Report On

An overview of the inventory management system of BBS Cables Limited: How does the IT department maintain its inventory

By

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An internship report submitted to the BRAC Business School in partial fulfillment of the requirements for the degree of
Bachelor of Business Administration

BRAC Business School
BRAC University
January 2022

Declaration

It is hereby declared that

1. The internship report submitted is my/our own original work while completing degree at BRAC University.

2. The report does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.

3. The report does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.

4. I/We have acknowledged all main sources of help.

Student's Full Name & Signature:

_____

Muhammad Abul Hasanat Ibn Shawkat
ID: 18104082

Supervisor's Full Name & Signature:

_____

Shihab Kabir Shuvo
Lecturer, BRAC Business School
BRAC University

Letter of Transmittal

Shihab Kabir Shuvo

Lecturer

BRAC Business School

BRAC University

66 Mohakhali, Dhaka-1212

Subject: Submission of internship report upon completion of the course BUS400 in Fall 2021

Dear Sir,

It is my great pleasure to submit my internship report to you titled, **"An overview of the inventory management system of BBS Cables Limited: How does the IT department maintain its inventory"**

I have tried my best to conclude the report with the most important information and recommendations in a comprehensive manner.

I believe that this report will meet the requirements and enhance my understanding and knowledge of the inventory management system.

Sincerely yours,

_____

Muhammad Abul Hasanat Ibn Shawkat

ID: 18104082

BRAC Business School

BRAC University

Date: January 23, 2022

Non-Disclosure Agreement

This agreement is made and entered into by and between BBS Cables Ltd. and the undersigned student at BRAC University.

During my internship I had access to different information and platforms. I want to make it clear that I will not include any sensitive information about the firm in my report that might compromise the organization's ideals and image.

Organization Supervisor's Full Name & Signature:

_____

Md. Shahjalal Khandker

Assistant Manager

IT, BBS Cables Ltd.

Student's Full Name & Signature:

_____

Muhammad Abul Hasanat Ibn Shawkat

ID: 18104082

Acknowledgement

Firstly, I would like to thank Almighty for the strength and ability for the successful completion of this internship report. After that, I would want to express my gratitude to Mr. Shihab Kabir Shuvo, my respected academic supervisor, for his continuous guidance throughout the semester. I appreciate his encouragement and support in preparing the report during this tough period. I would also want to express my gratitude to Mr. Ahmed Abir Chowdhury, my academic co-supervisor, for his time and supervision.

Furthermore, I would like to thank Md. Shahjalal Khandker, head of IT, BBS Cables Ltd., and Md. Mizanul Islam for their supervision and knowledge throughout my internship period. I am also immensely grateful to all the members of the IT team for their supports.

Also, I want to express my thanks to my family, friends, and well-wishers for their unwavering love, support, and assistance.

Finally, I would like to thank BRAC University for all the opportunities.

Executive Summary

This report was prepared as a part of Bachelor of Business Administration (BBA) degree from BRAC University. The report offers a thorough and descriptive overview of the inventory management system of the IT department of BBS Cables Ltd., one of the leading cables manufacturers of Bangladesh.

The report has three chapters. Chapter 1 presents the overview of the internship. Then Chapter 2 covers different organizational practices, analyzes the company's performance, and presents industry and competitive analysis. Lastly, Chapter 3 covers the project part on the inventory management system. The research gives a detailed overview of the database system used to manage the department's inventory. The study shows the data collection, insertion, and report generation processes, as well as the platform's functions and limitations.

Keywords: Inventory Management System; Database System; BBS Cables Ltd; Internship Report.

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List of Acronyms

IT   Information Technology

HR   Human Resource

BBSCL   BBS Cables Ltd.

MW   Mega Watt

FY   Fiscal Year

BAS   Bangladesh Accounting Standards

BFRS   Bangladesh Financial Reporting Standards

ERP   Enterprise Resource Planning

Chapter 1: Overview of Internship

1.1 Student Information: Name, ID, Program and Major/Specialization

Name   **:** Muhammad Abul Hasanat Ibn Shawkat

ID   **:** 18104082

Program   **:** Bachelor of Business Administration (BBA)

Major   **:** Computer Information Management (CIM)

1.2 Internship Information:

1.2.1 Period, Company Name, Department/Division, Address

Period   : Three (3) months. From October 2021 to January 2022

Company Name   : BBS Cables Limited

Department   : IT Department

Address   : Corporate Office – Configure Bepari Tower, 3rd Floor. GA-64, Middle

Badda, Progati Swarani. Dhaka 1212, Bangladesh.

1.2.2 Internship Company Supervisor's Information: Name and Position

Supervisor's Name   : Md. Shahjalal Khandker

Supervisor's Position   : Assistant Manager, IT Department

1.2.3 Job Scope: Job Description/Duties/Responsibilities

Job Description:

The IT department of BBS Cables Ltd. primarily manages the company's computer network system. The team is also in charge of resolving all computer-related problems, both software and hardware, as well as maintaining and distributing IT-related items and inventories. The intern's duty entailed assisting the IT department with various duties as

needed. My main tasks included cross-checking information and inserting data into the database of the IT department.

Job Duties and Responsibilities:

My primary duty was to maintain the inventory of the IT department by receiving invoices and inserting those data into the local database of the department. In addition, the responsibilities included aiding the line manager in cross-checking and tracking daily IT-related product delivery.

Additionally, I also got the opportunity to work as a beta tester of a developing website of BBS Cables Ltd. and presented some issues of the website and proposed some solutions for those.

1.3 Internship Outcomes:

1.3.1 Student's Contribution to the Company:

As an intern, I tried my best to help my supervisor and the IT department of the company. Firstly, I tried to increase the productivity of the company by assisting the IT team in maintaining the inventory. Secondly, by cross-checking and documenting relevant information, I tried to decrease product requisition and distribution mistakes. Thirdly, I tried to provide a fresh and new perspective on the current and upcoming projects and pointed out some shortcomings in the current database system, and suggested some improvements. Lastly, I believe, as an intern, my extra set of hands increased the efficiency of the department.

1.3.2 Benefits to the Students:

The internship at BBS Cables Ltd. was a fantastic learning opportunity that prepared me to transition from student to working life. For starters, I was able to gain real-world work experience and use my academic learnings in an office environment. Secondly, I learned how to use new software and obtained first-hand knowledge of the IT department's inventory management system. Thirdly, I became acquainted with the corporate culture and fundamental office policies. Also, I had the opportunity to learn how to deal with challenging circumstances efficiently.

1.3.3 Problems/Difficulties:

Fortunately, I was able to work in a welcoming and dynamic workplace, and I did not encounter many challenges throughout my internship period. Everyone was extremely helpful and guided me through my duties and responsibilities. The team was willing to help me with every difficulty I faced and was eager to teach me everything I needed to know. Also, they made sure I was comfortable in my new surroundings and assisted me in adjusting swiftly.

However, due to strict security measures, I needed permission to access the database and had to use my supervisor's credentials each time. Also, due to the unavailability of a digital identification system for interns, I had to manually input my attendance during my tenure.

1.3.4 Recommendations:

As discussed earlier, I did not face much hardship during my stay in the organization. Therefore, it is difficult to provide any major recommendations for them.

However, to improve efficiency, I would suggest a temporary identification system for the interns, possibly through a digital 'Intern ID' with their credentials. This would not only

allow interns to easily access required systems and record attendance but would also save time in terms of monitoring.

Chapter 2: Organization Part

2.1 Introduction

Bangladesh's cable industry began well before the country's independence in 1971. However, there were only a few companies in the industry at the time that could serve the entire country. Over time, the sector grew tremendously, recognizing the growing demand for cables at home and abroad. Although the cable industry has grown to a respectable standard, it is still insufficient to supply the country's overall demand.

According to Fortune Business Insights, the worldwide wires and cables market was worth USD 184.92 billion in 2019 and is expected to grow to USD 269.46 billion by 2027, with a CAGR of 5%. Also, a study from Grand View Research suggests that the Asia Pacific is dominating the global wires & cables market. In 2020 the region had a market share of 37.2%, the highest at the time owing to the rising need for light, electricity, and communication in that part of the world.

Bangladesh's cable market is also developing at a rate of 15-20% per year, primarily because of the government's efforts to offer countrywide electricity through the development of power grid lines (Chakma, 2018). He also added that, in addition to the power grid lines, cable has a large market in the housing and industrial sectors as well. Furthermore, according to Chakma (2018), the market has over 70 cable companies, the majority of which rely on raw materials imported from Chile, China, India, Oman, Malaysia, South Korea, and Singapore.

BBS Cables Ltd. is Bangladesh's second-largest cable manufacturer, specializing in environmentally friendly cables, wires, and conductors. According to Nazmul Hasan, the company secretary, BBS Cables Ltd. is now seeking overseas markets, particularly in Europe and the United States, after establishing itself as one of the country's main makers of electrical cables, wire, and

conductors. He further stated that the company manufactures 18 different types of cables, with the government accounting for 40% of sales and the remainder going to corporations and retailers.

