



## APPENDIX – I



# **The Effect of E-Logistics on the Customer satisfaction**

By

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**A DISSERTATION REPORT SUBMITTED IN PARTIAL  
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## APPENDIX – II

### Acknowledgement

This is to acknowledge with thanks the help, guidance and support that I have received during the Dissertation.

I have no words to express a deep sense of gratitude to the management of GRAAS Logistics India for giving me an opportunity to pursue my Dissertation, and in particular Ms Shiwani Raturi, for her able guidance and support.

I must also thank Mr Gajendra Gaur for their valuable support.

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### APPENDIX- III

#### Declaration by the Guide

This is to certify that the **Mr. Himanshu Gaur**, a student of **MBA in Logistics and Supply chain management**, SAP ID **500071734** of UPES has successfully completed this dissertation report on “**The Effect of E-Logistics on the Customer satisfaction**” under my supervision.

Further, I certify that the work is based on the investigation made, data collected and analyzed 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.

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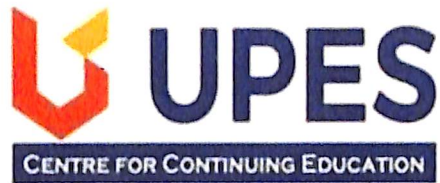
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## List Of Abbreviations

<b>1PL</b>	:	which are the shipper or the consignee
<b>2PL</b>	:	which are actual carriers
<b>3PL</b>	:	Third party logistics
<b>4PL</b>	:	Fourth-party logistics provider.
<b>5PL</b>	:	Fifth party logistics.
<b>B2B</b>	:	Business to Business
<b>B2C</b>	:	Business to consumer
<b>IoT</b>	:	Internet of Things
<b>CRM</b>	:	Customer Relationship Management
<b>E-CRM</b>	:	Electronic Customer Relationship Management
<b>ITS</b>	:	intelligent transport system
<b>ICT</b>	:	Information and Communication Technology
<b>IT</b>	:	Information Technology
<b>BPR</b>	:	Business process re-engineering
<b>ERP</b>	:	Enterprise resource planning
<b>SFA</b>	:	Sales force automation





## ABSTRACT

With the development in industrialization the demand for the e-logistic services rises and with this rise there is a need to analyze the customer satisfaction is also rises. This study aims to analyze the effect of e-logistics on the customer satisfaction. This study investigates the e-logistics factors which influence customer satisfaction. The factors of e-logistics in this study we discussed were Electronic Customer relationship management (E-CRM), effective payment methods, Logistics management, and Information and communication technology (ICT). A survey questionnaire was adopted, there are two parts one part for the factors of e-logistics and the other one for customer satisfaction for the measurement of variables in the research. Where the introductory portion deals with the demographic items and then the first part contain items tend to identify the score for each factor of e-logistics and then second part is for the customer satisfaction. Literature review with respect to E-CRM, effective payment methods, logistics management and ICT and customer satisfaction relationship of these variables guides this study. And these relationships are used to develop a research model and hypotheses. In the study through convenient sample technique 100 logistics actors of different logistics fields are chosen for research. The findings of the research demonstrate that factors of e-logistics which are Electronic Customer relationship management (E-CRM), effective payment methods, Logistics management, and Information and communication technology (ICT) does effect e-logistics customer satisfaction. Moreover, e-logistics has shown positive relationship with customer satisfaction.

In conclusion, results have shown significant interaction of customer satisfaction with the variables discussed in this study. The study covers only limited area in the present research therefore; to have more better and generalizable insights future studies must include investors from other parts of the country. However, large sample size can also be used in the future studies.

Now a day's expanding businesses and reaching directly to customers is very important to gain the trust and loyalty of the customers. In this study we discussed four independent variables those are Electronic Customer relationship management (E-CRM), effective payment methods, Logistics management, and Information and communication technology (ICT) and from the study it become clear that they have a positive significant relationship with the dependent variable that is customer satisfaction. Few studies are done in this context, so this study will help in mitigating the e-logistics customer satisfaction issues.

# Chapter One

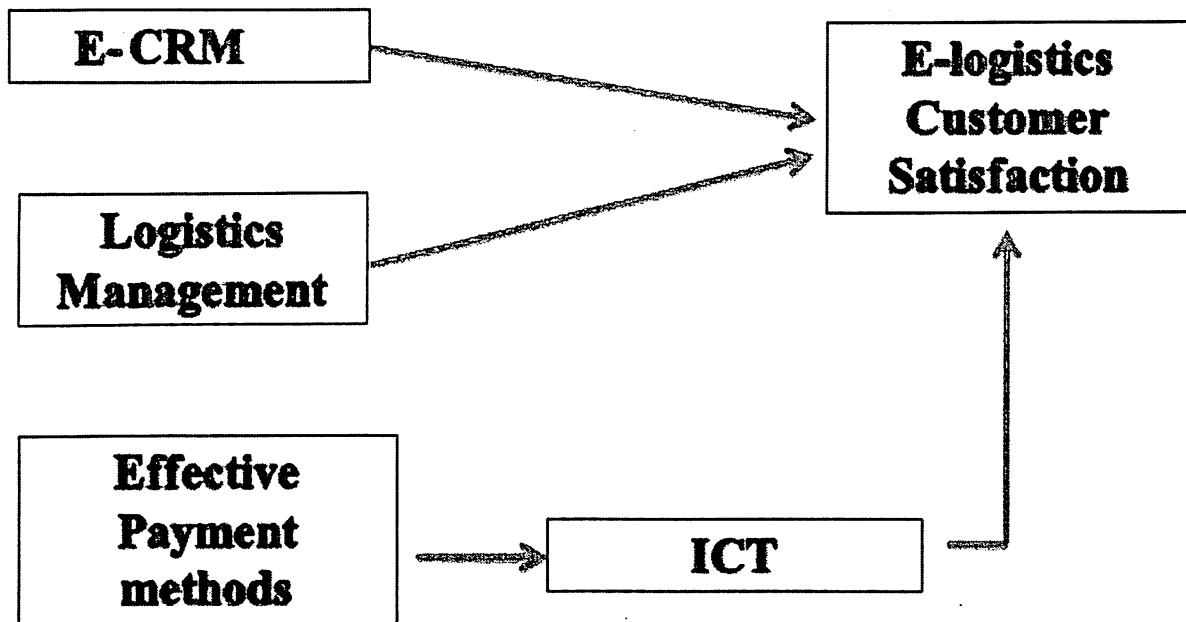
## Introduction

### 1.1 Overview

With an increase in e-logistic services, the problem of e-logistic customer satisfaction is raised. E-logistic services spread so rapidly worldwide which overlook the important segment of customer satisfaction. As satisfaction is the key to success for several businesses. Various prior studies emphasized on logistic customer satisfaction and found that logistic customer satisfaction is one of the crucial areas. However, most of the researchers could not introduce a comprehensive framework to satisfy the e-logistics customers.

For owning a good business the logistics companies' are more concerned to achieve the customer satisfaction and for achieving this the companies have integrated towards IT sector which on a whole given birth to the e-logistics. As at present the customers are more concerned for faster delivery of products, less delivery charges quality of products, effective methods of payment and all this they want from anywhere in the world and this can only be achieved by updating the working style of the companies, companies are adopting mobile technologies for this aim. Customer satisfaction is very important for logistics companies seeking competitive advantage, because they realize that if they do not satisfy the expectations of customers, their place will be taken by other companies whose activities will be more concentrated on customer expectations.

This study addresses the effect of E-logistics on customer satisfaction and for this we have focused on some e-logistics variables which are Electronic Customer relationship management (E-CRM), Effective Payment methods, Logistics management and Information and communication technology (ITC). All the variables are independent and in this study their relationship with customer satisfaction is shown. A theoretical framework is shown in Figure 1.



**Figure 1: Theoretical framework**

Internet has emerged as the essential part in supply chain management. The Internet has emerged as a most cost-effective means of driving supply chain integration. While the management of information flows has always been a key aspect of Supply chain management, the rapid growth of web-based information transfer between companies, their suppliers, and their customers has decidedly increased the importance of information management in creating effective supply chains. E-Business can be defined as a relation between the Internet and supply chain integration. This relation is transforming many processes within the supply chain from procurement to customer management and product design.

E-Commerce will open an entirely new market for employers in the logistics field. Logistics and distribution system that function efficiently and ineffectively in all respects will be crucial for the success of the companies involved. This implies that manufacturing companies, and especially logistics companies, must identify and create effective logistics solutions in order to compete on the marketplace.

Ordering materials of various kinds electronically, and primarily via the Internet, will become more and more common. This applies not only to business-to-business but also to business-to-customer. This end consumer will normally be a private person who orders everything from books, clothes and food to a new model computer. The result is that the end consumer can receive and will demand to receive the goods ordered significantly faster than via traditional distribution.

The warehouse and/or yard are at the core of transportation and logistics businesses. Their efficiency directly impacts the cost of doing business and the ability to compete. With IoT-enabled mobile devices designed to track inventory data, equipment and vehicles, enterprises can give their physical assets a digital voice. By converting the physical to digital, transportation and logistics warehouses can capture and share their mission-critical data across the cloud, ensuring they have the right products in the right place at the right time.

Advances in mobile technology and the IoT are dramatically improving the way transportation and logistics businesses operate. The Enterprise Asset Intelligence delivered through these solutions is what enables organizations to pinpoint inefficiencies in real time, improving throughput and helping them build progressive plans to move toward innovation.

