

**THE IMPACT OF INFORMATION TECHNOLOGY ON INVENTORY
MANAGEMENT IN RETAIL SUPER STORES IN BANGLADESH**

BY

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The Report Presented in Partial Fulfillment of the Requirements for the Degree of
Bachelor of Science in Computer Science and Engineering

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Dhaka, Bangladesh

January 2023

APPROVAL

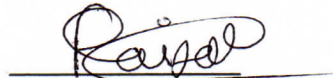
This Thesis/Project titled “**The Impact of Information Technology on Inventory Management in Retails stores in Bangladesh**”, submitted by **Md. Tanvir Ahmed Mithu** to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of MS in Management Information System and approved as to its style and contents. The presentation has been held on 24 January 2023.

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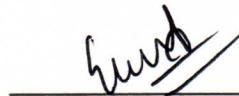
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ACKNOWLEDGEMENT

First I express my heartiest thanks and gratefulness to Almighty Allah for His divine blessing which makes me possible to complete the final year project/internship successfully.

I really grateful and wish my profound indebtedness to **Md Zahid Hasan, Associate Professor** , Department of CSE, Daffodil International University, Dhaka, deep knowledge & keen interest of my supervisor in the field of Machine Learning to carry out this project. His endless patience, scholarly guidance ,continual encouragement , constant and energetic supervision, constructive criticism , valuable advice ,reading many inferior draft and correcting them at all stage have made it possible to complete this project.

I would like to express my heartiest gratitude to **Dr. Touhid Bhuiyan**, Head, Department of CSE, for his kind help to finish our project and also to other faculty members and the staffs of CSE department of Daffodil International University.

Finally, I must acknowledge with due respect the constant support and patients of my parents.

ABSTRACT

The retail super store in Bangladesh implement the Information Technology to maintain the inventory management play as an important tool for the purpose of enhancing the efficiency of supply chain management practices and product availability. In the super store such as Shawpno, Agora, Unimart, Meena Bazar, Daily Shopping, super stores availability of the products and choices in the selection of inventory for daily consumption and future maintain inventory. Superstores in the retail industry improved information technology with the aid of media and social media, which also gave people awareness for a significant market share. There is a higher demand for these systems in Bangladesh as a result of the fact that modern retail enterprises need improved information technology for effective operation and management using systems like Point of Sale (POS), Retail Management Systems (RMS), and retail inventory management systems. The research paper recommends that in the retail super stores in Bangladesh environment lot of amount invest in the information technologies for the purpose of integrates their supply chain management approach in terms of inventory management efficiency performance and availability of the products.

This study aimed to investigate the possibilities of information technology (IT) based systems for inventory control in Bangladesh's retail giant industries. To find answers to the research objectives, formal surveys and interviews were used in the study.

Inventory management uses information technology as a tool to increase efficiency and cut costs. While some supermarkets have successfully used IT for inventory management, others have not. The goal of the study was to ascertain how information technology was affecting inventory control in Dhaka's supermarkets.

The study's goals were to quantify the extent to which IT systems are utilized for inventory control in Dhaka's supermarkets and to assess the effect of IT utilization on inventory control efficiency.

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ABBREVIATIONS AND ACRONYMS

ARP-Automatic Replenishment Programs

CIPS-Chartered Institute of Purchasing and Supplies

CPFR-Collaborative Planning, Forecasting and Replenishment

EDI-Electronic Data Interchange

EPOS-Electronic Point-Of-Sale

ERP-Enterprise Resource Planning

ICT-Information Communication Technology

QR-Quick Response

RBV-Resource Based View

RFID-Radio Frequency Identification

SPSS-Statistical Package for Social Sciences

TCE-Transaction Cost Economies

VMI-Vendor Managed Inventory

WMS-Warehouse Management Systems

CHAPTER 1

INTRODUCTION

1.1 Introduction

The majority of supply chains relied on retailers' businesses to provide the crucial final link with customers so that inventory management techniques could be used to increase customer satisfaction. Retailers work to supply the items and services that customers need in a competitive, affordable, and timely manner.

While Agora was founded in 2001, the Bangladeshi hyper shop industry had its beginnings roughly 20 years earlier. TBS News reports that the super store only controls 1.6% of Bangladesh's local retail market. Although the Super Shop sector only makes up a little portion of the local retail market, its potential and consumer base are slowly expanding.

A supermarket is a self-service store with various food, drink, and household goods options divided into categories. One of the sectors in BD that is expanding is the super shop sector. The socioeconomic progress, urbanization, and rising spending power of the middle and higher classes in the nation all contributed to the growth of supershop. Rahimafrooz Superstores Ltd. unveiled "Agora" as Bangladesh's first supershop in 2001, adopting the western idea. Rahimafrooz Superstores Ltd. established this megastore. The "Gemcon group" introduced "Meena Bazar" the next year. "Shwapno" began operations in Bangladesh in 2006 as a sister company of ACI Limited. With more than 185 locations, "Swapno" is presently the largest supershop chain in Bangladesh, servicing more than 40,000 consumers daily. However, only 61 of Shwapno's stores are owned by the company; the remaining outlets are run via franchises. Additionally, Meena Bazar, owned by the Gemcon Group, has 18 sites in Dhaka, Chittagong, and Sylhet, while Rahimafrooz's Agora has 18 locations nationwide. In 2020, the Daily Star reported that Gemcon Group and Rahimafrooz were in negotiations to acquire all "Agora" outlets. Additionally, the "Unimart" brand of the United Group has three locations in Dhaka's

Gulshan, Dhanmondi, and Wari as well as two express locations at United Hospital and United International University. In contrast, Daily Shopping, operated by Pran-RFL Group, has 51 locations around Dhaka. In addition to this, Dhaka is home to a number of other minor superstore chains, including 4 "Almas" locations and 2 "Prince Bazar" locations. Cities and urban areas like Dhaka, Chittagong, Narayanganj, Rajshahi, and Sylhet are home to the majority of super shop retail locations.