Bangladesh's cable industry is estimated to be worth over TK 10,000 crore, according to industry insiders. Around 120 local businesses can meet more than 90% of domestic demand. Cables worth TK 7,000 crores can be produced domestically, while the rest has to be imported. According to Bangladesh's Power System Master Plan 2010, the country's peak power consumption is forecasted to reach 34,000 MW in FY 2030 and 60,000 MW in FY 2041. The sector is becoming more promising due to the rising demand and expansion of industrialization, and so it is also attracting local investors.

2.2 Overview of the Company

2.2.1 History of BBS Cables Ltd.

BBS Cables Ltd. was founded as an electrical wires and cables manufacturer in April 2009 as a sister concern of Bangladesh Building Systems Ltd. (BBSL), a renowned pre-engineered steel building manufacturer in Bangladesh (BBSCL Annual Report, 2020-2021). In October of the same year, the firm launched its plants. The company started its commercial operations, launched products and marketing in April 2011. BBS Cables Ltd. was transformed into a public limited company in January 2015 and placed on the stock market in 2017.

The company's size and activities have grown in recent years, and it now develops and manufactures new cables, wires, and conductors utilizing cutting-edge technology following national and international standards. The company headquarters is at Configure Bapari Tower (3rd Floor), Ga-64, Middle Badda, Dhaka, with factories in Jaina Bazar, Telehate, Sreepur, and Gazipur.

Figure 1: Company Logo

2.2.2 Corporate Information

Official Name : BBS Cables Ltd.

Legal Status : Public Limited Company

Trade Code : BBSCABLES

Business Nature : Electrical Wire and Cables Manufacturer

2.2.3 Current Position in Bangladeshi Market

BBS Cables Ltd. is Bangladesh's second-largest electrical wires and cable manufacturer, trailing only BRB Cables Ltd. (BBSCL Annual Report, 2020-2021). The report also suggests that the company manufactures products following international standards such as International Electro-technical Commission (IEC), German Standard (VDE), British Standard (BS), Bangladesh Standard (BDS), Australian Standard (AS), and Indian Standard (IS).

2.2.4 Major Product Types

BBS Cables Ltd. specializes in producing 18 different types of wires and cables following unparalleled standards. These include Aluminum Cables, Silicon Cables, Copper Cables, Rubber Cables, Welding Cables, Flexible Cables, Coaxial Cables, Power Cables, Optical Fiber Cables, Submersible Cables, Railway Signaling Cables, Automobile Cables, and Tele-communication

Cables. The company also produces special cables, such as Jelly-filled Cables, FRLS Cables, HR-FRLS Cables, Fire Resistance Cables, and FR Skin Coated Cables (BBSCL, 2021).

Besides, new cables are constantly being developed and as of writing this report a new product labeled as "HT Cables up to 220 KV capacity" will be launched soon.

2.2.5 Ethos and Values: Vision, Mission, Strategic Focus

Vision

The vision of BBS Cables Ltd. is "A winning industrial leader creating superior values for business and community beyond the boundary" (BBSCL, 2021).

Mission

The company achieves its vision through honesty and integrity, business ethics, worldwide reach, technological competence, quality, and long-term connections with all the associates, customers, partners, and workers (BBSCL, 2021).

Strategic Focus

The strategic focus areas of the business define the values of the company upon which the strategies are built. According to BBS Cables Ltd., the firm strives to surpass customers' expectations by constantly enhancing its employees, services, and products in the pursuit of excellence. In addition, the organization guarantees to do business with honesty and integrity in order to secure long-term success. Furthermore, the organization aspires to set an example by fostering a fair and positive work environment, strong teams, and high business standards through mutual trust.

2.2.6 Corporate Objectives

According to BBS Cables Ltd., the corporate objectives of the company focus on becoming the market leader in the product range and market segment to become Bangladesh's leading cable manufacturer by promoting existing areas of success, prioritizing excellent customer experience, developing a strong brand image, achieving the target market share, and making sustainable profits. In addition, the firm intends to provide shareholders with consistent asset growth and return on investment, as well as initiatives to help employees reach their full potential.

2.3 Management Practices

2.3.1 Leadership Style

BBS Cables Ltd. is a public limited company and follows a democratic style of leadership. Democratic leadership is also known as participative leadership because of the active roles in decision-making by the members of the company (Amanchukwu et al., 2015). As a public limited company, the final decisions are taken by the board of directors in a board meeting.

This style of leadership encourages the employees of the company to achieve its goals and objectives. Firstly, after setting goals and objectives, if any concern arises then the employees in each department give feedback and recommendations on their assigned tasks to the head of the department. Then, the departmental heads address the issues in a meeting with the management. Later, a report on it is then passed on to the board of directors where the final decisions are taken. So, this style increases the job satisfaction of the employees and they become more engaged in their work.

2.3.2 Human Resource Planning

Marketing, Human Resource (HR), Management and Operations, Information Technology (IT), Finance, and Procurement are the company's primary departments. The HR department is in charge of human resource planning.

Firstly, the recruitment and selection process in the company starts with vacancies in a department. After the gap is created, the concerned department passes the requirements and the number of free positions as a requisition to the HR department. Then the HR department publishes the circular accordingly in various media and recruitment channels. Afterward, the applicants are called for viva by the HR department and the selected candidates are employed.

Secondly, the company has a variety of compensation systems. To begin, direct financial compensation is given to the sales and supported departments in form of sales incentives. Sales incentives are given in form of cash and are usually added to the monthly salary. Furthermore, the workers in the factories generally get indirect compensation. This is usually done in form of insurance, either life insurance or health insurance based on the type of work. The company also has a non-financial compensation system for all the employees in the form of yearly conferences. These yearly conferences are held for a week in different locations at home and abroad and provide no economic value to the employees.

However, the company does not have any robust training and development programs. In most cases, an initial training program is held for the new employees and there are some yearly optional training programs for the existing employees.

Lastly, the performances of the employees are evaluated by the department heads and through self-appraisal forms. These appraisals directly influence employees' promotions and salary increments. This system creates self-awareness and acts as a motivation.

2.4 Marketing Practices

2.4.1 Marketing Strategy

The company mainly focuses on the market development strategy to expand its sales in new markets. BBS Cables Ltd. is not only focusing on the local rural market but also trying to enter into the global market. According to the company secretary, Md. Nazmul Hasan, the company is producing international standard power cables and has established sophisticated plants in order to reach the export sector. Besides, the company is also developing new products and is trying to sell them to the existing customers with the product development strategy as well.

2.4.2 Target Customers, Targeting and Positioning Strategy

As one of the leading cable manufacturers in the country, BBS Cables Ltd. offers products for all types of cables and wiring needs. Thus, they target different varieties of customers in different sectors including government, corporates, dealers, and direct consumers. According to the company secretary, 40% of the sales goes to the government sector and the other 60% goes to the corporates, merchants and direct customers.

The company produces high-end products with premium quality and price. The products are offered to the customers who prefer safety above all and do not compromise on quality. The company has working experience with almost all the top-level organizations in the country.

2.4.3 Marketing Channels and Product Development

The company sells its products mainly through direct channels, distribution to retailers, and online platforms. There are multiple sales centers of BBS Cables Ltd. in key locations of the country. In addition, the products are also available in different online marketplaces like Daraz, Alibaba, and so on.

Besides, the company invests a lot of its resources in the research and development of new products. The company intends to release a new product called "HT Cables up to 220 VK capacity" very soon. In addition, new cables are constantly being developed, such as the development of a new type of lead-free fire retardant cable.

2.4.4 Branding, Advertising, and Promotional Activities

BBS Cables Ltd. performs different branding activities including both government and non-government sponsorships. The company constantly promotes its products through different electronic media, paper media, leaflets, banners, and so on. Moreover, the company gives special attention to social media and digital marketing through Facebook, Instagram, YouTube, and so on where the products are rigorously promoted and special discounts are given.

2.4.5 Marketing Issues and Gaps

As a high-end cable producer, the company has difficulties in capturing and fulfilling the needs of customers in rural areas. This issue has been created due to the lack of proper segmentation and related budget-friendly product productions.