Now a day's logistic companies are using air, ground or sea to deliver the products, transportation and logistics are essential components to many enterprises' productivity, and access to real-time data is critical. Mostly all the businesses are using mobile technologies; however, the unpredictable nature of fuel costs, rising labor rates, increased traffic and a changing regulatory environment, continue to make operations challenging. What's more, inefficiencies caused by a lack of visibility create considerable costs. As industry regulations force transportation and logistics organizations to do more with less, profitability is threatened. However, with visibility into personnel, equipment and transactions, enterprises can better support peak operations in real time - improving operational efficiency and performance. With the advent of today's mobile technologies and the Internet of Things (IoT), enterprises can accelerate productivity, profitability and operations with solutions designed specifically for their processes. With the right IoT solution in place, enterprises

can connect all devices across a centralized cloud network, and capture and share their mission-critical data, allowing them to gain real-time visibility of their operations. This actionable insight is what provides organizations the Enterprise Asset Intelligence they need to make improvements. This enhanced business knowledge can be gained through a set of enabling technologies in the areas of asset management, cloud, mobile and Big Data.

The Internet signifies new opportunities for reaching the global market. The Internet reduces the cost of purchases by giving supply-chain partners quick access to information about sources, availability, pricing and technical data. The integration of IT with logistics management is an important prerequisite for good logistics management. An electronic commerce portal can be used as a marketing channel in collaboration with existing intermediaries or through bypassing intermediaries—disintermediation will provide high leverage opportunities to the logistics function and increase its flexibility. Hence the development of E-Logistics becomes essential for success in global operations.

## 1.2 Background

With the increasing e-logistic services, the problem of e-logistic customer satisfaction is raised. E-logistic services spread so rapidly worldwide which overlook the significant segment of customer satisfaction. Therefore, the prime objective of the current research study is to develop a comprehensive framework for e-logistics customer satisfaction. Various studies highlighted the area of e-logistic customer satisfaction. Some topics are studied concerning the Electronic customer relationship management (E-CRM), Effective payment Methods, Logistics management, and Information and Communication Technology (ICT). By using the convenience sampling technique, the results of the current study found that E-CRM, Logistics management functions are important for customer satisfaction and effective payment methods and website design has a significant positive relationship with ICT and ICT has a significant positive relationship with e-logistic customer satisfaction. This study is contributing to the body of knowledge by developing a comprehensive framework to solve various e-logistic problems. Hence, the current study is helpful for e-logistic companies to mitigate e-logistic customer satisfaction problems.

Most studies determine consumer satisfaction in three ways:

- (1) Decision or reaction: emotional, cognitive assessment
- (2) Special focus assessment (e.g. expectations, products or buying experience etc.)  
and
- (3) Response time (i.e. before buying, after consume etc.)

The thesis describes how the advances in the information systems technology have had a huge impact on the evolution of supply chain management. As a result of such technological advances, supply chain partners can now work in tight coordination to optimize the chain-wide performance, and the realized return may be shared among the partners.

This study mostly focus on the five variables out of which four are independent variables (customer relationship management, e-logistic functions, logistics management, and information and communication technology) and one dependent variable (customer satisfaction).

### **1.3 Purpose of the study**

Logistics management is one of the tools to face economic challenges; it's a mix of business and core activities of the organization. The supply and distribution activities integrated together form what's known as logistics activities. The logistics activities within a business organization attempt to satisfy customers through achieving the time and location related market challenges and also through the cost of the service provided as well as the quality, taking into consideration customers needs and purchase power. Customer satisfaction is important because it provides marketers and business owners with a metric that they can use to manage and improve their businesses. Customer satisfaction is also a way to determinate the continuity of the business or of a product life by measuring the loyalty of the customers. If the customers are happy and satisfied, it will ensure the continuity of sales which means the continuity of the business. In the past customer satisfaction was more focused on requirements such as quality and reliability reducing costs of poor quality.

Important need for this research is to obtain understanding through companies around what the E-logistics really are and how they are managing to improve performance, increase the value of firms and enhance the customer's satisfaction using the e-logistics activities and the need for integration of IT with logistics management for good logistics management.

We use primary and secondary data in the analysis and it identified the need of e-logistics for improving the functioning of companies for improving the productivity and the demand by connecting directly to customers and providing them easy access to the products and e-payment methods.

This study will help actors in logistics field to get substantial findings on the impact of e-logistics on customer satisfaction. The industries will be able to understand the significance of e-logistics in improving the level of customer satisfaction.

The main idea for this study is to gain the knowledge of customer's requirement with e-logistics. Presently all the business are fully integrated with modern technologies but there are some barriers and challenges which were e-logistic actor have to face to achieve customer satisfaction. This study was also purposed to put a focus on such challenges.



## **1.4 Research Hypotheses**

Customer satisfaction is responsible for the profitability of the business, as if the customer will be satisfied then it is evident that the customer will visit more and hence more sales will result more profitability. Now in all this logistics plays a very important role and this study will analyze the impact of e-logistics on the customer satisfaction. This study will help actors in logistics field to get substantial findings on the impact of e-logistics on customer satisfaction.

Research methodology is a way to systematically study the Research problem. In it we study the various steps which are generally adopted by Researcher in studying the Research problem. The research methodology used in this dissertation is a Descriptive research design and followed a quantitative research which attempts to describe systematically a situation, problem, phenomenon, or service, or provides information about the effect of E-Logistics on customer satisfaction

# Chapter two

## Literature Review

### 2.1. Concepts and Definition

#### 2.1.1 Logistics

Logistics is that part of the supply chain process that plans, implements, and controls the efficient, effective flow and storage of goods, services, and related information from the point-of-origin to the point-of-consumption in order to meet customers' requirements.

#### 2.1.2 E-Logistics

E-logistics is a Dynamic set of communication computing and collaborative technologies that transform key logistical processes to be customer centric by sharing data. Knowledge and information with supply chain partners. Ultimate objective of E-logistics is to deliver right products in right quantities at right place and time to the right Customer.

E-logistics is a logistics system, which deliver products at right time at a minimum cost. E-logistics has four major dimensions. These are information management, inventory management, partnership formation, and strategic planning.

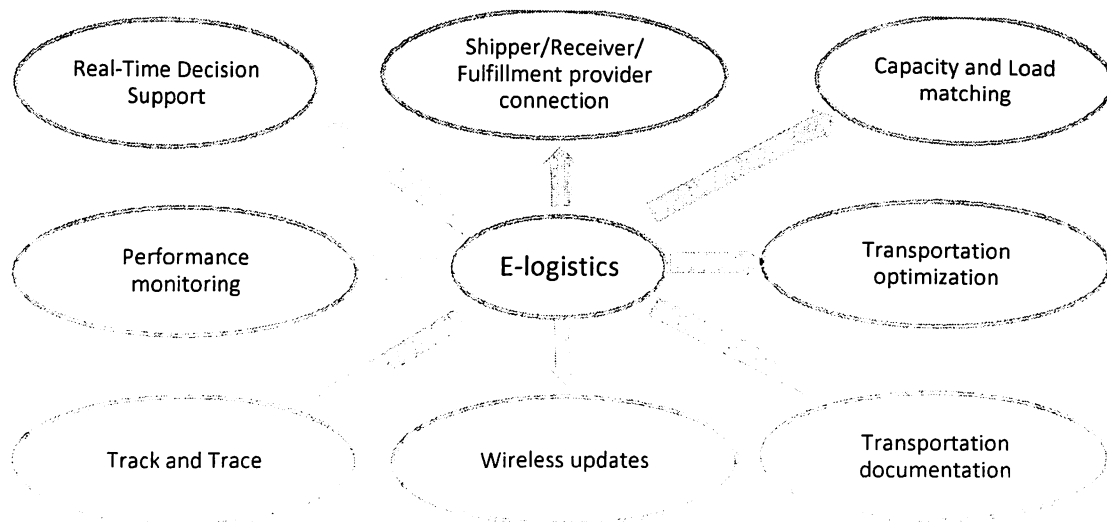


Figure 2: Advantages of E-logistics

### 2.1.3 Customer Relation Management (CRM)

Customer relationship management (CRM) is an approach to managing a company's interaction with current and potential customers. It uses data analysis about customers' history with a company to improve business relationships with customers, specifically focusing on customer retention and ultimately driving sales growth.