TBS estimates that by 2020, Bangladesh's retail market will be worth \$16 billion. Just over \$256 million, or 1.6% of this total, came from the superstore sector. However, neighboring countries have significantly higher rates. 43% of Sri Lanka's whole retail market is made up of super shops. In India, the percentage is 8–9%, whereas in Myanmar and the Philippines, the retail market will account for more than 50% of all sales in 2020. Despite Bangladesh having a fairly tiny super shop landscape, the industry will continue to expand there. According to a Daily Star study from January 2020, the super store industry would expand by an average of 24% annually, and TBS News predicts that during the next seven years, super shops will represent at least 10% of Bangladesh's retail sales.

1.2 Problem Statement

The efficacy of inventory management and the profitability of the retail industry would both increase with greater usage of information technology applications in retail super stores. The goals of retail superstores were to offer a variety of products that customers could easily acquire, at a reduced price, and with the use of time-saving information technology applications.

1.3 Delimitations

In this study the use of information technology in retail industry or retrieval super stores, only think of web based retail. Although it was still in its infancy in Bangladesh, this internet-based business was expanding quickly and was simple to reach. Most websites offer product catalogs, inventory management, and frequently prices as well, although the

industry was still in its infancy due to internet security issues. In any case, a number of study reports on web-based retail systems and retail superstores have been developed. The scope of the research paper is restricted to information systems that enable automated retail sales and inventory control within retail establishments. The store-based IT systems will in fact aid the web-based expansion, which is really an extension of those systems.

1.4 Objectives of the Study

The purpose of this study was to determine how ICT affected inventory control in Bangladeshi supermarkets.

1.4.1 Specific Objectives

The study's particular goals included the following:

- i. Determine the level of the use of IT systems for inventory control in Dhaka's supermarkets.
- ii. Analyze the effect of IT usage on the effectiveness of inventory management in Dhaka supermarkets.

1.5 Hypotheses

Both small and large shops could benefit from the availability of retail management systems, inventory management, and point of sale systems, automated tills, bar code readers, and many more information technology applications. Among the hypotheses for this research effort are:

- H1:** The Small business has a positive significantly impact of Information Technology on inventory management in retail super stores.
- H2:** The Routine Computer usage has a positive significantly impact of Information Technology on inventory management in retail super stores.
- H3:** The Staff usage computer routine has a positive significantly impact of Information Technology on inventory management in retail super stores.
- H4:** The Academic has a positive significantly impact on Information Technology based in retail super stores.
- H5:** The Retail Super Store has a positive significantly impact of Information Technology on inventory management in retail super store.
- H6:** The Large high street super store has a positive significantly impact of Information Technology on inventory management in retail super stores.
- H7:** The Reduced costs 33% of user friendly software availability has a positive significantly impact of Information Technology based on retail super store.
- H8:** The Reduced costs 50% of user friendly software availability has a positive significantly impact of information technology on retail super store.

1.6 Model for the Study

It was thought that more use of information technology resources and the greatest benefits of its penetration would result from improved knowledge, computer literacy, the growth of modern retail outlets, and more cost-effective information technology resources. The information technology resources increased the variables associated to better operations and management of the retail industry.

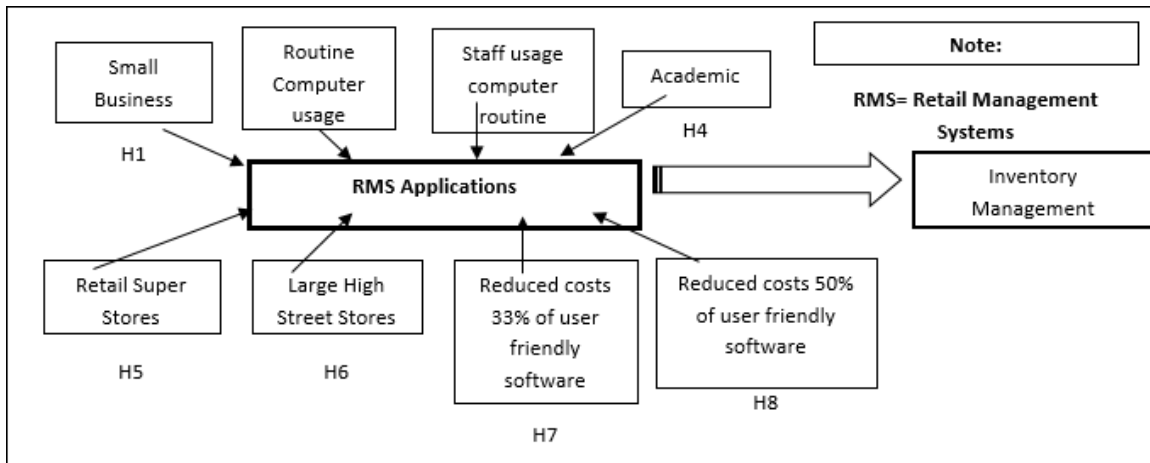


Figure 1.1: Research Model

1.7 Scope of the Study

This research paper proposes to investigate, the ongoing development of information technology in the retail super stores was influenced by how effective these systems had shown to be in the areas in which they were applied, as well as criteria like the education level of retailers and the size of retail firm. In order to fully understand the potential of these systems in the Bangladeshi retail sector and the advantages that the supply chain and inventory management would gain from their implementation, this research study proposes to examine the likely applications such as point-of-sale, inventory, and retail management systems as well as other electronic data interchange systems.

CHAPTER 2

LITERATURE REVIEW

2. Introduction:

Both fascinating and appealing, the retailing sectors of retail superstores. Retailing is the business of selling products and services to customers for their own, personal, or household consumption. Retailing represents the pinnacle of the value-adding steps that supply chains laboriously take to make their products more appealing to consumers. The customer is increasingly aware that retailing shouldn't only be a procedure of making a purchase; it should also be about the experience, the service, and the environment that draw them to the stores that offer the "customer experience."

The shacks and corner stores only provide customers with the bare minimum of what they require, but the superstores and market chains give them the desired value advantage. Customers are drawn to the larger stores because modern retailing satisfies these criteria. Because of their size and market, these big-box retailers have the capacity to get their suppliers to lower their prices, which offers them the opportunity to either enhance their profit or pass the savings on to customers, who will then find the stores to be even more alluring.