2.5 Financial Performance and Accounting Practices

2.5.1 Financial Performance

The financial analysis of BBS Cables Ltd. has been done based on the last five years' annual reports from 2016-17 to 2020-21. Currently, the company's market value is over 11.70 billion takas.
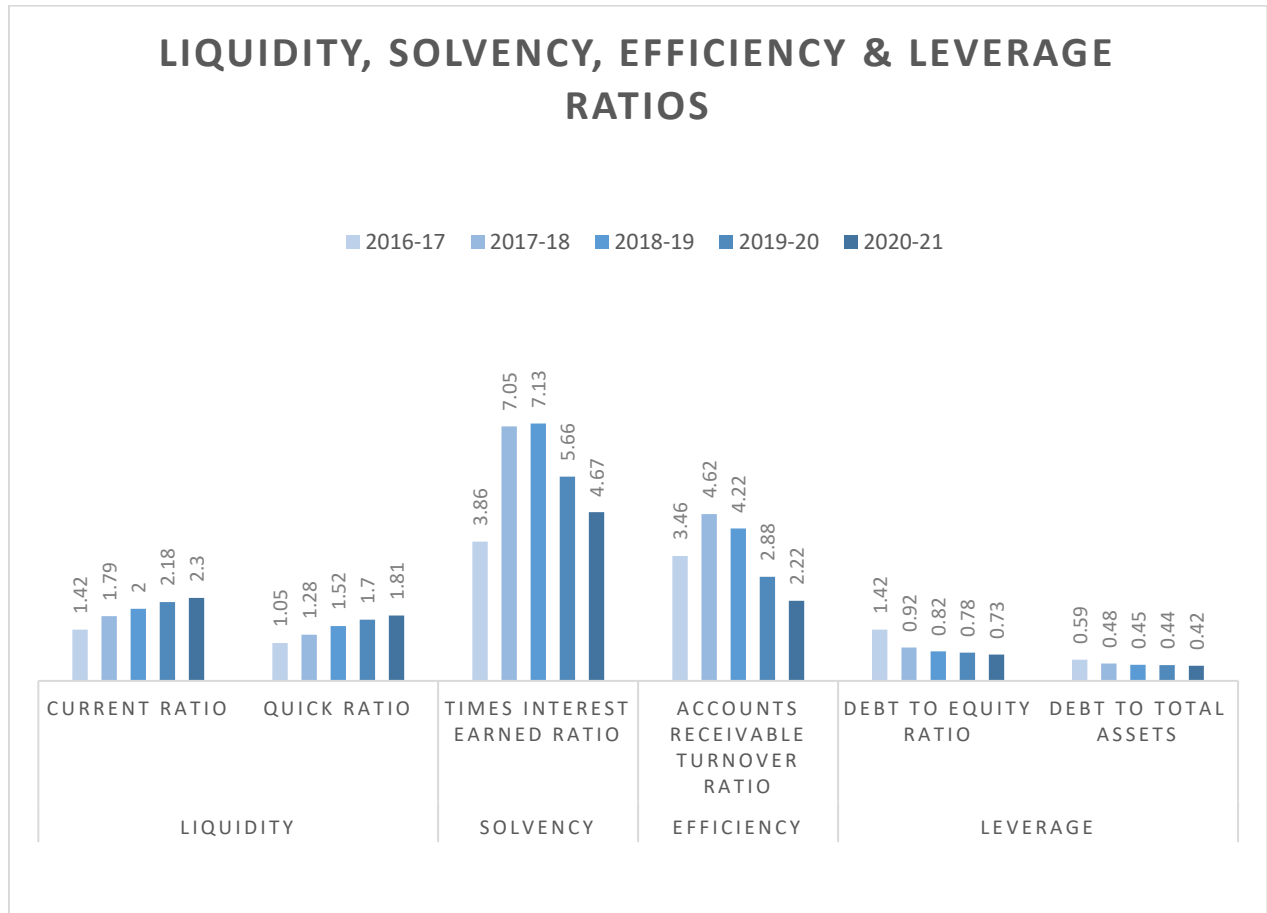
Figure 2: Liquidity, Solvency, Efficiency & Leverage Ratios

Firstly, the data suggests that the company's liquidity condition is getting better every year. The company's ability to pay off its short-term liabilities with its current assets increased from 1.42 in 2017 to 2.3 in 2021. Also, the company experienced a consistent increase in short-term liquidity in the last five years. However, the company's solvency was affected due to the pandemic and has

decreased from 7.13 to 4.67 in the last three years. Secondly, although BBS Cables Ltd.'s net profit margin increased from 2017 to 2019 from 12% in 2017 to more than 17% in 2019, due to the COVID-19 situation it has decreased around 3% in the last three years.
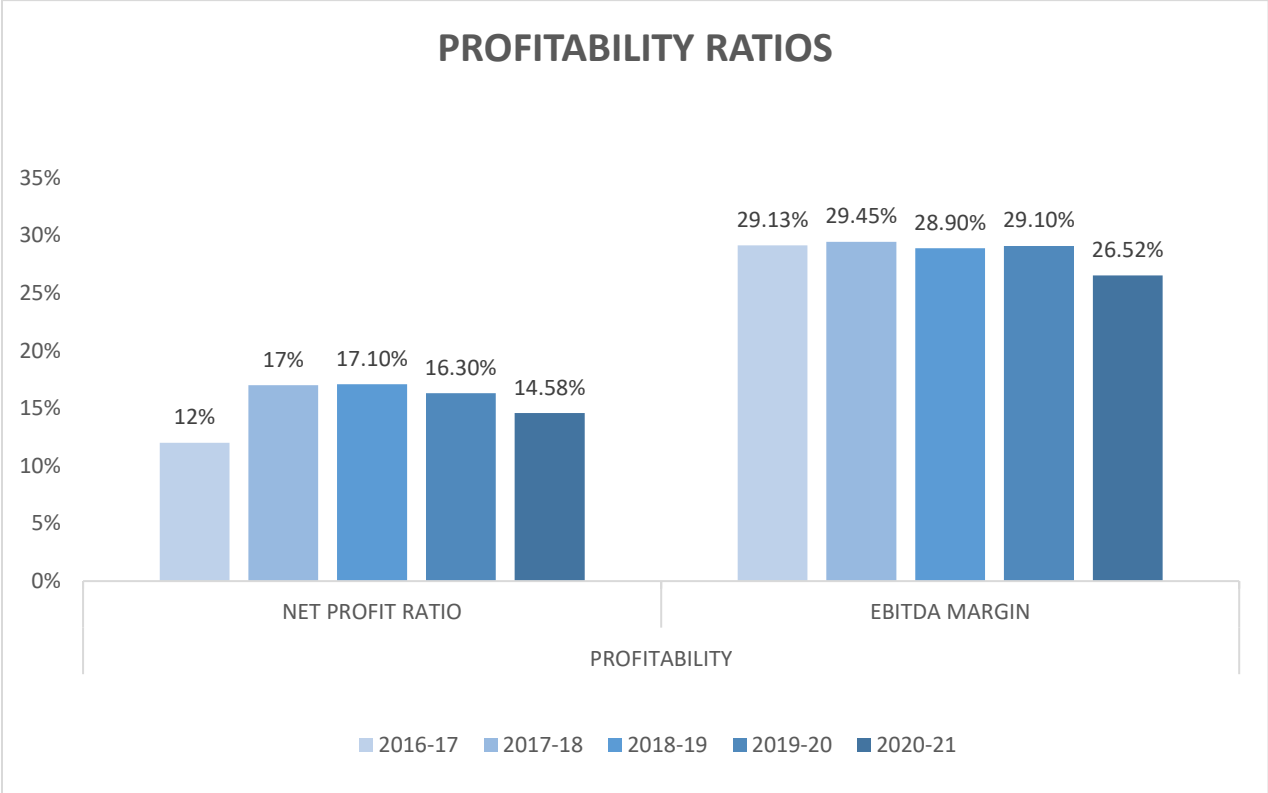
Figure 3: Profitability Ratios

Similarly, the company's operating profitability has also decreased during the period. Moreover, the company had a massive increase in efficiency from 2017 to 2019 from 3.46 to 4.22 but it had a drastic decrease of 2.88 in 2020 and 2.22 in 2021 indicating that the company is facing difficulties in collecting its credit sales from customers. However, the company is in a risk-free state as indicated by the decreasing financial leverage in the last five years.

2.5.2 Accounting Practices

BBS Cables Ltd. follows the Bangladesh Accounting Standards (BAS) and Bangladesh Financial Reporting Standards (BFRS) to prepare its financial statements. All of the core accounting principles are followed in accordance with the standards, and if any deviations are made, they are adequately stated.

Also, the company follows the accrual basis methods of accounting and records information when the transaction happens. Thus, the revenue is recorded as earned, as well as expenses are also recorded when it is incurred. Furthermore, the business sticks to all phases of the accounting cycle. This process, however, is computerized and carried out using the software. As a result, the accounting cycle is completely automated.

Moreover, for general equipment like computers, vehicles, office machinery, and so on, the company follows a straight-line depreciation method. However, the company continually buys expensive and modern machines for its factories, and so for these equipment declining balance method of depreciation is followed for accelerated depreciation.

2.6 Operations Management and Information System Practices

2.6.1 Enterprise Resource Planning (ERP)

BBS Cables Ltd. has been using DreamApps ERP++, an enterprise resource planning (ERP) software from the very beginning of its operations. It records most of the operations of the company, like, automatic attendance and leave management, salary distribution, operations, and so on.

However, with the passage of time, the software got outdated, and cannot be updated to match the current business processes. Also, due to the lack of scalability and support the company has

purchased a new ERP software from Link3 which is still under development. This will be a fully functional ERP system and all the activities of the organization will be integrated into the software. The new ERP system will start with a fresh database system and the current one will be closed and archived.