## CRM Evolution

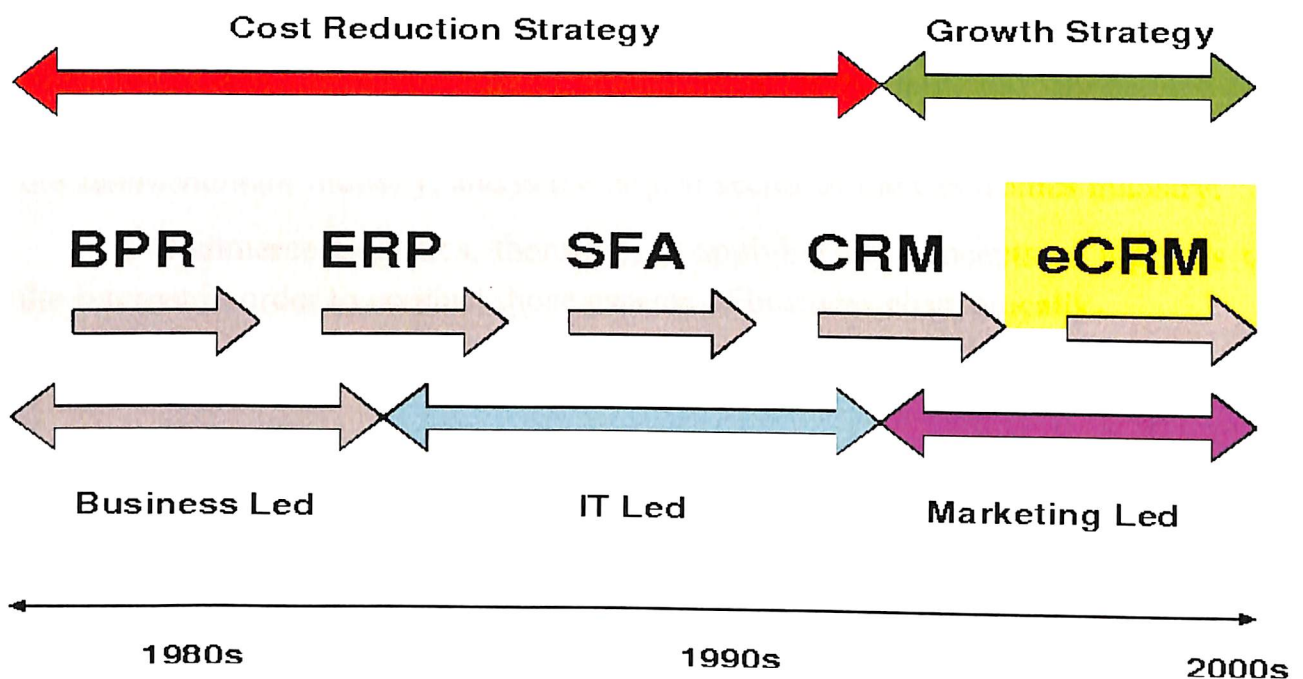


Figure 3: CRM and /E-CRM Evolution

### 2.1.4 Electronic Customer Relation Management (E-CRM)

Electronic customer relationship management (E-CRM) is the application of Internet-based technologies such as emails, websites, chat rooms, forums and other channels to achieve CRM objectives. It is a well-structured and coordinated process of CRM that automates the processes in marketing, sales and customer service.

An effective E-CRM increases the efficiency of the processes as well as improves the interactions with customers and enables businesses to customize products and services that meet the customers' individual needs.

### **2.1.5 Effective payment methods**

E-commerce (electronic commerce) is the activity of electronically buying or selling of products on online services or over the Internet. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems. E-commerce is in turn driven by the technological advances of the semiconductor industry, and is the largest sector of the electronics industry.

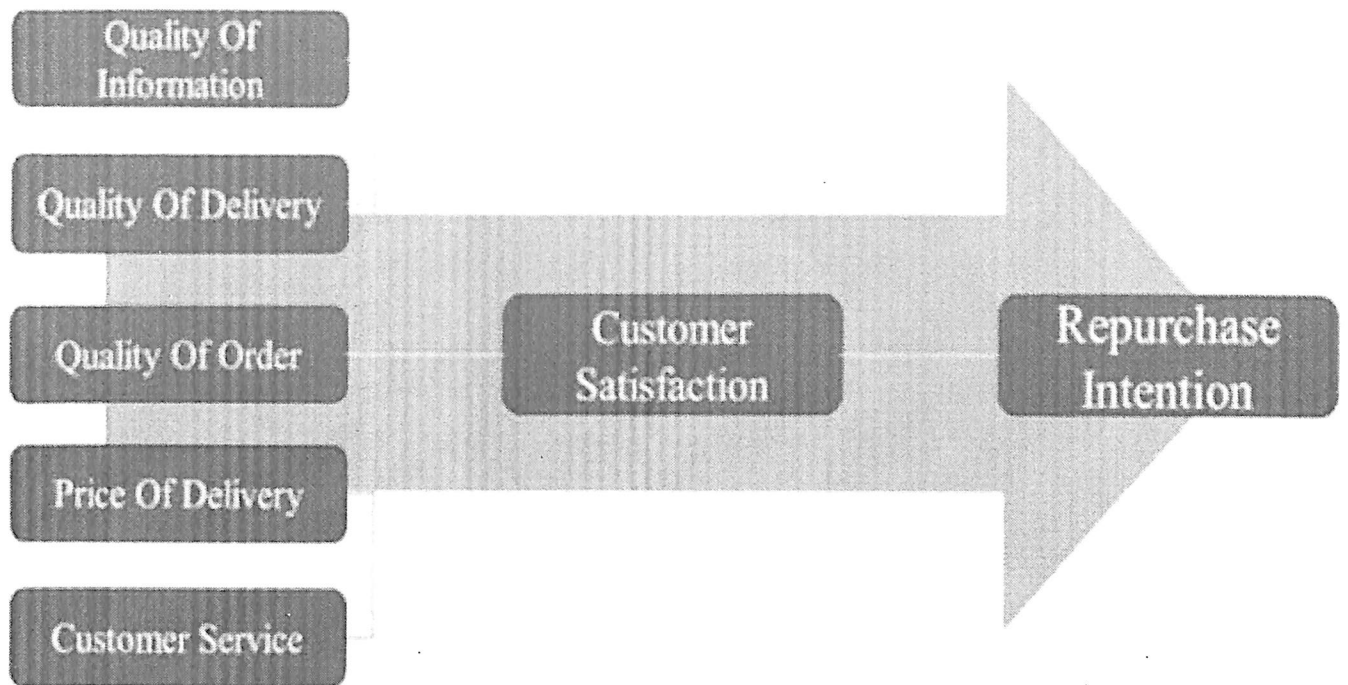
E-Commerce Logistics, therefore, is applying the concepts of logistics via the Internet in order to conduct those aspects of business electronically.

### **2.1.6 Customer Satisfaction**

Customer satisfaction is defined as a measurement that determines how happy customers are with a company's products, services, and capabilities. Customer satisfaction information, including surveys and ratings, can help a company determine how to best improve or changes its products and services.

An organization's main focus must be to satisfy its customers. This applies to industrial firms, retail and wholesale businesses, government bodies, service companies, nonprofit organizations, and every subgroup within an organization.

Customer satisfaction is very important for logistics companies seeking competitive advantage, because they realize that if they do not satisfy the expectations of customers, their place will be taken by other companies whose activities will be more concentrated on customer expectations.



**Figure 4: Representation of Customer Satisfaction**

### **2.1.7. Logistics Management**

Logistics management is a supply chain management component that is used to meet customer demands through the planning, control and implementation of the effective movement and storage of related information, goods and services from origin to destination. Logistics management helps companies reduce expenses and enhance customer service. The logistics management process begins with raw material accumulation to the final stage of delivering goods to the destination. By adhering to customer needs and industry standards, logistics management facilitates process strategy, planning and implementation.



**Figure 5: Logistics Management**

### **2.1.8. Information and Communication Technology (ICT)**

Information and communications technology (ICT) is an extensional term for information technology (IT) that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals) and computers, as well as necessary enterprise software, middleware, storage, and audiovisual systems, that enable users to access, store, transmit, and manipulate information.

# Components of ICT

The term information and communications technology (ICT) is generally accepted to mean all technologies that, combined, allow people and organizations to interact in the digital world.

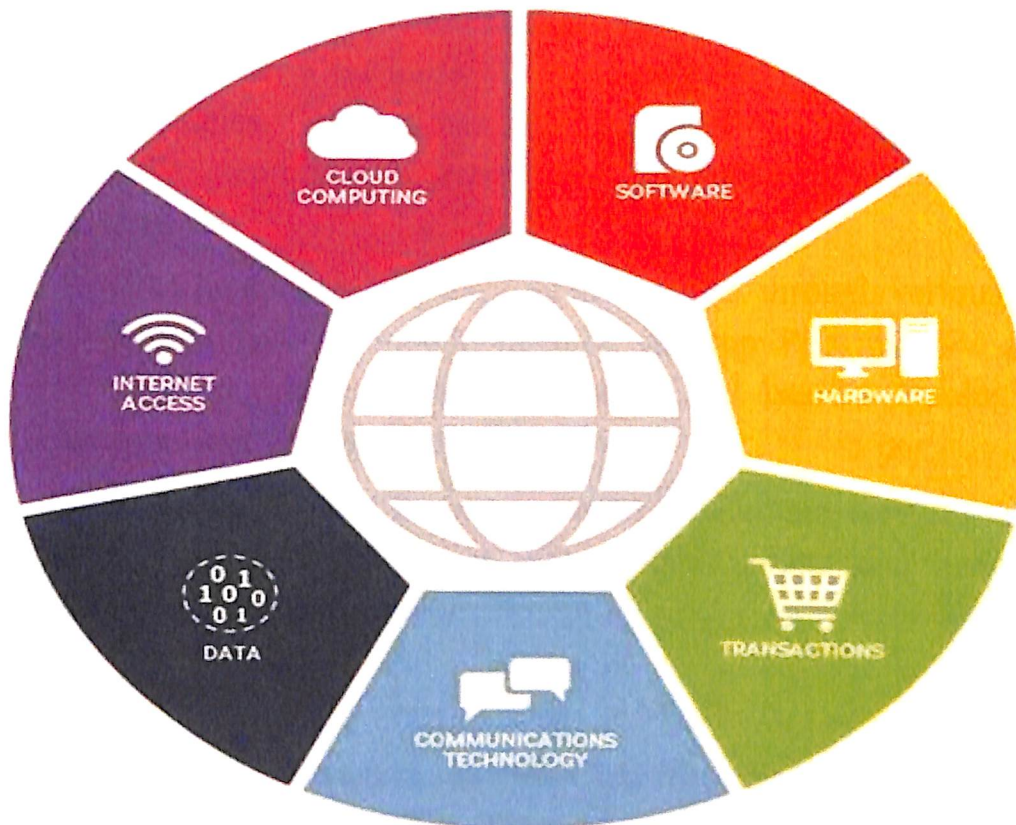


Figure 6: Concepts of ICT

## 2.1.9. Supply Chain Management

Supply chain management is the management of the flow of goods and services and includes all processes that transform raw materials into final products. It involves the active streamlining of a business's supply-side activities to maximize customer value and gain a competitive advantage in the marketplace.

