%.

In the above table we have taken the analyses the Level of education of the respondent so we have observed that the total responded are the 96, that the responded are from the masters they are 19 frequency with 19.8% secondly degree they are 50 frequency with 52.1%. after that diploma they are 14 frequency with 14.6%.then lastly other they are 13 with 13.5%.

In the above table we have taken the analyses the Working experience of the respondent so we have observed that the total responded are the 96, that the responded are from the below 1 they are 50 frequency with 52%,then secondly 2 year they are 30 frequency with 31.3%.after that 3 year they are 16 frequency with 16.7%.

We have taken the survey of Showing the Relationships between supply chain management and organizational Performance, so we have observe that the total respondents are 96. That the responded are from the Yes they are 22 frequency with 22.9%.then No they are 74 frequency with 77.1%

We have taken the survey of Challenges facing supply chain management in the organizations. We have observed that the total respondents are 96. Firstly the Yes they are 21 frequency with 21.9%.then No they are 75 frequency with 78.1%.

We have taken the survey of Shows responses on supply chain management's impact on organizational performance. We have observed that the total respondents are 96. Firstly, the Yes they are 22 frequencies with 22.9%. Then No they are 74 frequencies with 77.1%.

We have taken the survey of Environmental Audit for suppliers. We have observed that the total respondents are 96. Firstly, the Yes they are 22 frequencies with 22.9%. Then No they are 74 frequencies with 77.1%.

We have taken the survey of Reduce supply chain risks. We have observed that the total respondents are 96. Firstly, the Yes they are 14 frequencies with 14.6%. Then No they are 82 frequencies with 85.4%.

We have taken the survey of Short supplier response time. We have observed that the total respondents are 96. Firstly, the Yes they are 24 frequencies with 25.0%. Then No they are 72 frequencies with 75.4%.

We have taken the survey of increased stability of supplies. We have observed that the total respondents are 96. Firstly, the Yes they are 22 frequencies with 22.9%. Then No they are 74 frequencies with 77.1%.

We have taken the survey of Reduced total cost of owning supplies. We have observed that the total respondents are 96. Firstly, the Yes they are 29 frequencies with 30.2%. Then No they are 67 frequencies with 69.8%.

In that above table there are case processing summary in that case total responded are 96 above that valid cases are 96 with (100.0%) and Excluded are zero with (.0%).

In that above table one sample statistics, firstly the gender. No of frequency is 96. Mean value are 1.78, std. deviation is .416, and then std. Error Mean are .042.

Secondly for the How old are you. No of frequency is 96. Mean value are 1.64, std. deviation is .742, and then std. Error Mean are .076.

Then for the level of education. No of frequency is 96. Mean value are 2.22, std. deviation is .920, then std. Error Mean are.094

After that working experience. No of frequency is 96. Mean value are 1.65 std. deviation are .754, then std. Error Mean are.077.

Then showing the Relationships between supply chain management. No of frequency is 96. Mean value are 1.78 std. deviation are .423, then std. Error Mean are.043.

Then reduced total cost of owning supplies. No of frequency is 96. Mean value are 1.70 std. deviation are .462, then std. Error Mean are.047.

Lastly the total responded are from the How old are you is 52.240 and total DF value is 95. Between Groups that the Sum of Squares is 1.150, DF value is one, Mean Square

value is 1.150, F is 2.116 and significance value is .149. Secondly, for the Within Groups that the Sum of Squares value is 51.090, DF value is 94, Mean Square value is .544.

RECOMMENDATIONS

Based on the findings of the study, following is suggested:

- Poor management of even a single supply chain link can have far-reaching consequences for a company's profitability, market share, and other key performance indicators, according to researchers.
- In a rapidly evolving industrial sector, the company faces difficulties in adapting its supply chain to satisfy consumer demands and maintain its competitiveness.

CONCLUSION

In today's globalized and interconnected business landscape, supply chain management plays a critical role in the success and competitiveness of organizations across industries. Efficient and effective supply chain management requires the integration and coordination of various activities, processes, and stakeholders involved in the flow of goods, services, and information from suppliers to customers. Information technology (IT) has emerged as a vital enabler in enhancing the performance and agility of supply chains

In conclusion, IT plays a pivotal role in modern supply chain management. It enables connectivity, integration, and collaboration among supply chain partners, enhances demand forecasting, inventory management, and transportation logistics, facilitates supplier relationship management, supports risk management, and enables performance measurement and continuous improvement. By leveraging IT effectively, organizations can achieve a more agile, responsive, and competitive supply chain, delivering greater value to customers and stakeholders.

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