2.6.2 Information System

The DreamApps ERP++ system is currently being used for sales and marketing, distribution, marketing finance, and operations by the respective departments. It records all the employee and operational information of head office, sales centers, and factories.

Besides, Tally Solutions, an accounting-related ERP software is used to manage all the accounting-related activities by the accounting and related departments.

Additionally, the IT department has developed its own inventory management software using Oracle Developer to manage its inventory.

Furthermore, the information and data are passed among stakeholders and clients using mail services and conventional methods. The employees and departments also pass information through local file-sharing methods. The company also publishes annual reports to present and share its current financial condition, operations, and policies to the clients.

2.7 Industry and Competitive Analysis

2.7.1 Porter's 5 Forces Model

To evaluate a company's competitive environment, the Porter's 5 Forces model was applied. On a scale of 1 to 5, the intensity of competition was assessed, with 1 indicating relatively weak competition and 5 indicating highly heavy competition.

Porter's 5 Forces Model

Market Concentration Ratio
52%

Threat of New Entrants
(2/5)

• High capital requirements
• Strong brand loyalty
• Difficult to achieve economies of scale
• Favorable government policies
• High switching cost

Industry Rivalry
(5/5)

• Highly competitive market
• High number of competitors
• Growing industry
• Low differences in offerings
• High customer loyalty

Supplier Bargaining Power
(3/5)

• Many local suppliers
• Majority of the supplies are not unique
• Dependency on foreign suppliers for copper

Customer Bargaining Power
(2/5)

• Huge loyal customer base
• Very few alternatives
• Quality differences
• Information unavailability

Threat of Substitute Products
(1/5)
• No real substitutes
• Different types of cables may be used in some cases

Figure 4: Porter's 5 Forces Model

Threat of New Entrants

The cables industry requires very high investments and experience. Also, it is really difficult for a new company to gain the necessary experiences and conditions to achieve economies of scale. Moreover, the distribution channels are also difficult to access for a new firm. Although the government policies in the country are favorable and it is easy to get a license, given BBS Cables Ltd.'s market dominance and brand loyalty, new entrants pose minimal risks. Thus, the threat of new entrants is given a score of 2.

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Threat of Substitute Products

The cable industry does not have any real substitutes but in some cases, a different variety of cables can be used. So, the threat of substitute products for the company is almost non-existent and is given a rating of 1.

Customer Bargaining Power

BBS Cables Ltd' being the second-largest cables company in the country has a huge loyal customer segment. Besides, the company produces premium products which most of the competition lack. Also, due to the high demand for cables and the unavailability of any real substitutes, the buyers do not have much bargaining power. Thus, the customer bargaining power is given a score of 2.

Supplier Bargaining Power

The cables market has a huge number of small and large local suppliers. The company gets its supplies from both home and abroad. The majority of the company's suppliers do not offer unique products and can be substituted. However, due to the scarcity of some raw materials and quality differences in the local market, some foreign suppliers are greatly valued by the company. For example, the company imports high-quality copper from the Marubeni Corporation, Japan. So, the bargaining power of the suppliers can be considered moderate with a rating of 3.

Competition from Rival Sellers

BBS Cables Ltd. operates in a highly concentrated and competitive market. The cables industry in the country is growing rapidly and due to the competition is getting high. The company is consistently adjusting its product prices and quality to remain as one of the top cable manufacturers

in the country. So, overall, the competitive rivalry of the industry is very high and gets a full score of 5.

So, Porter's 5 Forces analysis shows that the degree of competition in the market is 52% which suggests that the company is in a healthy position and should have long-term profitability and sustainability.

2.7.2 SWOT Analysis

The SWOT analysis was done to assess the performance of the company by looking at its strengths, weaknesses, opportunities, and threats.

Strengths

BBS Cables Ltd. has a strong brand image and customer loyalty. They share common strengths with the country's top cables manufacturer in producing quality cables. Moreover, the company uses Sikora technology and other high-end technologies and equipment imported from Germany and Italy in its factories which offers a distinctive advantage over the competition. Also, the quality of the cables and wires created with those state-of-the-art technologies are difficult to imitate with regular machines. They also produce eco-friendly cables. Furthermore, the company has highly technical personnel in the management who are well knowledgeable about the products and industry providing the firm a competitive advantage over others.

Weaknesses

The company is yet to capture the local rural market and it is considered as one of the major weaknesses. Since the company is a premium cable manufacturer, it lacks low-cost and budget-friendly product categories, which affects overall revenue generation.

Opportunities

The company can turn its weakness into opportunity by developing products that will offer a more budget-friendly price without sacrificing any major product qualities. This could potentially give them a chance to push for the number one spot in the country's cables market.

Threats

With the growing demands of cables and cables companies in the market, BBS Cables Ltd. could potentially face huge challenges from the new entrants and the top cables manufacturing companies. Besides, the growing number of duplicate cables in the market could also be a huge threat in the future.

SWOT Analysis

Internal

Strengths

- Strong brand image & customer loyalty
- High-end technologies
- Eco-friendly cables production
- Highly technical and knowledgeable management

Weaknesses

- Lack of low-end & budget-friendly products
- Uncaptured rural market

Opportunities

- Creating easily affordable product segment
- Capturing countryside markets

Threats

- New entrants and existing competitors
- Duplicate products

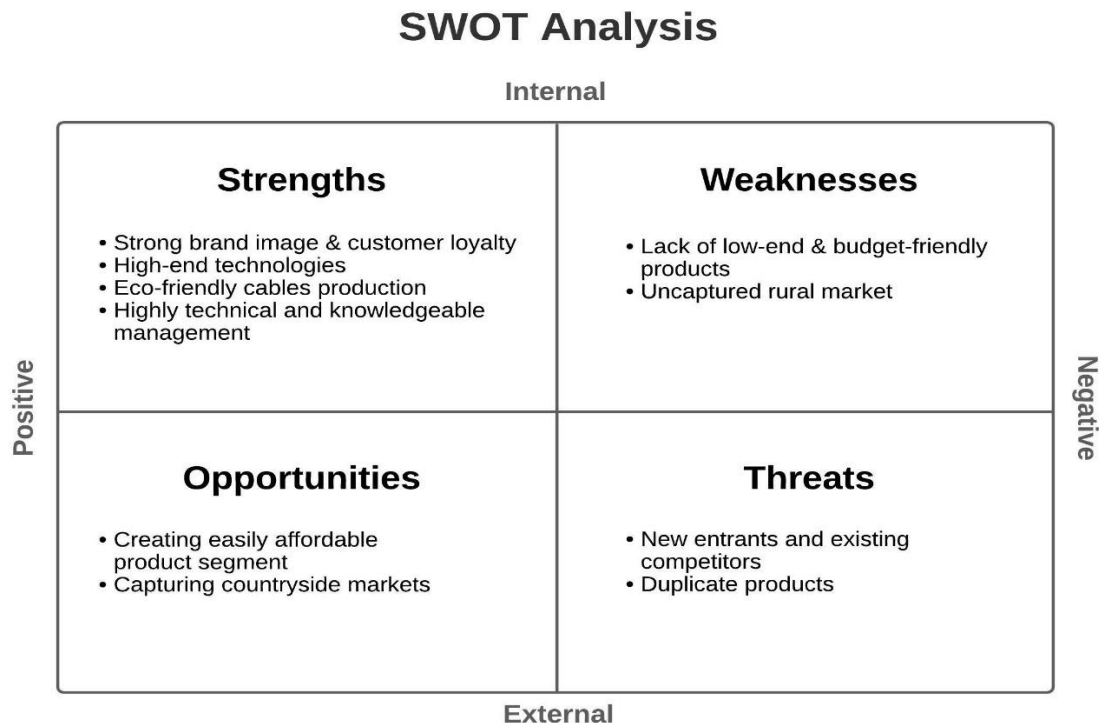**Positive**

Negative

External

Figure 5: SWOT Analysis

2.8 Summary and Conclusions

The organization analysis was done to figure out the organizational practices and status of the company in the current market. The analysis looked into the company's management, marketing, accounting, operations, and information system practices along with the financial performances over the last five years. Furthermore, industry and competitive analyses were done based on Porter's 5 Forces model and SWOT analysis.

The findings suggest that the company encourages democracy, the employees are encouraged to participate and are evaluated and compensated generously based on the work types and performances. Moreover, the company brands itself as a premium, nature-friendly cables manufacturer and targets all customer segments except the rural sector. Also, the company spends a lot of its resources in research and development of new products, as well as in advertising and promotional activities including digital and social media marketing. Furthermore, the company uses ERP and other conventional operation and information management systems. Also, BBS Cables Ltd. follows standard accounting practices to provide transparent and accurate information. The data from the last five years' annual reports suggest that the was growing rapidly each year before the hit of the COVID-19 pandemic. Even so, the firm managed to adapt and ensure gradual growth. Lastly, the industry analysis suggests that BBS Cables Ltd. is one of the dominating competitors in the cables industry and has a sustainable and profitable future.