SCM represents an effort by suppliers to develop and implement supply chains that are as efficient and economical as possible. Supply chains cover everything from production to product development to the information systems needed to direct these undertakings.

## **2.2. Relationships between Variables**

### **2.2.1. E-CRM and Customer Satisfaction**

Electronic customer relationship management provides an avenue for interactions between a business, its customers and its employees through web-based technologies. The process combines software, hardware, processes and management's commitments geared towards supporting enterprise wide CRM business strategies.

E-CRM is motivated by easy internet access through various platforms and devices such as laptops, mobile devices, desktop PCs and TV sets. It is not software, however, but rather the utilization of web-based technologies to interact, understand and ensure customer satisfaction.

An effective E-CRM improves customer relations, services and supports. It matches the customers' behavior with suitable offers and hence it increases customer satisfaction and loyalty.

### **2.2.2. Logistics Management and Customer Satisfaction**

Logistics management involves selecting appropriate vendors with the ability to provide transportation facilities, choosing the most effective routes for transportation, discovering the most competent delivery method, using software and IT resources to proficiently handle related processes. The main objective of the logistics management are to improve the overall organization performance and customer satisfaction level by improving the products or service delivery to customer.

The relation between the customer satisfaction and logistics management has many indicators; one of the most import indicators is the cost of the product.

The logistics analyze aims to reduce the cost from suppliers to final user, taking into consideration the quality and the time, two of the major customer satisfaction indicators are the costs and the waiting time. Both customer satisfaction indicators are implied in the logistics process which result to a cheap



product (using a cheap raw material, choose the cheapest transportation method, high production with low labor costs, low cost storage and delivery).

### **2.2.3. Effective payment methods and Customer Satisfaction**

E-commerce is a field of commerce with the use of different networks such as the Internet so that e-commerce provides online sales support operations and customer service. E-commerce can be likened with electronic market where sellers (suppliers, or companies, or shops), intermediaries (brokers) and buyers, continue in providing products and services in the virtual or digital format, and pay the money. In general, it is a comprehensive expression that means any type of business or commercial operations involving the exchange of goods and services at any time via electronic channels and using so-called electronic payment gateways. E-commerce can be achieved through connecting to the Internet, using the credit card and having an address for shipping.

E-commerce offers many benefits; it is not only for individuals but also for the community of people and institutions to the abundance of Internet access and easy access to website through secure electronic payment channels. One of the primary goals of e-commerce is customer satisfaction.

The interested companies in customer's satisfaction are the companies that have reputation and credibility of helping spread and breadth of their business. The customer is always looking for quality and price; therefore, companies seek to earn customer satisfaction by offering affordable prices and multiple services.

### **2.2.4. Impact of Information and Communication Technology on Customer Satisfaction**

Information technology set expectations of customers high. There's no better feeling than for a customer to have expectations exceeded. No business is immune to unhappy customers. In fact, even companies with the best customer service in the world will still lose up to 9% of their customers to competitors. Information technology provides customer feedback. Information technology strongly ensures

customer loyalty. Information technology significantly builds customer loyalty as it strives to empower and educate customers and also invests in a self-service support channel. Information technology provides an interactive platform to customers to share their grievances and have their needs attended to on time and concisely. Information technology sets the stage for a two-way communication effort. For example, follow up with a customer after a business transaction proves to customers that the company wants to hear from them. By soliciting feedback and using that information to inform business decisions will find new ways to ensure business is relevant to customers and hopefully open new lines of profitable opportunity.

## **2.3. Critical Factors**

In this chapter there is theoretical support is given to our research. This support will be including theory of e-logistics and satisfaction theory as well.

### **2.3.1. Theory of E-logistics**

Logistics can be defined as an operational process that includes inputting, storing, transporting and distributing physical goods. E-Logistics is an Internet-enabled logistics value chain designed to offer competitive logistics services including public warehousing, contract warehousing, transportation management, distribution management, freight consolidation. Over the years, logistics has developed from single party logistics (self-managed) to Third-party logistics (3PL) using a logistics network. 3PL is contractual logistics focusing on regional operations. The main objectives of outsourcing logistics services are to: (a) reduce operating costs, (b) meet demand fluctuations, and (c) reduce capital investment.

The general problems that arise in corporate logistics include delayed and inaccurate information, incomplete services, slow and inefficient operations, and high product damage rates. This indicates the importance of accurate information exchange among different parties along the logistics value chain. Under such

circumstances, the role of information technologies including the Internet, World Wide Web (www) and Electronic Data Interchange (EDI) in providing shared-information platforms for improving logistics performance is significant.

The key component in the setting-up of an E-Logistics system is developing a logistics community network with suitable Internet technologies. E-logistics (Internet-enabled logistics) and logistics business process outsourcing are the subsets of a larger external logistics market, part of the supply chain. The supply chain is an integrated business model for logistics management. It covers the flow of goods from suppliers through manufacturing and distribution chains to the end consumer. Information Technology (IT) is a two-edged sword. The increasing power of communication systems makes intra-organizational integration possible in order to improve coordination between organizational units. In recent years, information systems (IS) have been regarded as resources to support various business processes highlights the role of the Internet, Intranet and Extensible Markup Language (XML) for enhancing money flow visibility and supply chain visibility. In the literature, few studies deal with 3PL using a web-based information system in a logistics value chain. E-Logistics can be defined as an Internet-enabled 3PL value chain which can provide the best logistics services to customers.

### **2.3.2. A Conceptual Framework for Developing an E-Logistics System**

A conceptual framework for developing an E-Logistics system is presented. The objectives of E-Logistics are: reducing operating costs, meeting product delivery deadlines, and improving customer services;

This framework has four major dimensions: strategic planning, partnership formation, inventory management and, information management. All of the four dimensions are interdependent and have been identified as the major enablers of a successful logistics system to deliver the goods at the right time and at minimum cost.

### **2.3.3. E-logistics functions and Customer Satisfaction**

E-logistic functions include e-commerce, e-payment, e-traceability, website design. These are directly connected to customer satisfaction as in today's world the time, transparency between the customer and service provider is very important. E-payment helps the customer to make the payment easier and saving time, Payment can be made through many options credit cards, debit cards, net banking and many more. For electronic payments, a system of verification of payment is needed before shipping. Now a customer can look the best deal he gets on internet, they can check the pricing details by just opening the website, they don't have to go to a store, for the service providers internet made it possible to directly contact a customer and to reach their demands and act accordingly. Customer gets the information if the product is available or out of stock or if there is any delay in delivery, which will be essential to gain customers trust. Arranging shipment electronically is quick and immediate. Insurance facilities are also available for customers since the product can be lost or damaged in shipping process. Now a day's customer are gets information's like order confirmation, payment success, shipping confirmation, tracking information, any problems in the process, and with this reverse logistics also become possible which is helpful in gaining customers satisfaction.

### **2.3.4. Expectation-Disconfirmation Theory**

Disconfirmation of expectations paradigm is conceptualized by Oliver (1980, 1997). It came from a subject of study for antecedents of satisfaction. The standard approach to study the satisfaction involves comparison of prior expectations with observed performance. Thus in this theory, the customer's perception of overall satisfaction results from a comparison between expectation and outcome performance. Therefore, expectation and outcome performance are two important variables which can influence the judgment of satisfaction measure. Because customers satisfaction is one of the curial factor to predict the customer purchase tendency. To investigate satisfaction toward the products is also a main topic in customer behavior research. Based on expectation disconfirmation theory, firm can increase satisfaction by increasing perceived product performance or

decreasing expectation. In the process of satisfaction judgments, first buyers may experience from expectations of the specific product or service prior to purchase. Second, consumption reveals a perceived performance level of product which is influenced by expectations if the difference between actual performance and expectations is perceived as being small. Hence, perceived performance may increase or decrease directly with expectations as indicated by the arrow drawn from expectations to perceived performance. Third, perceived performance may either confirm or disconfirm prepurchase expectation. Fourth, satisfaction is positively affected by expectations and the perceived level of disconfirmation. When the outcome performance is object, it is difficult to increase the perceived performance. Thus, to decrease expectations is a viable alternative for the firm. To sum up expectation disconfirmation theory, expectations provide a baseline or anchor level of satisfaction.

### **2.3.5. Business benefits of E-CRM**

Implementing a customer relationship management (CRM) solution might involve considerable time and expense. However, there are many potential benefits.

A major benefit can be the development of better relations with your existing customers, which can lead to:

- Increased sales through better timing due to anticipating need based on historic trends
- Identifying needs more effectively by understanding specific customer requirements
- Cross-selling of other products by highlighting and suggesting alternatives or enhancements
- Identifying which of your customers are profitable and which are not

Ultimately this could lead to:

- Enhanced customer satisfaction and retention, ensuring that your good reputation in the marketplace continues to grow
- Increased value from your existing customers and reduced cost associated with supporting and servicing them, increasing your overall efficiency and reducing total cost of sales.

- Improved profitability by focusing on the most profitable customers and dealing with the unprofitable in more cost effective ways.

### 2.3.6. Logistics system influenced by ICT

ICT will affect the logistics system in different ways. Concerning the influence of ICT on the logistics system, three aspects should be examined (Figure):

- The Internet changes the B2B and B2C business style, thus increasing/decreasing the demand of freight transportation (E-commerce).
- The internet also changes the S2L and L2L market of logistics services where fragmented transportation needs might be consolidated (e-logistics).
- ITS makes logistics operations more efficient by optimizing the fleet management based on real-time traffic data (e-fleet management).