In the past twenty-five years or so, general stores, supermarkets, and mega-malls have all started to sprout. Due to the introduction of large superstores, store management has become crucial in order to maintain constant product replenishment and short line times for customers. Information solutions that can automate the majority of store management tasks are now in demand as a result of this. The following list of duties performed by the retail industry is not exhaustive.

2.1 Retail Trade

2.1.1 Four Functions of Retailers

- a. Retailers should inform channel members about product availability and provide consumers with information that is both helpful to consumers and channel members.
- b. All of these were gathered in the form of an assortment of services and goods by suppliers and wholesalers who then offered them to consumers.
- c. Retailers stored the goods in the form of frequently and set prices for all of the products before selling them to final consumers.
- d. They complete transactions with the customers.

2.1.2 Functions of Retail sector

Distributing the necessities that consumers require was the primary goal of the retail sectors. These sectors took the form of several sorts of retail outlets, and these outlets operate in four different ways:

- with the aid of retailers
- selling household goods
- using the email feature
- automatic vending machines

All of these were referred to as the assortment and variety of goods, and together they made up the retail store or shop organization. The fundamentally varied functions were as follows:

- Mini retailer and chains system
- In the shape of an extensive chain or several,
- The departmental shop,
- The cooperative form's store,
- Placing an order by email

2.2 Retailing Super Store in Bangladesh

Bangladesh's retail industry can be divided into two categories: organized retail and unorganized retail. Unorganized retail has long dominated the market, but as consumers of the newest age seek out ease, organized retail is slowly gaining popularity. While the neighborhood mom-and-pop stores (known in Bengali as Mudir Dokan) continue to play a significant role in the turnover of consumer products, superstores are gradually integrating those customers into their value chain while also attracting new ones.

Bangladesh's GDP is \$249 billion USD and is growing at an astounding 7.3% [1]. Major elements of the growth trajectory include an increase in the middle and affluent class (MAC) sector and a steadily rising per capita income of USD \$1517 [2].

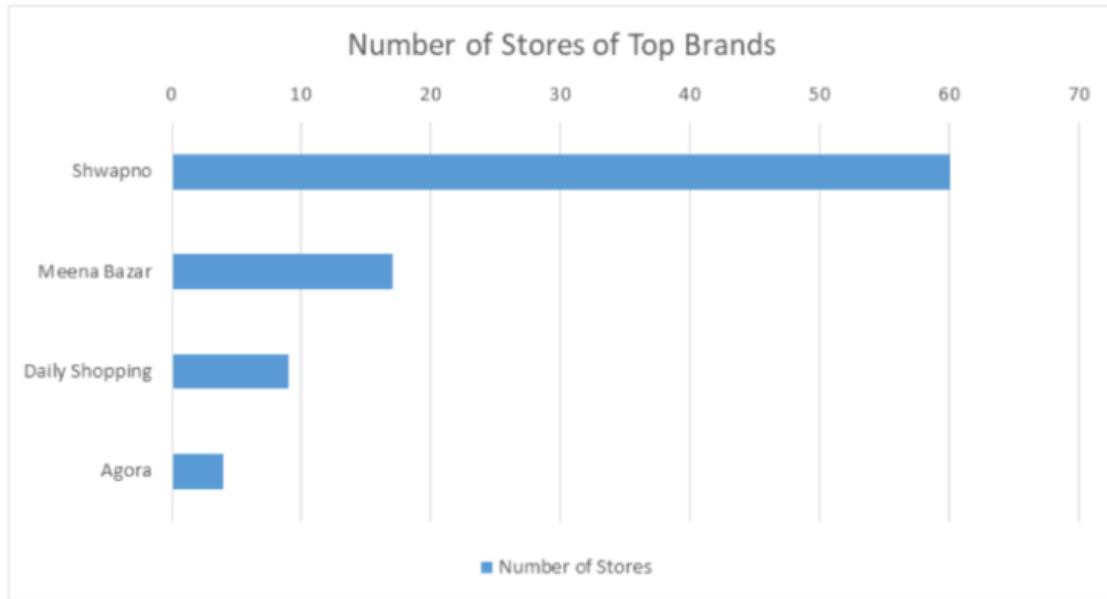
People gradually have more discretionary income due to these indicators getting better, giving them greater purchasing power. Additionally, the convenience-seeking attitude and the expanding white collar society are altering customer tastes, purchasing patterns, and habits. Modern consumers are less willing to engage in price bargaining and prefer a wide variety of options in a clean, pleasant atmosphere, which is driving demand for mega markets.

Only slightly more than 1% of the retail market is organized, or supermarkets. Bangladesh Superstores Owners' Association (BSOA) reports that approximately 160 outlets operated by 30 companies are currently open throughout the nation, however most of the stores are found in cities and other urban regions.

Rahimafrooz Superstores Limited launched Agora, a superstore with 4 locations, as its initial foray in 2001. Agora was quickly followed by Nandan, which had two large-scale shops at first, and Meena Bazar, which had four medium-scale locations. ACI Ltd. debuted its own retail chain, Shwapno, in 2008. Other smaller chains with locations in Dhaka include Daily Shopping (9 locations), Almas (4 locations), Carrefamily (2), Pick & Pay (2 locations), Lavender (2 locations), and Prince Bazar (2 locations)[3]. Agora,

Shwapno & Meena Bazar also has operations in Chittagong, Khulna, Sylhet, and Rajshahi in addition to Dhaka.

Shwapno is currently the market leader, servicing on average 35,000 clients each day, and has the most outlets (60 outlets) and a greater customer coverage [4]. Shwapno has 60 outlets, Meena Bazar has 18, and Agora has 10 outlets in total [5].



SOURCE: LightCastle Partners Primary Research

Figure-1.2: Number of Stores of Top Brand in Bangladesh

2.3 Use of information technology in the retail sector

The industry offered a wide range of inventory management systems, complicated point-of-sale systems, and cash management systems. Without some sort of cash management system, a retail business cannot function. The mechanical cash register merely permitted the placement of cash in the proper drawers and provided a minimal level of protection via a locking facility. The Abacus and other comparable counting devices were banished to the museum with the invention of the calculator, but many small businesses still employed these machines. Electronic cash registers have since taken their place.