Lastly, it is clear from the analysis that BBS Cables Ltd. is doing pretty well. The company has grown over the years and become the second-largest cables manufacturer in the country and is pushing itself to become the top cables manufacturer. In order to achieve that target, attentions need to be given to capturing the rural market.

2.9 Recommendations/Implications

As one of the leading cables manufacturers in the country, the company constantly monitors the market and adjusts accordingly. So, there are not many recommendation scopes.

However, looking at the market gap, more rigorous marketing to capture the rural market could be recommended. Although the lack of cheaper product categories is a barrier to entering the rural market but with tactful promotional activities focusing on the importance of quality cables in family safety in the rural environment could be an option to penetrate that market.

Chapter 3: Project Part:

An overview of the inventory management system of BBS Cables Limited: How does the IT department maintain its inventory

3.1 Introduction

Inventory management has long been a necessary aspect of every organization to ensure scheduled delivery of goods and services, in the correct quantity, and in excellent condition. According to Ogbo (2011), the primary objective of inventory management is to identify when and how much inventory to reorder, as well as to have enough safety stock to avoid stock-outs. With the passage of time, in this era of digitalization new programs and software are continually being developed and used to create inventory management systems with high performance and efficiency. This report offers an overview of such a system used by the IT department of BBS Cables Ltd.

The study discusses the components of a digital inventory management system and provides a clear and thorough overview of the system. The report also includes an understanding of the data collection and storage procedures. Furthermore, it identifies the system's weaknesses and suggests some potential solutions.

This report contains five major parts. Firstly, the introductory part contains a preliminary literature review, as well as the research's goal and importance. Secondly, the process of conducting research has been discussed in the methodology part. Thirdly, the findings and analysis part include the overview of the system, data collection, and insertion process, along with the analysis of different functionalities of the system. Then, an overall summary of the findings has been presented in the summary and conclusion part. Finally, the solutions and fixes have been provided in the recommendations part.

3.1.1 Background/Literature Review

The IT department of BBS Cables Ltd. assists other departments with computer-related activities and supplies all necessary computer-related equipment. In the beginning, the department had to

manually record all of the actions on paper and in Excel files. The company purchased an Enterprise Resource Planning (ERP) software in 2009 but the software did not have any module to record and manage the IT department's inventory. So, in 2019 the department locally established their own inventory management system on Oracle Developer, which is fully utilized and maintained by the department and is used to track inventories. The technology can automatically identify inventory status and provide reports.

3.1.2 Objective

The research aims to provide a general understanding of BBS Cables Ltd.'s inventory management system used by the IT department. The study intends to present a comprehensive overview, insight, and knowledge of the inventory management process, as well as examine and investigate various features and functionalities of the system.

The research intends to find out the followings.

- An in-depth look at the IT department's inventory management system

- Data collection and insertion process

- The platform used to create, store, and generate reports

- Discussion on various system components to understand how data is stored and utilized to create reports.

- The functions and benefits of the system

- The limitations of the system

- Recommendations on how to further enhance the system

3.1.3 Significance

The study will benefit both the company and me. Working in the inventory management system of the IT department will provide me with a valuable understanding of the system and the work process, as well as the opportunity to apply my academic knowledge and get real-world experience.

Similarly, the organization will also gain from this research. Since the purpose of the study is to provide a thorough overview of the inventory management system by reviewing different features and operational procedures, it will provide a fresh perspective on existing deficiencies. Also, the report will offer solutions and improvements to increase efficiency and further improve the system.

3.2 Methodology

The research has been conducted mostly using qualitative methods. The study offers a descriptive analysis and aims to provide a complete grasp of the inventory management process. The analysis has been depicted in depth using words and diagrams.

Data were gathered from two sources, both primary and secondary. The majority of the information was obtained from primary sources during the internship, including knowledge gained from job experience, observations, interviews, and discussions. In addition, the data from the secondary sources were collected from annual reports, newspaper articles, the company's website, and other material gathered from relevant websites, articles, and readings.

3.3 Findings and Analysis

3.3.1 Overview of Inventory Management System

The IT department of BBS Cables Ltd. manages its inventory with the help of a database. All the activities of the department are recorded and stored in it. The process of collecting, inserting, and storing data, as well as the use of the database has been illustrated in figure 6.
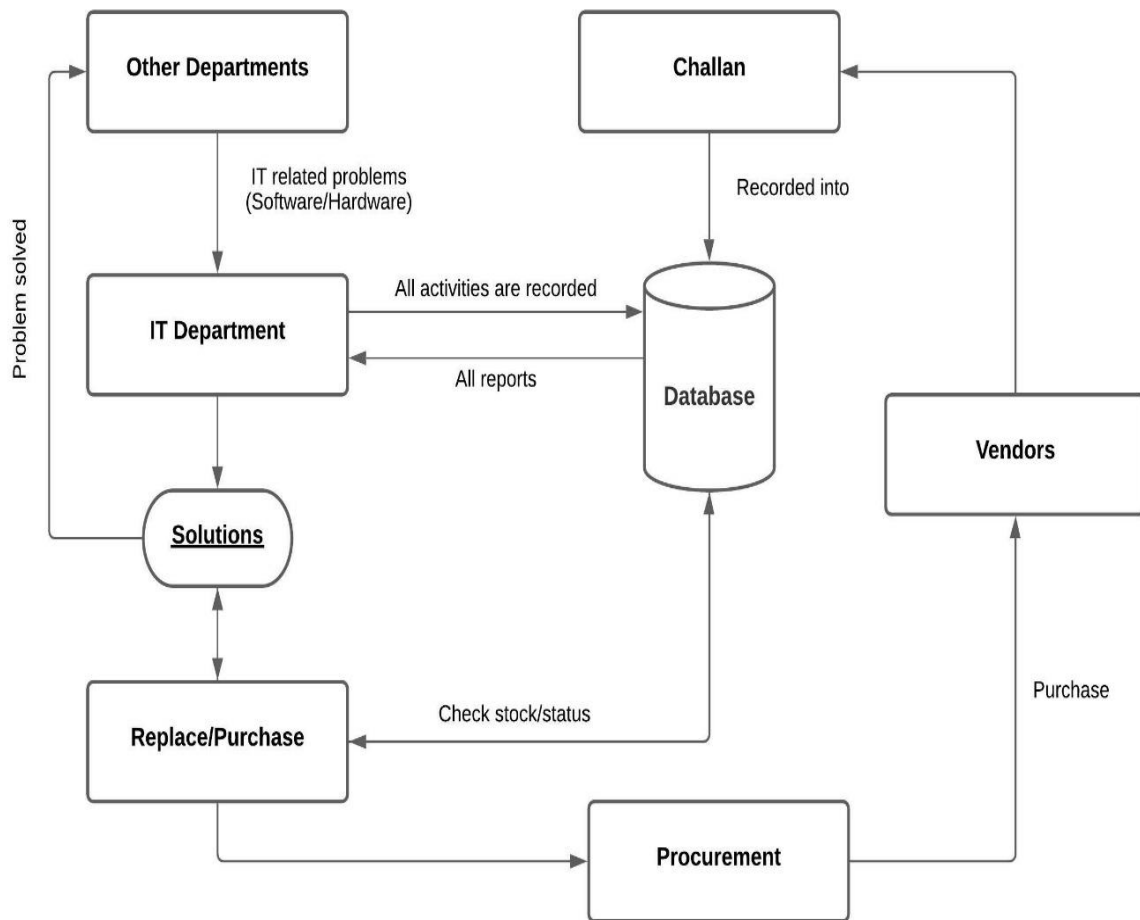

Figure 6: Inventory Management System of BBSC's IT Department

The IT department of the company works closely with other departments and provides all the IT-related needs. Therefore, when any department faces IT-related problems, both software, and

hardware, they report the issue to the IT department. Then, upon receiving the complaints or needs, the department evaluates the problem and records all the activities in the local database system. If the problem can be solved without replacing or purchasing any products or parts, the task is distributed and the solution is provided.

However, if any product or part needs replacement or purchase, its stock is checked through the database management software. If the stock is available, the product is replaced and the information is recorded into the system. In case, it is not in stock or a new product needs to be purchased, the IT department creates a requisition form through the system and sends it to the procurement department. Later, the procurement department purchases the items from the vendors. After that, the vendor transfers the product to the department, where the challan information, invoices, receipts, and other documents are entered into the database.

In this way, the inventory is constantly being managed with the help of the database management system. This entire operation is carried out continually. All the activities, challan information, and other necessary data are documented into the database on a day-to-day basis to ensure proper stocks in the inventory. Furthermore, the reports that are generated are not only used to check stocks but also to track the products even after distribution. The system keeps track of all the delivered products along with their delivery location and user information.

3.3.2 Overview of the Database

3.3.2.1 Introduction

BBS Cables' IT team used Oracle developer software to develop a local store and inventory management system. The front-end of the system is built on Java and PHP, web application development tools. On the other hand, the back-end is built on PL/SQL, which is a SQL extension

for Oracle relational databases. This is the primary software for keeping track of various IT-related operations, product allocations, and distributes. This system and its data will be integrated as a module in the Link3 ERP that is currently being developed.