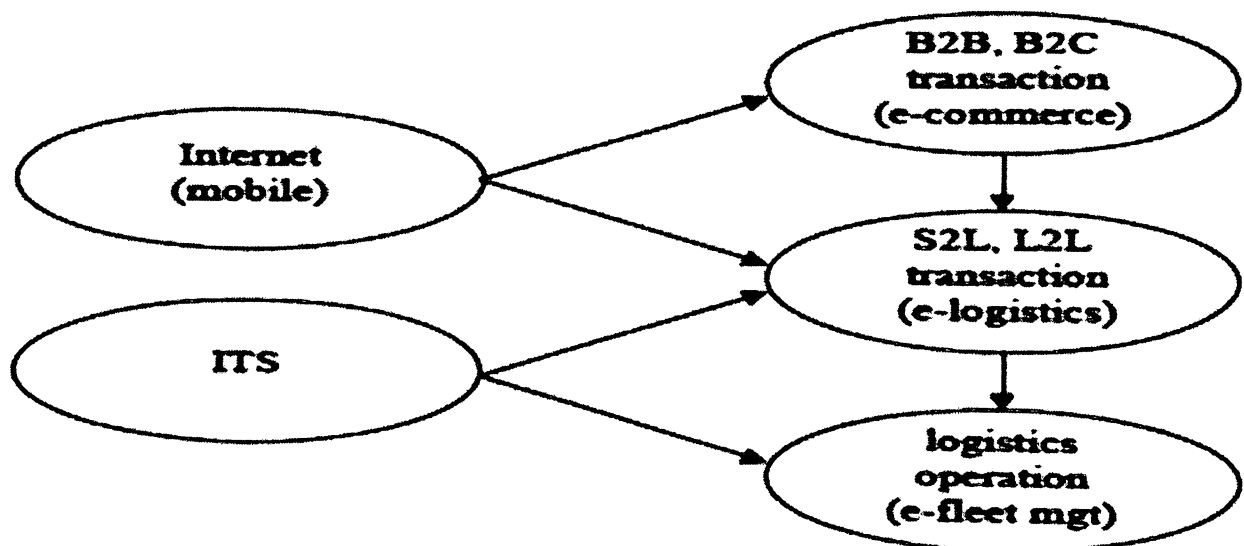


Figure 7: ICT and Logistics system

## 2.4. Summary

Logistics is one of the factors which creates the value for the customers in terms of ease, and saving of time, through an effortless interaction with the logistics services. This study addresses the developing logistic field via enabling internet and making it e-logistics. E-logistics connects the logistic companies directly to customers and excess the demand and requirements of them. The Information and Communication Technology (ICT) is related to e-payment, e-traceability and website designing and the whole is related to customer satisfaction. The E-logistics, CRM, E-commerce, ICT and SCM are variables discussed which brings changes on customer satisfaction.

From the study by examining all the relationship of the variables it is proved that all of the variables are positively correlated with each other and have significant effect. And all of the Independent Variables Customer relationship management, e-logistics functions, Logistics management, information and communication technology (ICT) bring changes in the Dependent Variable which is customer satisfaction where sample size is 68%. And the entire hypothesis which is developed in the study is accepted and the independent variables have positive impact on dependent variable.

# Chapter three

## Research Design, Methodology and Plan

### 3.1. Data Sources

One of the most significant steps in writing a report is the collection of data or information. Because the report depends on the quality of the data collected, the report will be good if the data collected is good. When collecting data in research it is important to take into account, what type of data was collected and what method of data collection was implemented.

The present study is explanatory in nature than experimental. The data was collected from the organization under study from primary as well as secondary sources.

**Primary sources** – The primary data for the purposes of the study was collected through sample method by adopting convenience sampling technique

**Secondary sources** – The secondary data was collected from various published and unpublished sources like website, transcript, journals and handouts.

### 3.2. Research Design and Research Methodology

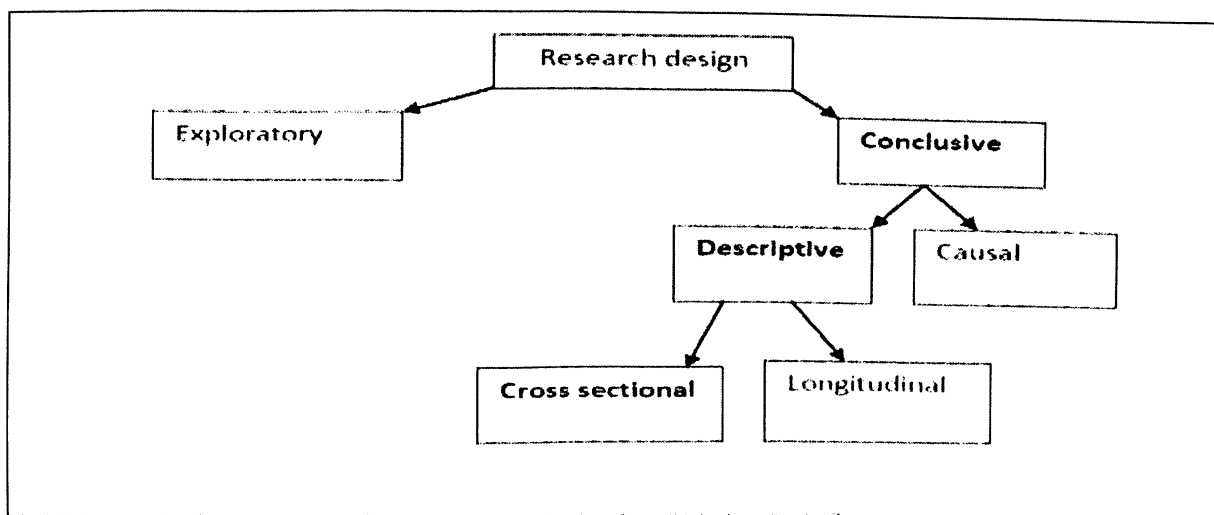
#### 3.2.1. Research Design

Research design is classified into exploratory and conclusive. The primary objective of conclusive research is to formulate and test hypotheses and to explain the relationships between variables of the study. On the other hand exploratory research aims at identifying the real nature of research problems and also formulating relevant hypotheses for further studies. In conclusive research, key informants are clearly defined, large samples are used and data are analyzed by quantitative/statistical techniques. But in exploratory research, the procedure for information source is unstructured, samples are usually small and data are analysed through both qualitative and quantitative techniques.



Further, conclusive research is divided into descriptive and casual. Causal research in conclusive research is used to study the cause and effect relationships among variables through experimentation. On the other hand descriptive research in marketing is used to describe an industrial phenomenon, characteristics of organizations, market demand, and customer profile. Again, Descriptive research can be categorized into two categories: cross sectional or longitudinal. Cross sectional research design is applied when data are collected from the pre-defined sample of population elements only once. Whereas fixed sample or sample of population elements are measured repeatedly in longitudinal research design. Therefore, this study is considered to be classified as cross sectional design which falls under the category of descriptive and conclusive research.

The design of this study will be with minimum interference, cross sectional descriptive survey. The reason for choosing this type of survey is that it will be the most appropriate for this research and its questions. This survey which is known as cross sectional survey will enable the researchers to examine the effects of e-logistics on the customer satisfaction within logistics actors. And this study will also offer the opportunity for a logical structure of the inquiry into the problem of the study. This is descriptive study along with hypothesis testing on the impact of e-logistics on the customer satisfaction and the basic research will be revolving around the major factors like e-logistics functions, customer relationship management and customer satisfaction which will improve the customer satisfaction. The research is based on two types of data secondary and primary data. The secondary data is the published and unpublished sources and the data obtained from the survey through the questionnaire is known to be the primary data for this study.



**Figure 8: Research design for this study**

### **3.2.2. Research Methodology**

Research methodology is a way to systematically study the Research problem. In it we study the various steps which are generally adopted by Researcher in studying the Research problem. The research methodology used in this dissertation is a Descriptive research design and followed a quantitative research which attempts to describe systematically a situation, problem, phenomenon, or service, or provides information about the effect of E-Logistics on customer satisfaction.

### **3.3. Survey Questions**

The survey questionnaire was developed to get the basic idea on the effect of e-logistics on customer satisfaction. The following topic were tried to be addressed and to get the knowledge of these.

- Developments done in e-logistics technology are beneficial in bringing customer satisfaction.
- Importance of Customer satisfaction in logistics business.
- Does the variables E-CRM, Effective Payment methods, Logistics management and ICT responsible for customer satisfaction?
- What are the benefits and barriers experienced after integration of logistics with mobile technologies?

Sample questionnaire is given in appendix for reference.

### **3.4. Interview procedures**

The data was collected through structured questionnaires and the respondents were the logistics manager, and when the logistics manager was not present then these questionnaires were filled by the inventory and ware-house manager and even when they were not present then the questionnaire were filled by the store manager who also had knowledge of the logistics. Some logistics students were also provided with questionnaire. Questionnaire with structured questions was used to collect the data.

### **3.5. Data Analysis Procedures**

As it is the descriptive research, so on the basis of the data collected through questionnaires, their percentages, mean and standard deviation calculation will be done. As already explained the analysis used was descriptive, due to applying this, the re-researcher was enabled for the summarizing, organizing, evaluating and interpreting the numerical results. And regression analysis will be applied for creating the relationship between the factors of e-logistics and customer satisfaction.