Bangladesh's thriving economy is contributing to the retail sector's excellent growth. Only a few retailers have reached the landmark of 100 stores nationwide. More crucially, a variety of retailing formats are being used, a sign that the sector is evolving to a higher level of sophistication.

In Bangladesh today, retail chains are not often constructed with a number of stores sharing a name and brand. Instead, the top retail businesses are introducing more modern formats with integrated supply chains.

As they expand, retail businesses are predicted to face a variety of difficulties. Some of these will be connected to shifting consumer behavior, maintaining growth, and the requirement for ongoing innovation. Retail businesses will need to use the appropriate technologies to successfully overcome these obstacles.

Today, a number of significant retail businesses employ at least one software program to coordinate internal operations. Some of them have chosen to deploy internationally renowned retail solutions, while others have opted for locally created ones. The majority of these businesses manage their finances, accounting and point-of-sale transactions using software.

The majority of Bangladesh's top 15 retail businesses are accessible online. This is a positive sign that shows how well-aligned the industry is with world trends. Online platforms have seen the majority of revenue growth on a global scale. Additionally, the growth rate of online channels has been far faster than the expansion of the entire retail industry. Due to their absence from internet platforms, traditional retailers have been experiencing stagnant or declining sales at the same time. Retail businesses must carefully select the ideal channel among the various possibilities, even though online sales growth is anticipated to outpace the industry's growth by a number of percentage points. The likelihood of sales growth via mobile devices is significantly higher than that via other platforms, according to global patterns over the past three years (desktop computers, tablets, etc.). Mobile applications and mobile websites are the two technological choices available for selling products via mobile devices.

Customers all over the world are choosing mobile websites over mobile apps, largely because they already have a large variety of programs on their devices.

On the other hand, loyal customers frequently choose mobile apps that are installed on their device for quick access to and tracking of loyalty points. Therefore, in order to increase online sales, retail businesses in Bangladesh must concentrate on developing mobile websites rather than using other online channels. Interactive elements built on in-depth user persona research, especially the behavior of potential customers, are essential for a good mobile site. The stability of the current income base will be provided by in-store sales, while mobile websites and other internet channels will deliver the much-needed growth. A sizable portion of customers will keep going back to a store at least once each week. Retail businesses must improve the in-store experience for customers if they want to succeed.

Retail businesses require the proper people to work in their stores on the one hand, and they also need to use the correct technology to make customers' visits engaging. For instance, a customer might enter a store to purchase a specific item.

A skilled in-store salesman would be aware that if a product is out of stock, it might still be accessible at one of the stores nearby outlets.

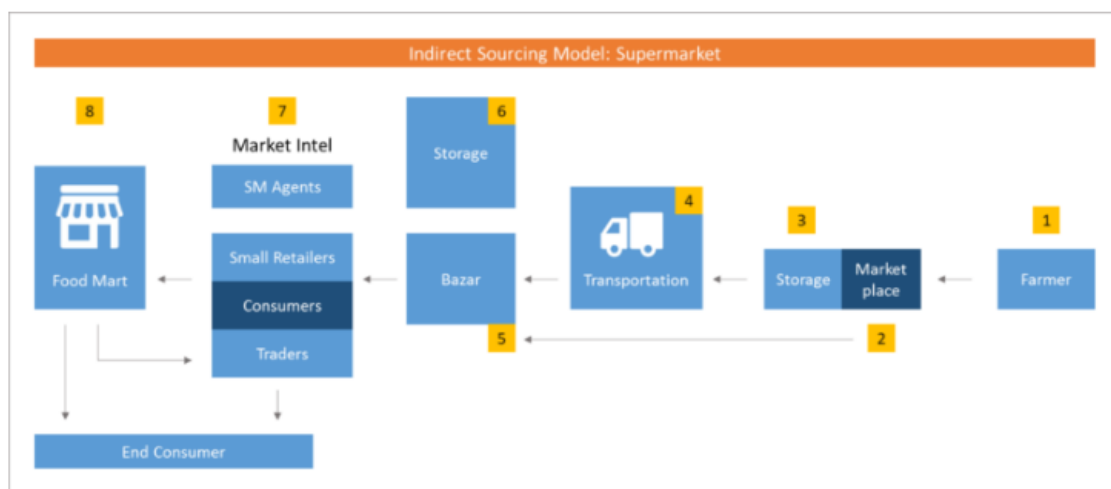


FIGURE: Indirect Sourcing Model

Figure-1.3: Indirect Sourcing Model (Supermarket)

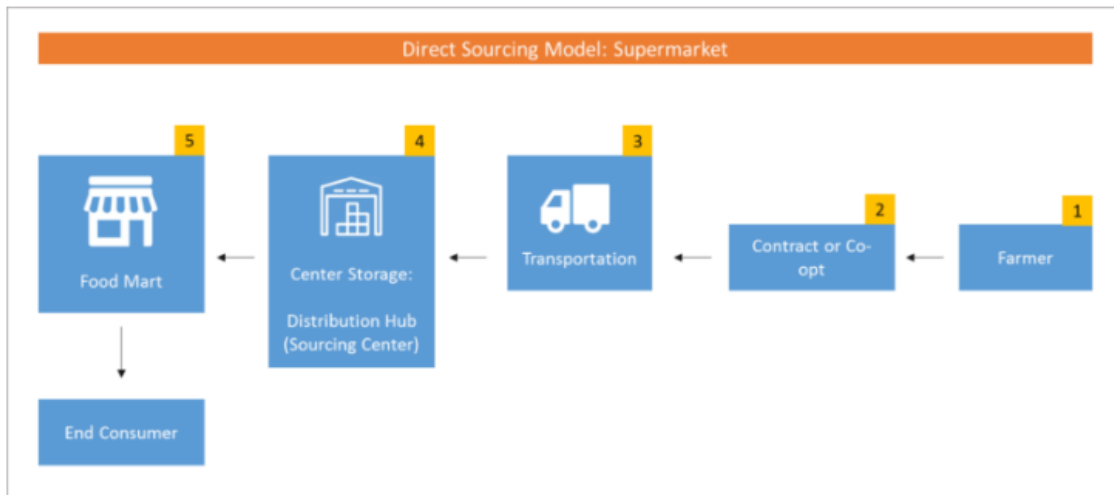


FIGURE: Direct Sourcing Model

Figure-1.4: Direct Sourcing Model (Supermarket)

2.4 Electronic Cash Registers

When a fledgling company was short on funds, it was frequently forced to make compromises, and on a tight budget, computerized cash registers were frequently the best option. Electronic cash registers were simple to use, had few parts in their construction, and could create simple reports and conduct basic cash management tasks. An electronic cash register typically cost between 25,000 and 35,000 Taka. Cash registers can be upgraded gradually if needed and have an expected lifespan of more than ten years. Waters (2011). (2011). although an electronic cash register was inexpensive, it frequently couldn't perform all a mechanical cash register could. It is useless for tasks like inventory management, automatic purchasing, the creation of historical sales records, or customer tracking.