FORMS and REPORTS are the two sections of the database. FORMS are input forms that are used to enter data into a database. REPORTS, on the other hand, are report forms that are used to generate various sorts of reports.

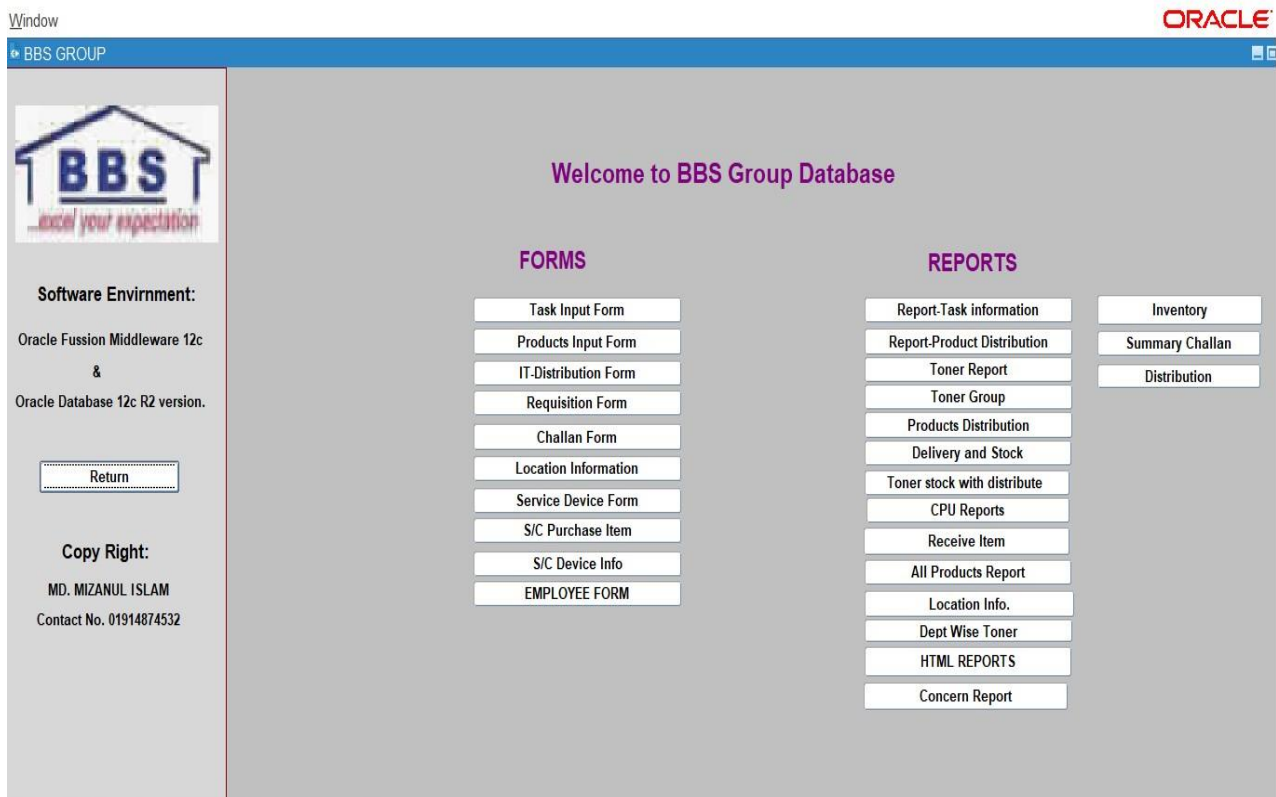The dashboard of the system is as follows.

Figure 7: Dashboard of the Oracle Database System

The Input Form is used to insert data into the database. Currently, there are 9 input forms and they are labeled chronologically. The input forms are denoted with 'I'. Each form has been discussed below in detail.

I-1: Task Input Form

The Task Input Form is a daily basis task planner that has been created to record and distribute day-to-day tasks of the employees of the IT department. The form records the hardware information and the problem details sent to the IT department along with the employee id and name associated with it. The employee information is collected from the stored employee list. Then the task is then assigned and distributed to an employee from the department based on the type of problem.

I-2: Products Input Form

The Products Input Form is used to record the product information. This form is used to add new products, edit existing products and remove outdated ones. The products information is stored according to the product id, product name, brand name, and unit price of each product. Also, the product description and quantity are recorded as well. This information is later used as a reference for shipments. Additionally, the form also displays the current product list and stock levels.

I-3: IT-Distribution Form

The IT-Distribution form is also referred to as product distribution form. It is used by the IT department to keep track of products that are distributed to other employees and departments. The distribution number is automatically entered into the database from the most recent point with the

current date. The product distribution form has two sections, one section includes employee information and the other section includes product information.

Employee information includes the employee's name, id, designation, and employment location. Similarly, the product information includes the product's id, name, brand, and quantity. Employee and product information can be filled both manually or automatically from the list. After adding all the information, the stocks will be displayed in the 'Stock in hand' section, along with the quantity available. The distribution will be successful and the goods will be delivered if the desired product is in stock. In case the product is out of stock, it will be displayed as requested, indicated by the negative quantity value.

Additionally, the IT-Distribution Form is used to generate a 'Gate Pass' for product approval that is delivered outside of the main office.

I-4: Requisition Form

The Requisition Form is used to purchase products. Based on the availability of the products in stock, the IT department put forward a formal request to purchase those products through this form. Also, the form is used to process the product request from other employees and departments based on their needs. The products are selected from the stored product list and after adding the required quantities the total price is generated automatically. Additionally, the form also contains the delivery date, location, employee name, and the department where the products will be sent.

I-5: Challan Form

Product invoices are added to the inventory using the challan input form. The serial number and challan number, as well as the current date, are automatically added to the database from the last point. The Product ID in the database is linked to the product name, brand name, description, and

unit price. The quantity of the products is added to the product IDs based on the shipment, determining the total price of those items. Similarly, based on these inputs the total price of the shipment is recorded.

I-6: Location Information

The Location Information form is used to record information of the locations of the offices, sales centers, and factories of the company. This form is mainly used to add new sales center information and edit or remove nonfunctional ones. Each sales center is registered with a unique location id associated with the name and address of that location. Furthermore, the mobile number and the division of the sales center are also recorded.

I-7: Service Device Form

The Service Device Form is used to keep track of the details of products that will be sent to third-party repair services. After filling in the serial number of the product, other information like the device name, brand name, seller name, and received date are automatically generated. The rest of the data are filled in manually based on the status of the product. If the problem occurs within the warranty period or is returnable it is sent to the supplier of the product. In case it is non-returnable or does not have a warranty, it is either sent to the seller or a third-party company. The products recorded without the 'Send Date' are added to the 'Pending' tab.

I-8: S/C Purchase Items

The S/C Purchase Items form is used to record locally purchased product information. This form is used to register products that have been purchased directly by the sales centers without sending requisition requests to the IT department. However, this form is rarely used as most of the products need to be approved and purchased through the IT department. Usually, products that are urgently

required by the sales center are purchased directly by them and later they need to send the challan information to the IT department. The input information is similar to that of 'Products Input Form'.

I-9: S/C Device Info

The S/C Device Info form is used to keep detailed records of the devices that are used in the sales center. This form has six major information fields consisting of CPU, monitor, printer, scanner, biometric scanner, and router information. Each section has a location ID and location name that is used to fill up information on the devices used by the sales centers in that location.

I-10: Employee Form

The Employee Form records the employee information of the organization. It is used to insert new employee data and edit or remove existing ones. Each employee is given a unique employee id. The information like their name, phone number, joining date, ending date, email and salary need to be input manually. Furthermore, the form also records the designation, department name, location, and status of the employee from the available list. These data are required and used for product distribution and requirements.

3.3.2.3 Report Forms

Different types of reports can be generated using the report forms. Currently, there are 17 separate report formats, each of which is named chronologically. The report forms are denoted with 'R'. Each form has been discussed below in detail.

R-1: Report-Task Information

The Report-Task Information report shows the daily tasks of the employees of the IT department. The report is generated by selecting a time period. It shows the dates when the problem was sent

to the department, the problem type, details, and the employee that worked on that problem, their name, designation, and location. Additionally, the report also shows the solution status of the problem and remarks on the issues that have been solved.

R-2: Report-Product Distribution

The Report-Product Distribution report form shows the list of all the products distributed to the employees. This report is sorted by date. The report shows the date of the products sent to the employees along with their description. The report contains the list of dates, employee id, employee name, the location of the sent product along with the product name, brand name, description of the product, and remarks on the model number.

R-3: Toner Report

The Toner report shows the list of all the toners distributed to different departments and employees. This report is also sorted by date. The report contains dates of the product sent, employee id, employee name, location, product name, brand name, description of the product, and the quantity received.