### **3.6. Statistical Tools for Data Analysis**

After collecting the data, the following tests were applied, for measuring the relationship between the variables, the correlation analysis is used. And for the relationship between the dependent and independent variables regression analysis was used.

#### **3.6.1. Cronbach's Alpha**

Cronbach's alpha, is the coefficient of consistency or reliability, it's a technique to check and compute the internal evenness between the questions or items used in the survey questionnaire, and it also determine the internal relation between the items of the questionnaire.

#### **3.6.2. Correlation**

Correlation is the most common used statistical analysis to check the degree of association between any two variables. For the examination of the liner relationship Pearson correlation coefficient ( $r$ ) is the most widely used measure. For its examination its value lies between +1 and -1.

### 3.6.3. Regression

Regression analysis is a statistical modeling used to estimate the type of relationship, and its intensity between predictor and outcome variable. In this study the model is applied on the independent variable those are SCM, e-logistics functions, logistics management, Information communication technology (ICT) and dependent variable that is customer satisfaction. The regression equation is given below

$$Y = c + \beta_1 (\text{INV1}) + \beta_2 (\text{LT1}) + \beta_3 (\text{TRN1}) + \beta_4 (\text{LOG1}) + e$$

And its explanation is given below

Y = customer satisfaction (the dependent variable) C = constant.

# Chapter four

## Findings and Analysis

### 4.1. Descriptive Statistics

As of the total 100 questionnaires were distributed among the respondents related to different logistic fields, and out of those 100 questionnaires, 83 were received back from the respondents, and the analysis was done on 68, as 15 questionnaires were not filled completely, which makes response rate of 68%.

**Table 1: Response Rate**

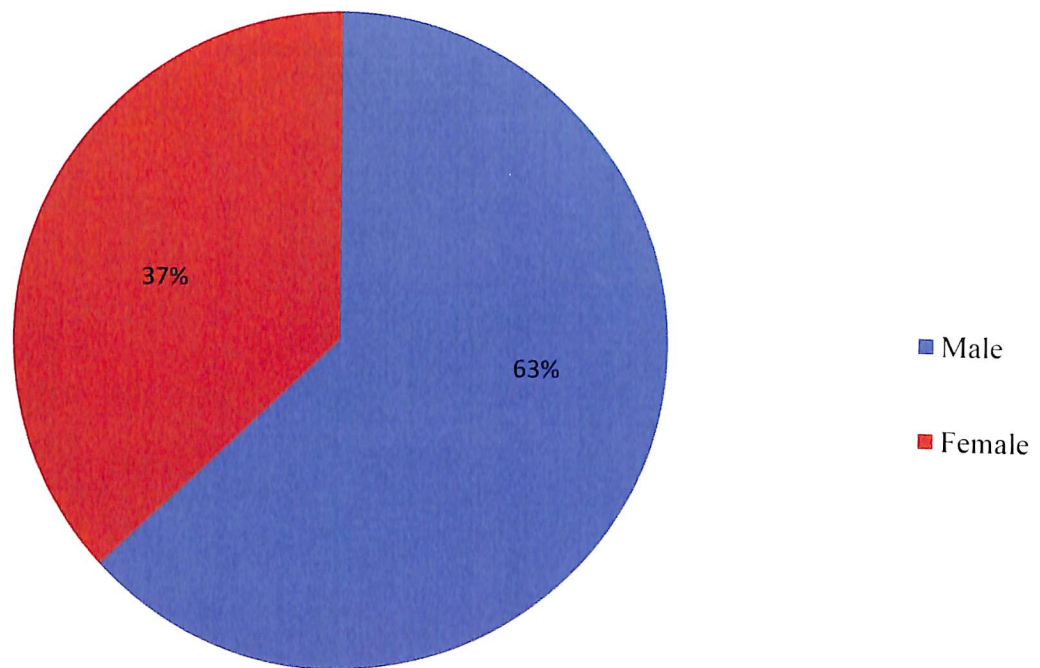
S. No.	Response	Frequency/ Rate
1	Number of questionnaires distributed	100
2	Number of questionnaires returned	83
3	Number of Useable questionnaires	68
4	Number of excluded questionnaires	15
5	Response rate before data entry	83%
6	Response rate after data entry	68%

### 4.1.1. Profile of the Respondents

Personal and demographic information regarding gender, age, income, education level, status is given in the below table.

**Table 2: Genders of the Respondents**

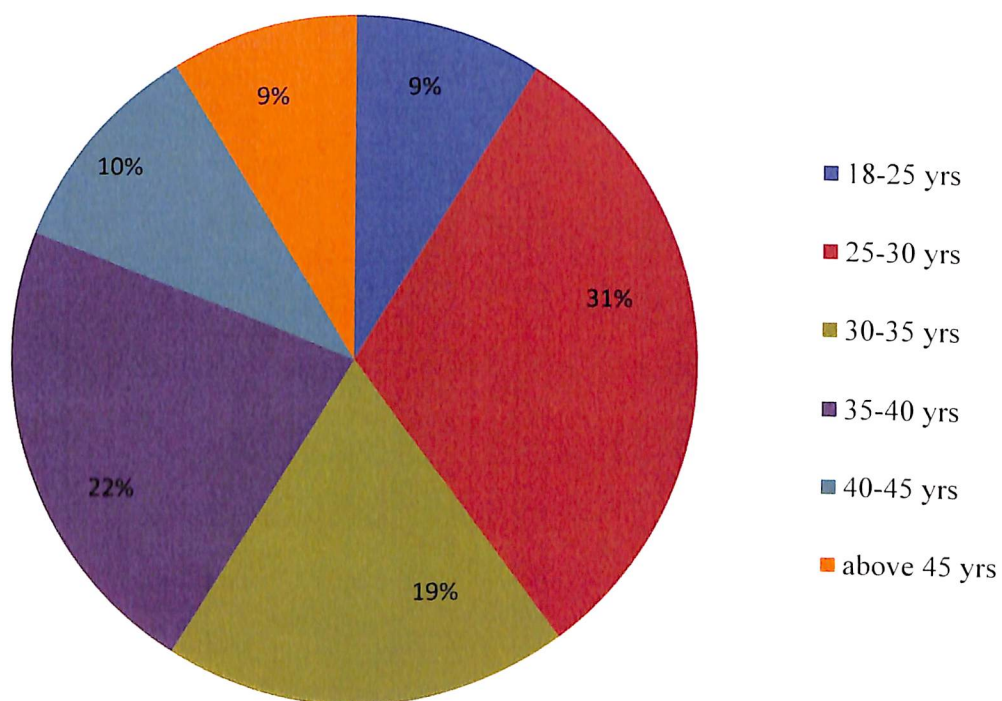
Variables	Category	Frequency	Percentage
Gender	Male	43	63
	Female	25	37



**Figure 9: Pie chart for Gender of Respondents**

**Table 3: Age of the Respondents**

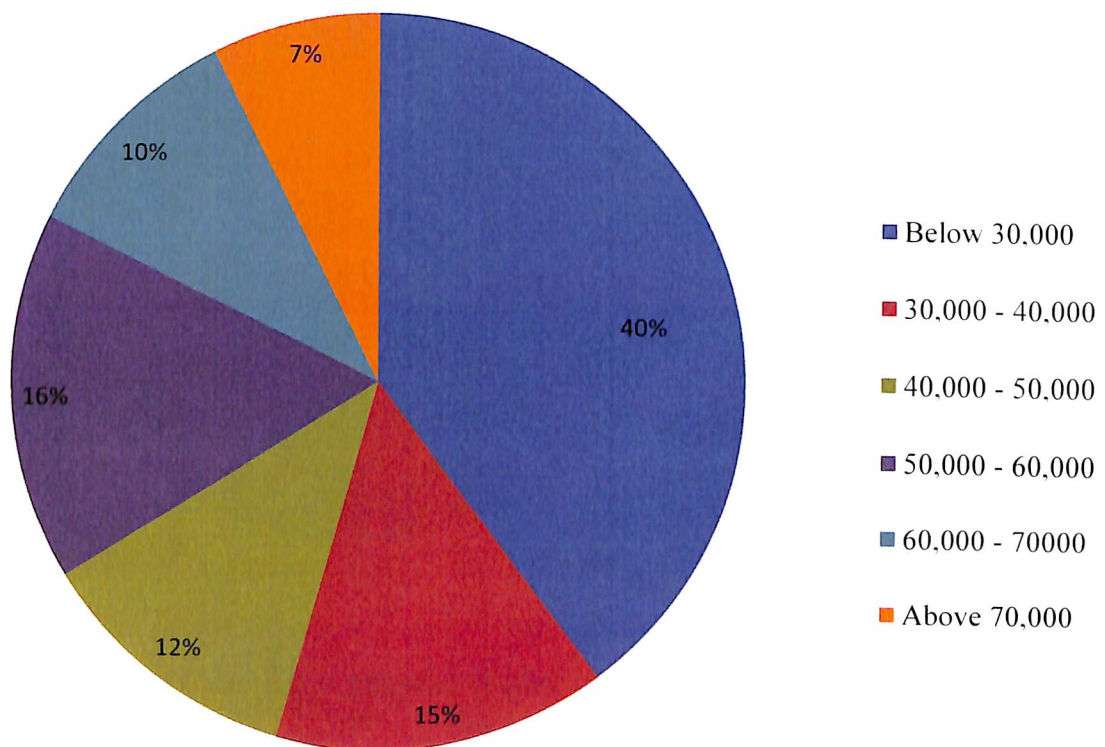
Variables	Category	Frequency	Percentage
Age	18-25 years	6	8.8
	25-30 years	21	30.9
	30-35 years	13	19.1
	35-40 years	15	22.1
	40-45 years	7	10.3
	Above 45 years	6	8.8