2.5 Point of Sales (POS) Systems

Fast checkouts are made possible by efficient retail points of sale systems, which are substantially faster than electronic registers. The software included with the POS system enables inventory position generation, helps reduce inventory, decrease stock outs, and keeps track of both the inventory that is now on hand and that is in route. Additionally, POS helps streamline and expedite the ordering process (2011). Point-of-sale systems make it possible to track consumer data and aid in the introduction of initiatives like customer loyalty programs. The POS software can also produce a number of reports that are tailored to the needs of the retail store. The ability to modify a POS system for web-based e-business is crucial. Payment Card Industry Data Security Standards, or PCI DSS, are used at the point of sale to provide secure card transactions and ensure that customer credit and debit card information is safe and secure.

The managing of retail business was being improved by POS system advancements, and new software was always being developed to solve issues and expand the functionality of POS systems, according to Anand (2008). The opportunity to gradually add on hardware and software to genuinely benefit the retail business increased the advantages of POS systems, such as the capacity to track inventory, improved accuracy, and more extensive reports, Anand said (2007). With the help of POS systems, advancements like multi-channel integration can enable retail businesses to manage online sales (2008a).

2.6 Retail Management Systems (RMS)

Because of the convenience it offers, information technology applications like point-of-sale systems can be used to truly integrate the retail industry. If the business chooses to combine a chain of stores for better control over inventory and prices, a number of RMS were offered for managing a single large store.

The RMS unifies the corporate office and/or other branch locations, manages crucial company data across regional chains, and obtains chain-wide centralized control. The

RMS system can run independently as a store application or it can be connected to other stores and the central control to integrate both (head office).

2.7 Inventory Management

The inventory management system is a collection of interconnected components that work together to complete a single task. An inventory management system manages the inventory of retail superstores or any other organization for the purposes of easy access, tracking, management, and warehousing and storage, which benefits all activities carried out in retail superstores and enhances the ability of supply chain management to satisfy customer demands. The performance of the retail industry in retail super stores will now improve thanks to the inventory management system's assistance during purchases and inventory checks and balances (Abernathy et al, 2000).

2.8 Impact of Information Technology on Inventory Management

Information technology's influence on inventory control promotes long-term or strategic planning in the use and increases the maximum benefits to keep the products. The importance of information technology in the inventory system and greater efficiency in terms of big retail superstores and ordering and balancing inventory are the findings of this study (Yu et al, 2001).

1. The automation of numerous previously manual operations by information technology has transformed inventory management.

By automating many of the manual operations that were previously performed, information technology has completely changed how inventories are managed. As a result, decision-making and planning have improved, and inventory data are now more precise and timely. Additionally, IT has made it possible for inventory management to adapt more quickly to changes in demand.

2. As a result, there has been an improvement in accuracy and efficiency and a decrease in expenditures.

Inventory management has benefited greatly from information technology. As a result, there has been an improvement in accuracy, efficiency, and cost-effectiveness. Businesses have been able to streamline their operations and increase their bottom line by automating inventory management procedures.

3. Real-time inventory tracking is another benefit of information technology, which has improved decision-making.

Inventory management has benefited greatly from information technology. Real-time inventory management has enabled businesses to manage their goods more effectively. Less waste and more effective operations are the results of this.

4. Additionally, inventory management systems can now be linked to other corporate systems like accounting and CRM thanks to information technology.

A system for monitoring inventory levels and managing goods is what information technology does for inventory management. A further benefit of information technology is the ability to link inventory management systems with other company applications like CRM and accounting. Businesses can better manage their inventory and monitor their stock levels as a result.

5. With the advancement and sophistication of information technology, the future of inventory management appears promising.

Information technology's function in inventory management is continually changing and getting more complex. More efficient inventory management is made possible by advancements in information technology. Given the rapid advancement of information technology, the future of inventory management appears promising. Businesses will be able to better manage their inventories as a result, resulting in more effective operations and increased profits.

2.9 Web Based Retail

As Discussed in the introduction, we were limiting our research to store based management system. Many of the larger stores had web base presence and were offering web based retail services. We believe that the web based retail services were a normal progression of the IT application in stores and once the store based IT management system flourish, supply chain applications such as Vendor Managed Inventory (VMI), collaborative Planning, Forecasting and Replenishment (CPFR) and Internet based retail services was simply be an extension of the IT in Stores.