R-4: Toner Group

The Toner Group shows the report of toners delivered to other departments sorted by the toner model. The report shows the date, distribution number, employee id, employee name and departments, location name, the quantity received, and remarks on it.

R-5: Products Distribution

The Products Distribution report form offers similar reports to the Report–Product Distribution but with individual product categories and is sorted by location name. This output shows the

distribution of a product in a single report. The report contains data on the distribution information. Unlike the previous report on product distribution, this one additionally shows the information of the quantity sent.

R-6: Delivery and Stock

The delivery and Stock report shows the information of the challan, including the number of received products, the quantity used, and remaining stock for each product. The report contains the information of product model, product id, product name, challan quantity, used quantity, and the stock. The report is sorted by product model.

R-7: Toner Stock with Distribution

The Toner Stock with Distribution report offers a similar report to that of Toner Group but with additional information on the number of available stocks. Similar to the Toner Group report, the Toner Stock and Distribution report also contains information on the delivery date, quantity sent, and employee information with additional information of stock. However, unlike the Toner Group report, this one is ordered by date for each toner model.

R-8: CPU Reports

The CPU report shows the distribution information of CPU, UPS, and monitors. The report is sorted by location name. The report shows the information of product name, brand name, description of the product, sent date, employee and department name, designation, and so on.

R-9: Received Items

The Received Items report shows the information about the received products by an employee. The form has an option to input employee IDs and a time period to generate reports. The report

has two parts. The first part shows the employee information consisting of the employee ID, employee name, employee designation, and the employee's department name. The second part consists of the item description which shows the information of the products received by the employee in the inserted time period. This report works as an acknowledgment slip, a confirmation from the receiver with a signature.

R-10: All Products Report

The All Products Report is the combination of the reports of both the 'Report-Product Distribution' report and the 'Products Distribution' report but more organized and detailed. The report is sorted by product name similar to that of the Product Distribution report but shows the information of all products instead of each one. The report contains information on the product name, date, received number, employee name, employee id, designation, location name, brand name, description, quantity, and remarks on it.

R-11: Location Information

The Location Information Report displays a list of all of the company's office locations, factories, and sales centers. The data has been organized alphabetically by the division names. Each location is also listed alphabetically under each division, along with the accounts and sales departments' office locations, phone numbers, and emails.

R-12: Department wise Toner

The Department wise Toner report shows the information of toners received by each department. The report is sorted date-wise and contains the information of department name, location, toner model, quantity received, and remarks on it. However, each report can only show information about a single department.

R-13: HTML Reports

The HTML Report generates reports of products received by a particular employee in HTML format. The report shows the employee information consisting of employee id, employee name, designation, and job location along with the description of the items they received. The item description contains the received number, received date, item name, brand name, description, quantity received, and remarks on it.

R-14: Concern Report

The Concern Report shows the product distribution reports to the concerns of BBS Cable Ltd. The report is generated based on the concern's code. The product distribution is sorted by product name (Pro Name) alphabetically. The concern report comprises the product name, concern name, distribution date, brand name, description, quantity, and remarks.

R-15: Inventory

The Inventory report shows the status of the number of products in stock. It is the updated format of the Delivery and Stock report. The product name, product id, brand name, product description, and quantity available are all included in the report. The report is organized alphabetically by product name. However, the report does not display values with zero, which means that goods that are not in stock are not displayed in the report.

R-16: Challan Summary

The Challan Summary report shows the shipment of products and their quantities within a specific period of time. The form has the option to insert dates from when the report needs to be generated. The generated report shows the time period of the report and the date it has been generated. It

contains the information of product codes, types, brand names, product descriptions, and the quantity of each product shipped within that time.

R-17: Distribution

The Distribution report shows the list of distributed products similar to that of the All Products Report. This report has been further polished from the previous ones by removing unnecessary columns and is primarily used to view product distribution reports where each product is sorted by product id (Pro Id). The information includes product id, product name, sent date, employee and department name, location name, brand name, description of the product, and quantity sent.

3.3.3 Functionalities of the Database

The database system acts as a core of the inventory management system of the IT department. As illustrated in figure 8, it has two primary functions. One is to input data into the database and the other is to generate reports. The data is inserted into the Input Forms and the reports are generated through the Report forms.

To begin, the database has 10 different input forms that can be classified into three different categories. They are New Information, Input & Report and Regular.

The New Information section covers the input forms that are used to record information to create a reference list. This section includes three input forms, Products Input Form (I-2), Location Information (I-6), and Employee Form (I-10). Data are not inserted in these forms regularly, rather they are used only when a new product, location, and employee information needs to be added. Besides, they are also used to update or remove information from those lists. As a result, all the reference lists utilized by the other forms are dependent on these three forms in the New Information section.

Then, the four input forms, Task Input Form (I-1), Requisition Form (I-4), S/C Purchase Items (I-8), S/C Device Info (I-9) are categorized as Input & Report. All of these forms can generate reports directly from the input forms and do not have any designated report forms except the Task Input Form (I-1). However, these forms are considered outdated are not in use, one of the primary reasons for not having separate report forms. The only exception to this is the Requisition Form (I-4). It is used to fill up requisition requests sent to the Procurement department.

Finally, the Regular category of the Input Forms contains the most active options. IT-Distribution Form (I-3), Challan Form (I-5), and Service Device Form (I-7) are all part of Regular Input Forms. As seen in figure 6, a huge part of the IT department's operations is based on product purchase and distribution. So, the IT-Distribution Form (I-3) and Challan Form (I-5) are two of the most important forms. Apart from these two forms, the Service Device Form (I-7) also plays an important role to keep track of products sent to repair.

On the other hand, the current system has 17 different types of report options. They are primarily classified into two categories, General and Product Distribution. The Product Distribution is further classified into two sub-categories as All Products and Toners.

Firstly, the General category contains all the reports apart from product distribution. These include the reports of the Task Information (R-1), Delivery and Stock (R-6), Location Information (R-11), Inventory (R-15), and Challan Summary (R-16). All of these reports have a unique purpose and serve different demands. As mentioned earlier, the Task Information (R-1) report is not fully in use. Apart from that, all other reports are active and functional. Also, some reports have been improved than others limiting the old ones' use. One such case is the Inventory (R-15) report which is the updated format of the Delivery and Stock (R-6) report.

Secondly, the Product Distribution section is divided into two sub-sections, All Products, and Toner. These two sections have been created mainly to distinguish between toner reports from all other products.
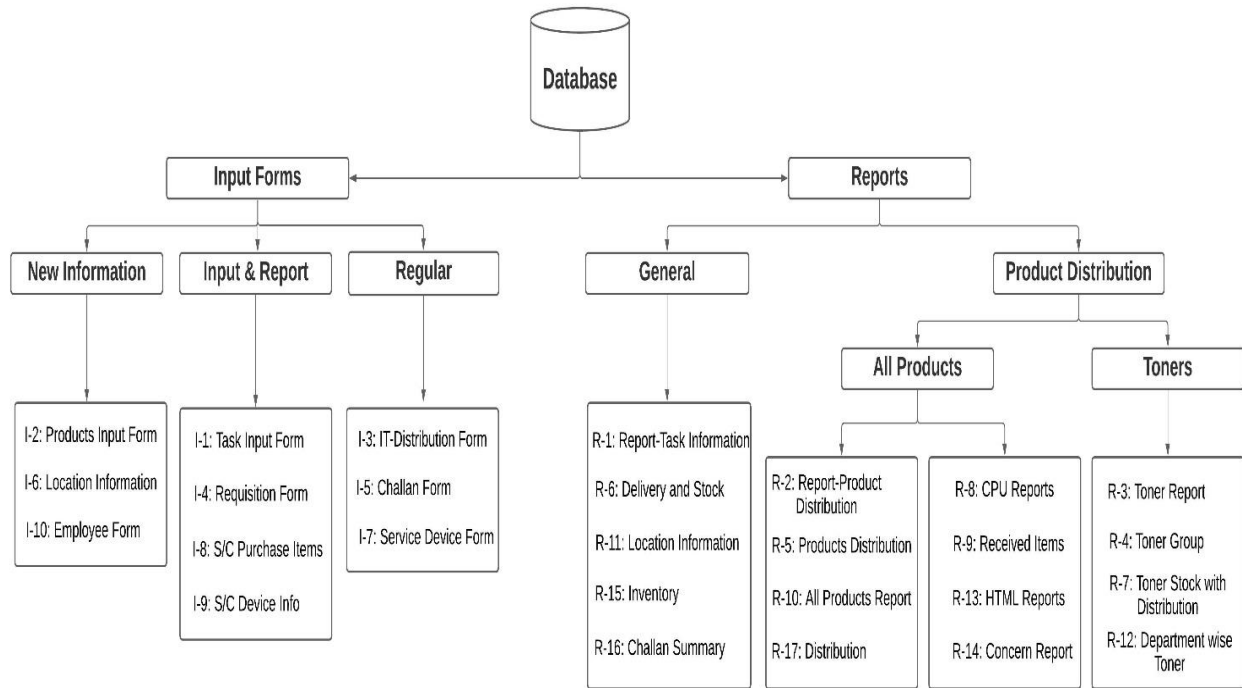

Figure 8: Functionalities of the Database

The All Products section contains 8 types of report options. These 8 types of reports can be divided into two parts. One part includes Report-Product Distribution (R-2), Products Distribution (R-5), All Products Report (R-10), and Distribution (R-17). All of these offer similar functionalities with slight changes and improvements. Here, the chronological order separates the older report formats from new ones. Thus, the higher the number, the better the report is formatted from its predecessors. For instance, the Report – Product Distribution (R-2) report shows the information on all products sorted by serial and date. Similarly, the Product Distribution (R-5) report offers similar functions with additional improvements on the ability to select products individually and

sort them by location name as well. The All Products Report (R-10) is the combination of these two reports and offers a more organized report. Lastly, the Distribution (R-17) is the latest report format and the report adds an extra function to sort the products by 'Product ID.'