**Figure 10: Pie chart for Age of Respondents**

**Table 4: Income of the Respondents**

Variables	Category	Frequency	Percentage
Income	Below 30,000	27	39.7
	30000-40000	10	14.7
	40000-50000	8	11.8
	50000-60000	11	16.2
	60000-70000	7	10.3
	Above 70000	5	7.4

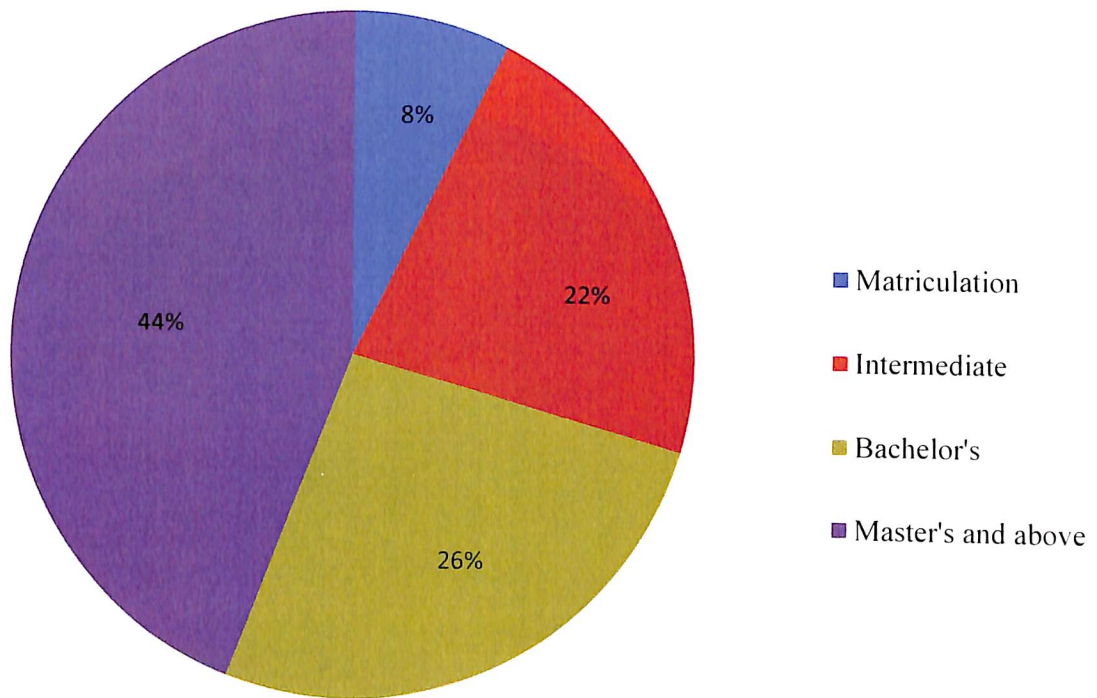


**Figure 11: Pie chart for Income of Respondents**



**Table 5: Education Status of the Respondents**

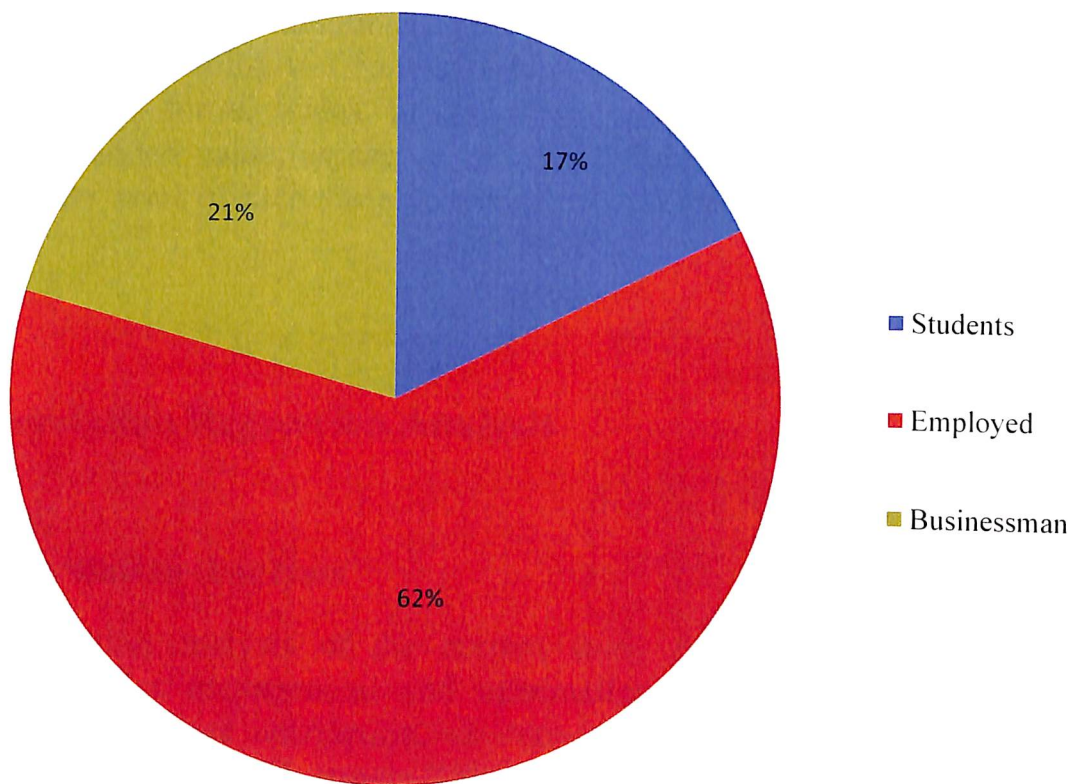
Variables	Category	Frequency	Percentage
Education	Matriculation	5	7.4
	Intermediate	15	22.1
	Bachelor's	18	26.4
	Master's and Above	30	44.1



**Figure 12: Pie chart for Educational status of Respondents**

**Table 6: Employment Status of the Respondents**

Variables	Category	Frequency	Percentage
Status	Students	12	17.6
	Employed	42	61.8
	Businessman	14	20.6



**Figure 13: Pie chart for Employment Status of Respondents**

### 4.1.2 Reliability

The results of reliability analysis of the current study indicate that all the 25 items (4 dependent – E-CRM, Effective payment methods, Logistics management, ICT and 1 dependent- customer satisfaction. 5 items of each) were sufficiently reliable to measure the opinions and views of potential respondents The Reliability tests are shown in below

**Table 7: Cronbach alpha test scale**

S. No.	Variables	No. of Items	Cronbach's Alpha
1	E-CRM	5	0.899
2	Effective payment methods	5	0.806
3	Logistics management	5	0.846
4	ICT	5	0.879
5	Customer Satisfaction	5	0.855

The above Table demonstrates the reliability of each dimension of the questionnaire. According to Cronbach's alpha( $\alpha$ ) Alpha values should be equal to or more than 0.7 for all scales. In the current study Cronbach's alpha( $\alpha$ ) is more than recommended value, as shown in above Table. Therefore, based on above results, all the items of each variable were finalized for survey.

## 4.2. Correlation Regression Analysis

### 4.2.1. Correlation Analysis

Correlation analysis of the current study found that effective payment methods, logistics management and information & communication technology (ICT) has a moderate correlation, as correlation values are 0.55, 0.5 and 0.6 respectively. However, Electronic Customer relationship management has high correlation with a value 0.7. Moreover, all the variables have a significant positive value below .05. Therefore, all variables have a significant positive correlation.

#### **4.2.1. Regression Analysis**

Regression analysis was used to examine the relationship between dependent variable and independent variables. To examine the relationship between variables, significant value ( $p > 0.01$ ) and beta value were considered.

Regression is a predictive statistical analysis technique, and this analysis was used to find out whether the predicting variables predict the dependent variable (customer satisfaction), and from the existing list of predicting variables (E-CRM, effective payment methods, logistics management and Information communication technology (ICT)), which variable significantly predict the dependent variable. So in other words it measures the percentage of change in dependent variable due to the independent variables.

SPSS is used is used for the computation of the regression analysis of independent variables (E-CRM, effective payment methods, logistics management and Information & communication technology (ICT)) and dependent variable (Customer Satisfaction), and the linear regression model was used to measure the impact of independent variables on dependent variable.

# Chapter five

## Interpretation of Results

### 5.1. Interpretation of Results

The table given below shows the values of Mean, Standard deviation and correlation coefficient. Explanation of the data is as such that the mean of the independent variables including E-CRM is 3.512, effective payment methods is 3.489, logistics management is 3.451, ICT is 3.508, and the mean of the dependent variable which is customer satisfaction is 3.589.

The fourth column in the table is of standard deviation, which are computed by SPSS with the following results, standard deviation of the independent variables including E-CRM is 1.09, effective payment methods is 0.79, logistics management is 0.79, ICT is 0.89, and the standard deviation of customer satisfaction which is the dependent variable is 0.83.

Table below, also shows the results of Pearson's Correlation coefficient, and the results of the correlation made it evident that the independent variables effect the customer satisfaction.

**Table 8: Means, standard deviations, and correlations test**

S. No.	Variables	Mean	Std. Deviation	1	2	3	4	5
1	SCM	3.512	1.09	-	-	-	-	-
2	e-logistics functions	3.489	0.79	0.85	-	-	-	-
3	Logistics management	3.451	0.79	0.67	0.73	-	-	-
4	ICT	3.508	0.89	0.55	0.56	0.77	-	-
5	Customer satisfaction	3.589	0.83	0.80	0.77	0.69	0.63	-

And from the regression analysis, the value of R-Square obtained is 0.69, in percentage it will be 69%, which means that the customer satisfaction is effected 69% by the E-CRM, effective payment methods, logistics management and Information & communication technology (ICT) and the remaining effect is because of the unexamined factors which can affect customer satisfaction.