POS Function Classification	Major Types of POS Procedural Problems	Where Outdated Technology is to Blame
Order Management	<ul style="list-style-type: none"> ▪ Scanning inaccuracy ▪ Price inaccuracy ▪ Promotion offer inaccuracy ▪ Errors in populating orders ▪ Error in order submission 	<ul style="list-style-type: none"> ▪ Lack of software updates ▪ Frequent touch-screen failure or outage ▪ Screen, receipt printer, and keyboard malfunction ▪ Lack of 2-D scanning capabilities
Payment Processing	<ul style="list-style-type: none"> ▪ Payment non-acceptance or delays ▪ Payment authorization failure issues ▪ Identity verification failure issues 	<ul style="list-style-type: none"> ▪ Lack of payment software upgrades and updates ▪ Magnetic card reader and check scanner malfunction ▪ Lack of pin entry device for payment self-service ▪ Lack of 2-D scanning capabilities for signature capture and returns verification ▪ Poor network management leading to high downtime
Loyalty Programs and Guided Selling	<ul style="list-style-type: none"> ▪ Rewards non-acceptance ▪ Lack of promotion execution ▪ Absence of up-selling and cross-selling procedures 	<ul style="list-style-type: none"> ▪ Magnetic card reader and barcode scanner malfunction ▪ Lack of software upgrade that provide promotion updates and guided selling prompts

Source: Aberdeen Group, June 2008

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Design

This Research study aims to investigate the potential of modern information technology systems in retail business to maintain the inventory management system. It was essential to have a well-defined research plan because doing so helps to produce the best outcomes. This study used both qualitative and quantitative methodologies to get its data. Personal interviews used in qualitative research provide evaluation of opinions of retail IT applications in retail superstores. The potential for future growth in the retail industry as well as the most likely market for IT applications were discovered by quantitative surveys carried out using questionnaires like the Likert survey. In order to determine the current situation and the need for more data, the investigation started with a review of the literature. The project contained:

- Researching secondary material
- Interviewing experts and knowledgeable people
- Examining and contrasting situations and scenarios

3.2 Respondents of the study

Primary and secondary data sources were both available for data collection for research purposes. Both primary and secondary sources were used in this study to finish it. While primary sources were questionnaire surveys, secondary sources included books, journals, articles, and the internet. According to the need, the study depends on sources for both theoretical and empirical data. This study intends to investigate how information technology has affected Bangladeshi retail superstore inventory management. The retail industry's use of information technology served as the study's foundation. In this survey, 200 people participated, including salespeople, counter employees, sales managers, and owners of retail super stores. The main independent and dependent variables were

included in the questionnaire that was created for this study, which relied on primary data collection from several Dhaka areas.

3.3 Research Instrument

In addition to casual interviews, a survey form, which is shown in Appendix, was used to collect the data.

3.4 Sampling Technique

The study used convenience as well as purposive sampling technique for research projects. Since questionnaires were used to obtain much of the data, it is simple to compare the results. A survey method with a questionnaire as the measurement tool was utilized to collect the data for the study.

3.5 Sample Size

The sample size for this study was 200 respondents, which includes:

- Retail shops owners
- Sales staff of Retail sectors
- Local Bazaar

3.6 Instrument of Data Collection

Primary and secondary data sources are the two categories of sources available for data collection for research purposes. Both primary and secondary sources were used in this research study to finish the investigation. While primary sources were questionnaire surveys, secondary sources included books, journals, articles, and the internet. According to the need, the study depends on sources for both theoretical and empirical data. The purpose of this study is to investigate the possibilities of contemporary information technology systems in the retail industry. 200 people participated in the study, including owners and employees of retail establishments. Data had been

gathered from many sites in Dhaka, including the Sadder region, the Ghulshan area, Banani, Uttara, Motijeel, Bashundara, Karwan Bazar, Dhanmondi, and Mohammadpur. This study was based on primary data and collection.

Second, certain superstore sales managers, including those from Shwapno, Daily Shopping, Unimart, Agora, etc., completed questionnaires. Different types of questions are included in the questionnaires. These inquiries center on how information technology has affected Bangladesh's retail industry. From retail shop to retail shop, the opinions vary. These inquiries center on awareness, computer literacy, and the growth of contemporary retail outlets, and more affordable information technology, which will lead to increasing utilization of information technology resources.

3.7 Data Analysis

The qualitative data will be gathered from multiple sources, tabulated, and examined in a variety of methods. The steps followed would be;

- Editing and coding data.
- Eliminating unanswered responses.
- Counting of responses according to it was answered.
- Eliminating irrelevant alternatives.
- Explaining the results

3.8 Statistical Tool Used

Questionnaires for surveys and SPSS as a testing tool were the instruments employed in this study's data collection. The Spearman Rank Order Correlation, which is a non-parametric measure of the degree and direction of connection that exists between variables recorded on at least an ordinal scale, was utilized by the researcher during the analysis of data in SPSS.

For this research work, all the store attributes were taken and along with the store attributes the information about all these variables was collected through a questionnaire, which consists of structured questions with quantitative value assigned to Likert Scale. It

was denoted by the symbol or this was the Greek letter such as ρ and was pronounced rho. The range of Correlation coefficient was from -1 to +1. The output of the data attached appendix.

There are three types of correlations.

1. Correlation of Positive and Negative:

When one variable moves in the same direction as another, this is known as a positive correlation. Conversely, when one variable moves in the opposite direction, this is known as a negative correlation.

2. Correlation of Linear and Non- Linear or Curvilinear:

It is known as a linear correlation if both variables change by the same ratio, and a curvilinear correlation if neither variable changes by the same ratio. For instance, a linear correlation would exist if a sale and an expenditure were moving in the same direction. A curvilinear correlation is useful when the direction of the relationship between sale and spending is not the same.

3. Correlation of Simple, Partial and Multiple:

Simple correlation exists between the two variables. If only one variable is used as a factor and this variable is correlated to that factor variable, it is considered to have multiple correlations. If more than one variable is used as a factor, it is known as partial correlation.

CHAPTER 4

RESULT & DISCUSSION

4. Results

Both primary and secondary sources were used in this study to finish it. While primary sources were questionnaire surveys, secondary sources included books, journals, articles, and the internet. According to the need, the researcher draws on both theoretical and empirical data sources. Examining the potential of contemporary information technology systems in the retail industry was the goal of this study. 200 people participated in the study, including owners and employees of retail establishments. The questionnaire for this study was created to incorporate the key variables, and data were gathered from several Dhaka areas using primary data and collection methods. The statistical analysis tool used for data analysis was SPSS. The degree and direction of the link between the variables measured were measured using the non-parametric Spearman Rank Order Correlation. Data were gathered using the created questionnaire, and SPSS was utilized to analyze the data.

4.1 Interpretation of the Results

The results of the analysis are outlined in the pages that follow. Eight different hypotheses were investigated in all, and the observations on each of them are as follows:

H1: Routine Information technology based on retail systems for inventory management was connected to computer use.

Correlation: Table No. 4.1.1

		Estimated Turnover Per Month
Routine Computer Usage	Correlation Coefficient	.518^{**}
	Sig. (2-tailed)	0
	N	200

According to the preceding table, there was a favorable correlation between the average monthly turnover estimate and computer usage. This implies that as regular computer use in the retail industry rises, so will the estimated monthly turnover. Because the coefficient value was only mild, the connection between these two variables was found to (0.518). The association was significant as indicated by the significant value (0.000). In this study, it was noted which retail stores used computers to run their operations; both their performance efficiency and estimated monthly turnover increased.

H2: The staff's regular computer use was connected to retail inventory management IT systems.

Correlation: Table No. 4.1.2

		Estimated Turnover Per Month
Staff Usage Computer Routine	Correlation Coefficient	<i>0.124</i>
	Sig. (2-tailed)	<i>0.081</i>
	N	<i>200</i>

The association between the staff's computer usage habits and the estimated turnover rate per month was shown in the above table, and while the significant value was found to be more than 0.05, the value was not significant.

The study's findings revealed that many retail stores employees lacked computer literacy and had no experience using them for commercial purposes. The findings of this study demonstrated that father and son worked together in their retail stores. There was little correlation between the variables, but if they applied information technology to their retail sector, performance efficiency would have grown along with estimated monthly turnover.

H3: Academic was related to information technology based on inventory management retail systems.

Correlation: Table No. 4.1.3

		Estimated Turnover Per Month
Academic	Correlation Coefficient	.212^{**}
	Sig. (2-tailed)	0.003
	N	200

The table's outcome revealed a connection between the academic and the estimated turnover rate per month. It means that as the number of employees who are knowledgeable about the retail industry increases, so does the estimated monthly turnover, and the correlation coefficient was discovered to be 0.212. The correlation between the variables was substantial, as indicated by the value (0.003).

The provision of knowledge on business management and the application of information technology by education was proven to have a substantial impact on the management of retail outlets. It is clear that exposure to and knowledge of information technology are positively connected with effective leadership and a predisposition to use technology to support management of the retail industry.

H4: Super Market Stores were related to Information Technology based inventory management on retail systems.

Correlation: Table No. 4.1.4

		Estimated Turnover Per Month
Super Market Based on Point of Sale System	Correlation Coefficient	.387^{**}
	Sig. (2-tailed)	0
	N	200

Based on point-of-sale systems, the aforementioned table demonstrated a relationship between the estimated turnovers each month and the super market. It implies that if we

implement the point-of-sale system in the supermarket, we will raise the estimated monthly turnover with a high ratio because they had a relationship that was mutually beneficial (0.387). The value (0.000) demonstrates the importance of the relationship.

The findings indicated that the retail sector benefited from information technology.

H5: Point of Sales System in stores were related to IT inventory management based on retail systems.

Correlation: Table No. 4.1.5

		Estimated Turnover Per Month
Store Based of Point of Sale System	Correlation Coefficient	.225^{**}
	Sig. (2-tailed)	0.001
	N	200

he previous table demonstrated that there was a connection between the store-based point of sale system and estimated turnover per month. It implies that if a point-of-sale system located in a physical location is implemented in the retail industry, we would observe an increase in the estimated monthly turnover as well (0.225). As indicated by the value (0.001), the association was significant.

The results showed that information technology had a positive impact on retail sector.

H6: Reduced costs 33% of user friendly software availability was related to IT inventory management based on retail systems.

Correlation: Table No. 4.1.6

		Estimated Turnover Per Month
Impact of Reduced Prices By 33 %	Correlation Coefficient	.264^{**}
	Sig. (2-tailed)	0
	N	200

According to the table's results, there was a correlation between estimated monthly turnover and the effects of 33% lower pricing. This indicates that many retail store owners would be interested in using information technology in their company if the cost of the user-friendly decreased by 33%. The table's results revealed an estimated turnover per month association of 0.264, with a significant value of 0.000, indicating that the link was meaningful.

The output shows that the IT had positive impact on retail sector in Bangladesh.

H7: lowers expenses The IT inventory management system based on retail systems accounted for 50% of the availability of user-friendly software.

Correlation: Table No. 4.1.7

		Estimated Turnover Per Month
Impact of Reduced Prices By 50%	Correlation Coefficient	.530^{**}
	Sig. (2-tailed)	0
	N	200

According to the table's results, there was a significant correlation between estimated monthly turnover and the effects of price reductions of 50%. This indicates that if the

price of user-friendly software drops by 50%, I will see a significant increase in the number of retail store owners interested in utilizing IT in their operations. The results of the table demonstrated a strong correlation between estimated turnover monthly, which was (0.530), and the value shown significant value (0.000), indicating that our hypothesis was approved.

The investigation demonstrates that information technology had a favorable effect on Bangladesh's industry of retail super stores.

H8: Small business was related to Information Technology based on inventory management retail systems.

Correlation: Table No. 4.1.8

		Estimated Turnover Per Month
Premises area of Retail Outlet	Correlation Coefficient	.832^{**}
	Sig. (2-tailed)	0
	N	200

The above table demonstrated a favorable correlation between the estimated turnover per month and the retail outlet's premises. Since they had a very close link, it meant that if the retail outlet's premises area increased, the estimated monthly turnover would likewise increase with a high ratio (0.832). A significant association is indicated by a significant value of (0.000).

4.2 Empirical Conclusion

S #	Description	R value	Sig: Value	Outcome
H1	Routine Computer usage was related to IT inventory management based on retail systems.	0.518**	0	Accepted
H2	Staff usage computer routine was related to IT inventory management based on retail systems.	0.124	0.081	Inconclusive
H3	Academic was related to IT inventory management based on retail systems	0.212**	0.003	Accepted
H4	Super markets Stores were related to IT inventory management based on retail systems	0.387**	0	Accepted
H5	Store Based of Point of Sale System related to IT inventory management based on retail system	0.225**	0.001	Accepted
H6	Reduced costs 33% of user friendly software availability was related to IT inventory management based on retail systems.	0.264**	0	Accepted
H7	Reduces costs 50% of user friendly software availability was related to IT inventory management based on retail systems	0.530**	0	Accepted
H8	Small business was related to IT inventory management based on retail systems.	0.832**	0	Accepted

CHAPTER 5

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of findings

The information technology market for retail is expected to grow significantly, according to the study survey. All of the hypotheses created to examine the variables that might have an impact on increased information technology usage show that the variables were associated to increasing information technology use in the retail sector favorably. Due to its low profit margin and low sales volume, tiny family shops were only sometimes used. However, high street businesses, general stores, and supermarkets saw a significant increase in the usage of IT-based retail management.