## **5.2. Comparison of Results with Assumptions (Hypothesis)**

All the results by regression analysis on the independent variables and dependent variables prove it that the entire hypothesis is correct, and there is strong positive impact of independent variables (E-CRM, effective payment methods, logistics management and Information & communication technology (ICT)) on dependent variable (Customer Satisfaction).

Customer service is a series of activities designed to enhance the level of customer satisfaction and adapting E-logistics is one the effort that logistic industries are adapting. This Research shows that new technologies attract customers and improve the level of customer satisfaction. New technologies help in mitigating the customer expectations.

Logistics, just as all other areas of applied research, is under continuous development. Normally, the theoretical side is a couple of years ahead, pointing out what could be done if the tools were available. Then the technological development catches up - and visions are turned into reality. This is exactly what has happened in the development of theory and practice in relation to channels of distribution.

The study of customer satisfaction is critical for any organization to provide superior service for their customers especially for logistics industries. Results shows that logistics has integrated with IT and upgraded the working style by increasing the delivery speed, managing inventory, interaction with customer, e-transactions, traceability, and getting customers feedback. For customers making payment, tracking there product and complaining and suggesting something become easier which increased the customer satisfaction level. There are also some challenges faced by companies in implementing e-logistics were like training of their employees, Reverse logistics, customers awareness, Man power management, cost of adapting new technologies.

# Chapter six

## Conclusions and Scope for future work

### 6.1. Conclusions

Customer Satisfaction is probably the most important measure for a successful business. It will connect the logistic industry with the relevance of work they are doing. If customer is unhappy then there is no chance that this industry can run successfully infect they are wasting their time on it. So there main objective should be to measure how the customer judges the outcome of their service or product through surveys or at the end of each transaction with the customer and for overall customer satisfaction it is very critical to update yourself with the requirements of the customers and e-logistics is very effective in it. Some points were discussed below in this reference.

- Technological advancements had major effect on the business management practices
- The internet enables customers to interact with the business from any place, at any time.
- The E-Business vision uses the internet to integrate the information flow across the traditional boundaries.
- Customer relationships should be improved by enhancing feedback and by creating customer communities therefore they can share their experience.
- Customer satisfaction has a statistically significant impact on repeat purchasing behavior.
- Businesses can use the internet to gain global visibility across their extended network of trading partners and help them to respond quickly to a range of variables, from customer demand to resource shortages.
- Transactions are now possible in a variety of formats considering that speed and accuracy of data flow re improved the cost per transaction falls.
- Order taking can be done over the Internet, EDI, EDI/Internet, or an extranet, and may be fully automated
- Order fulfillment can become instant if the products can be digitized
- Electronic payments can expedite both the order fulfillment cycle and the payment delivery period
- Managing risk to avoid supply-chain breakdown can be done in several ways
- Inventories can be minimized by introducing a build-to-order (on-demand) manufacturing process as well as by providing fast and accurate information to suppliers

- Collaborative commerce among members of the supply chain can be done in many areas.
- According to the research done Electronic Customer relationship management (E-CRM), Effective payment methods, Logistics management and Information & communication technologies are independent variables responsible for customer satisfaction which is a dependent variable.

**But there are some Barriers and challenges along with E-Logistics:**

1. Technical reasons involving integration, standards, and networks.
2. Security and privacy concerns.
3. Internal resistance to information sharing and to new approaches.
4. Lack of internal skills to conduct collaborative commerce.
5. Lack of defined and universally agreed-upon standards.
6. Logistic companies have to face challenges like reverse logistics, Man power management, cost of adapting to new technology, training of employees.

**6.2. Scope for future work**

- There are many limitations in this study as the study is done using survey questionnaire and it is a reality that human behavior is not always same so the accuracy is not 100% correct, so in future the study can be done to get the idea of the customer demand of that time.
- As the study is only done in the limited area, so future researchers can do their studies in more cities, which is a future direction for the future research on the topic.
- The sample size that we select is only 100, which in future studies can be increased.
- For future research a particular industry can be selected to get a more accurate output from that industry.
- With the development of e-logistics and e-commerce, some areas which are not covered in this study are interesting and need to be explored.
- The limited variables are considered in this study so in future many more variables can be considered by the researchers for further study.
- Future research could make several extensions of the current study.



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# Appendix

## Appendix 1: Questionnaire

Survey on the topic of “The effect of E-Logistics on the Customer Satisfaction”.

### Part A:

**Personal information** (Please kindly complete the following by ticking where appropriate)

1. **Gender**                      Male                       Female

2. **Age Group**

a. 18-25 years	<input type="checkbox"/>
b. 25-30 years	<input type="checkbox"/>
c. 30-35 years	<input type="checkbox"/>
d. 40-45 years	<input type="checkbox"/>
e. Above 45 years	<input type="checkbox"/>

3. **Income**

a. Below 30,000	<input type="checkbox"/>
b. 30,000 – 40,000	<input type="checkbox"/>
c. 40,000 – 50,000	<input type="checkbox"/>
d. 50,000 – 60,000	<input type="checkbox"/>
e. 60,000 – 70,000	<input type="checkbox"/>
f. Above 70,000	<input type="checkbox"/>

4. **Education**

a. Matriculation	<input type="checkbox"/>
b. Intermediate	<input type="checkbox"/>
c. Bachelor’s	<input type="checkbox"/>
d. Master’s and Above	<input type="checkbox"/>

5. **Employment Status**

a. Students	<input type="checkbox"/>
b. Employed	<input type="checkbox"/>
c. Businessman	<input type="checkbox"/>

## Part B

(Please circle the number that represents your views regarding the following statement on E-CRM, Effective payment methods, Logistics management, ICT and E-logistics Customer Satisfaction).

Where, 1= strongly disagree, 2=disagree, 3=neither disagree nor agree, 4=agree, and 5= strongly agree.

### 1. Electronic – Customer Relationship Management

S. No.	Questions	Ratings
1	E-CRM is beneficial for e-logistics industries.	1 2 3 4 5
2	Does adapting E-CRM is expensive for business?	1 2 3 4 5
3	Does implementing E-CRM is time consuming?	1 2 3 4 5
4	E-CRM helps in reaching customers trust and loyalty.	1 2 3 4 5
5	E-CRM improves business decisions.	1 2 3 4 5

### 2. Effective payment methods

S. No.	Questions	Ratings
1	E-payment methods are beneficial for e-logistics industries?	1 2 3 4 5
2	Adapting e-payment options made accounting easier and made money tracking possible.	1 2 3 4 5
3	Paying for the services become easier with e-payment options.	1 2 3 4 5
4	Customers prefer paying digitally for their services rather paying with traditional means.	1 2 3 4 5
5	E-payment options are easier for customers to use.	1 2 3 4 5

### 3. Logistics Management

S. No.	Questions	Ratings
1	Logistics management is beneficial for e-logistics industries.	1 2 3 4 5
2	Logistics management reduces lead time.	1 2 3 4 5
3	Logistics management made inventory management easier.	1 2 3 4 5
4	Logistics management helps in transport management	1 2 3 4 5
5	Logistics management helps in improving customer satisfaction.	1 2 3 4 5

### 4. Information and communication technology (ICT)

S. No.	Questions	Ratings
1	ICT is beneficial for e-logistics industries.	1 2 3 4 5
2	ICT improves distribution system.	1 2 3 4 5
3	ICT helps customers to track their product.	1 2 3 4 5
4	ICT involves website designing through which attracts customers.	1 2 3 4 5
5	ICT directly or indirectly brings customer satisfaction.	1 2 3 4 5

### 5. E-Logistics Customer Satisfaction

S. No.	Questions	Ratings
1	Customer Satisfaction is most important for logistics industries.	1 2 3 4 5
2	Does Reaching customers directly by removing the mediators brings customer satisfaction	1 2 3 4 5
3	Does by getting different payment methods a customer satisfaction can be achieved?	1 2 3 4 5
4	Customer satisfaction can be achieved by bringing the customer services.	1 2 3 4 5
5	Customer satisfaction achieved by quality of information's provided to the customers.	1 2 3 4 5

**Which of the following e-logistic function is most helpful for achieving customer satisfaction?**

E-CRM

Effective payment methods

Logistics management

ICT


**E-Logistics improves customer satisfaction level more than traditional methods.**

YES

NO

**How does e-logistics help in improving customer satisfaction?**

.....

.....

.....

.....

**What were the barriers and challenges faced in implementing e-logistics?**

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## Appendix 2: Sample characteristics

<b>Variables</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Gender</b>	Male	43	63
	Female	25	37
<b>Age</b>	18-25 years	6	8.8
	25-30 years	21	30.9
	30-35 years	13	19.1
	35-40 years	15	22.1
	40-45 years	7	10.3
	Above 45 years	6	8.8
<b>Income</b>	Below 30,000	27	39.7
	30000-40000	10	14.7
	40000-50000	8	11.8
	50000-60000	11	16.2
	60000-70000	7	10.3
	Above 70000	5	7.4
<b>Education</b>	Matriculation	5	7.4
	Intermediate	15	22.1
	Bachelor's	18	26.4
	Master's and Above	30	44.1
<b>Status</b>	Students	12	17.6
	Employed	42	61.8
	Businessman	14	20.6