5.2 Discussion and Conclusions

The data from the surveys and interviews was extremely helpful in determining how Bangladesh's retail industry is faring. Due to rising computer literacy and falling computer and electrical device prices, information technology applications are now feasible. On the other hand, when choosing voltage sensitive instruments, interruptions brought on by power outages and damage to electronic devices due to voltage variations were frequently serious issues.

Tiny corner stores eventually made the switch to electronic registers, which can function with a small battery backup in the event of a power loss. The general stores and supermarkets had their own generators for lighting and refrigeration needs, and they could run the majority of retail management systems with the help of an uninterruptible power supply (UPS). It was clear that point of sale systems had found extensive application in larger stores, general stores, and supermarkets, whereas tiny shops, small grocers, and perishable food outlets had relied on electronic cash registers for some time as the only high technology use. While many of the larger merchants already had state-

of-the-art retail management systems, vendor managed inventory capabilities, and even online business capabilities, were becoming more widely acknowledged as having advantages. The true potential of information technology systems was made possible by the growth of medium-sized retail shops, chain stores, and franchised outlets.

Large supermarkets and retailers were frequently seen to be pricey. The overheads of these establishments were high in the beginning. They were unable to compete with the small, family-run business that had low costs but only basic amenities for its customers. The larger retailers could only just now compete on price with smaller retailers thanks to economies of scale. Larger retailers like Shwapno, Daily Shopping, Unimart, and Agora now have very competitive prices to offer. It was evident that the retail industry in Bangladesh was changing as a result of better inventory management achieved through efficient information technology utilization and the purchasing power of a chain of outlets. In order for retail stores to be productive, efficient, and competitive, information technology resources were essential.

This study reveals that a larger deployment of information technology changed Bangladesh's retail industry processes and enhanced customer service. The after-sales service helped to predict the success and failure of rival retail chains, which was advantageous for customers as well.

5.3 Limitations of Research

The lack of trust in our society made it challenging to obtain the kind of data needed for this project, as noted by many student research initiatives. The majority of retailers believe that this information was gathered under the pretext of a student research project by a government organization. Lower-level employees, who were frequently given the responsibility of helping fill out the questionnaire, were frequently unwilling to respond

to the questions out of concern that saying something may get him in trouble with the management.

5.4 Recommendations

Inventory management in the retail superstore was most definitely being significantly impacted by information technology. Due to the users' inexperience, many acquisitions were likely to be mismatched and challenging to improve. We believed that in order to prevent users from being duped, a comparison of the available inventory management systems and the after-sales support capabilities of different system providers was necessary. Government controls and system certification not only benefited users, but also ensured that the technology they bought would be useful for their businesses.

The retail superstores' adoption of an inventory management system to control their stock improved both sales performance and the effectiveness of the supply chain. The impact of information technology on inventory management boosted product availability and performance in retail superstores and other areas of the retail industry, which is useful research for the researchers' future discoveries. This research study also has a limitation to Bangladesh in Dhaka because it was determined that similar research will be done in other countries for the use or adaptation of information technology to maintain the inventory in order to fulfill customer demand and easy-to-access products availability at low time consumed. These items improved the efficiency of the supply chain, boosted sales at retail giants, and attracted more customers.

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APPENDIX
LIST OF TABLES

Table 4.1.9

		Estimated Turnover Per Month
Routine Computer Usage	Correlation Coefficient	.518
	Sig. (2-tailed)	0
	N	200
Staff Usage Computer Routine	Correlation Coefficient	0.124
	Sig. (2-tailed)	0.081
	N	200
Academic	Correlation Coefficient	.212
	Sig. (2-tailed)	0.003
	N	200
Super Market Based on Point of Sale System	Correlation Coefficient	.387
	Sig. (2-tailed)	0
	N	200
Store Based of Point of Sale System	Correlation Coefficient	.225
	Sig. (2-tailed)	0.001
	N	200
Impact of Reduced Prices By 33 %	Correlation Coefficient	.264
	Sig. (2-tailed)	0
	N	200
Impact of Reduced	Correlation Coefficient	.530

Prices By 50%	Sig. (2-tailed)	0
	N	200
Premises area of Retail Outlet	Correlation Coefficient	.832
	Sig. (2-tailed)	0
	N	200

Table No. 4.1.11: VARIABLE VIEW

Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
Outlet Size	Numeric	8	0	Premises area of Retail Outlet	{1, Temporary Stall}...	None	8	Right	Ordinal
Turn Over	Numeric	8	0	Estimated Turnover Per Month	{1, <25000}	None	12	Right	Ordinal
Inventory System	Numeric	8	0	Type of Cash/Inventory System	{1, Total manual}	None	14	Right	Nominal
Proficiency	Numeric	8	0	Routine Computer Usage	{1, Strongly Disagree}	None	15	Right	Ordinal
Staff Computer Usage	Numeric	8	0	Staff Usage Computer Routine	{1, Strongly Disagree}	None	17	Right	Ordinal
Education	Numeric	8	0	Academic	{1, Strongly Disagree}	None	8	Right	Ordinal
Super Market Computer Usage	Numeric	8	0	Super Market Based on Point of Sale System	{1, Strongly Disagree}	None	11	Right	Ordinal
Store Management	Numeric	8	0	Store Based of Point of Sale System	{1, Strongly Disagree}	None	16	Right	Ordinal
Reduce Price 33 Percent	Numeric	8	0	Impact of Reduced Prices By 33 %	{1, Strongly Disagree}	None	17	Right	Ordinal
Reduce Price 50 Percent	Numeric	8	0	Impact of Reduced Prices By 50%	{1, Strongly Disagree}	None	16	Right	Ordinal

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