Similarly, the other part of All Products includes reports on CPU Reports (R-8), Received Items (R-9), HTML Reports (R-13), and Concern Report (R-14). They also offer different reports on product distribution. Unlike the other four product distribution reports, these reports are unique and serve different purposes. For example, the CPU Report (R-8) only shows the information on all the CPU, UPS, and monitors. Furthermore, the Received Items (R-9) generates the acknowledgment slip. Additionally, the HTML Reports (R-13) offers a similar report to that of the All Products Report (R-10). The only difference between the two is that the first one generates reports in HTML format while the latter one generates reports in PDF formats. Moreover, the Concern Report (R-14) generates product information of selected concerns.

Finally, the Toners section in Product Distribution contains toner-specific reports. This section includes reports on Toner Report (R-3), Toner Group (R-4), Toner Stock with Distribution (R-7), and Department-wise Toner (R-12). There are four different report forms for toner reports because most of the products that are distributed on a regular basis are toners. So, instead of finding toner distribution information within the total product reports, different reports on toners have been created. For example, the Toner Report (R-3) shows the information of all toners sorted by date and serial number. Similarly, the Toner Group (R-4) provides reports based on toner models, while the Toner Stock with Distribution (R-7) generates reports identical to the Toner Group (R-4) but with the inclusion of the amount of stock. In addition, the Department wise Toner (R-12) organizes toner reports by department name.

3.3.4 Limitations of the System

Although the inventory management system serves all the current needs of the IT department, it still has some shortcomings that may create some issues in the future as the system gets bigger and its functionalities increases.

The limitation of the system can be categorized into two main groups based on the limits of the input and report forms. They are -

- Common issues and limitations
- Individual form limitations

3.3.4.1 Common issues and limitations

Firstly, one of the major limitations of the system is that it is not dynamic enough. While it is true that the system is not completely static either but the report generation process is completely fixed. As the input forms have fixed inputs, so the forms being static is not a major problem. However, the criteria of the reports are also fixed for each report form. So, for this reason, multiple forms need to be created to generate the same report with different needs. For example, a report includes three columns: id, name, and date; if we want to make reports based on id, name, or date, we will need to construct three separate report forms for a single report.

Secondly, most input forms and reports lack separate columns for 'department name.' The department information is either not available in the input forms or is mixed in with other columns, such as employee information. Furthermore, most reports do not include a dedicated column for department names and instead mix them in with other columns. This leads to confusion when it comes to segregating personnel information from department information.

Also, the system does not have an option to search for any specific form, both input and report form.

3.3.4.2 Problems and limitations of specific forms

Apart from the common limitations, some of the forms are limited to certain features. The problems and limitations in individual forms are discussed below.

Task Input Form (I-1)	- Only the hardware-related problems can be recorded. No option to record software or any other issue
	- No option to insert department name
	- No option to update solution status

| Service Device Form (I-7) | - No option to view product warranty periods |
| | - No option to see the number of problems solved |

Task Information (R-1)	- No way to identify the date when the problem was solved
	- No option to sort out tasks by each employee
	- No option to see the number of problems solved each day

| Toner Report (R-3) | - Product name column is unnecessary as this section is only for toner reports |

| Toner Group (R-4) | - None of the columns are sorted |
| | - Department and employee names are not separated |

Products Distribution	-	No option to sort by date
(R-5)	-	Department name and employee names are not separated
	-	All department reports cannot be pulled in a single report
	-	No option to pull information from multiple departments
CPU Reports	-	The report does not only include CPU information
(R-8)	-	Product type cannot be selected or sorted
	-	Department and employee names are not separated
Received Items	-	No option to record the signed acknowledgment slip
(R-9)		
All Products Report	-	All columns are unsorted
(R-10)		
Location Information	-	Factory and corporate office information are not separated
(R-11)		from the S/C info
Department wise Toner	-	The columns with the department and location name are
(R-12)		unnecessary
Concern Report	-	Extra concern name column
(R-14)	-	Concern code unavailable
Inventory	-	Product with zero (0) quantity is not shown
(R-15)	-	There is no option to search for the out-of-stock products

3.4 Summary and Conclusions

The report was prepared with the goal of providing a comprehensive overview of the inventory management system of the IT department of BBS Cables Ltd. The research demonstrated the data collection, insertion, and report generation processes, as well as the functions and limitations of the platform used to manage the department's inventory.

The findings suggest that the total inventory management system is dependent on the database system. The database records all the activities and is used to generate all the IT-related reports. Moreover, both input and report forms can be classified into different groups and sub-groups based on their functionalities and uses. Apart from the forms in Input & Report (3.3.3) section in the database most of the forms are active and are in full operations. Furthermore, the IT-Distribution Form (I-3) and the Challan Form (I-5) are two of the forms that are used on daily basis. On the other hand, the report forms are updated constantly and the newer report forms of the same category offer better reports than the older ones. This is also reflected by the daily uses of the latest three reports which include Inventory (R-15), Challan Summary (R-16), and Distribution (R-17). In fact, these three reports can cover almost all the information needed by the IT department. Additionally, the findings also suggest that toner is the most distributed product of the department. As a result, the four different toner reports in the Toners (3.3.3) section are also very important.

Lastly, it is clear from the study that the database system increases the efficiency of the department and reduces errors. However, the system also has certain shortcomings including but not limited to report forms being less organized. So, some improvements and features could be implemented in order to make it more efficient and user-friendly.

3.5 Recommendations/Implications

As a locally designed program, the inventory management system is rather impressive and effective in its operational aspects, but it still has certain limitations and can be improved further.

To begin, based on the above analysis, the primary suggestion would be to make the report system more dynamic. This will decrease the number of forms required to generate reports on a single area. As a result, this will reduce extra stress on the system and improve efficiency. Furthermore, due to the requirement of a fewer number of forms, the dashboard would be cleaner and more accessible. For example, there are different types of toner reports (3.3.3) that fall under the same category and serve similar purposes. Furthermore, all of the reports have the same columns, with the only change being how they are arranged. As a result, multiple toner report forms need to be created to generate multiple toner reports. Therefore, a dynamic report structure can improve the system by generating multiple toner reports from a single report form.

However, making the total system dynamic may require drastic changes in the software and will be time-consuming. Furthermore, because this database will be integrated into the new ERP system, making that system dynamic will be a lot easier and efficient than redesigning the present one. So, for the existing inventory management system, the focus should be on the shortcomings of the individual forms.

The recommendations of those forms are followings.

Firstly, the forms including Toner Group (R-4), Products Distribution (R-5), and CPU Reports (R-8) should have different columns for department and employee names. This should be the priority because the reports become confusing and less meaningful when both the information are mixed.

Secondly, as for the input forms, the Task Input Form (I-1) should include an option to record software-related problems, insert department names, and an opportunity to update the solution status. The Service Device Form (I-7), on the other hand, should allow users to see the warranty period and the number of problems fixed each day.

Thirdly, the Task Information (R-1) report should include the problem-solving date, the number of problems solved, and sort out task information by employee names.

Also, the Toner Report (R-3) should get rid of the column with 'Product Name' as the form only generates reports of toners. Next, the columns in the Toner Group (R-4) should be sorted to generate a meaningful report.

Furthermore, the Products Distribution (R-5) module should have the ability to produce reports by date and pull data from various departments into a single report. Also, because the CPU Report (R-8) contains data from various components, it should either provide CPU-only reports or modify the module name to minimize confusion.

Then, there should be an option to insert signed acknowledgment slips in the Received Items (R-9) module. Additionally, the columns in the All Products Report (R-10) should be sorted and the Location Information (R-11) report should have separate columns for factories, corporate office, and sales centers.

Moreover, the Department wise Toner (R-12) report should not have a separate column for the name of the department as the report only contains data of a single department.

Similarly, the Concern Report (R-14) also should not include an entire column on the name of a single concern as individual concerns have individual reports. Additionally, the report should also include a concern code.

Besides, the Inventory (R-15) report should include an option to search for out-of-stock products as the unavailable products i.e., the products with zero quantity are not shown in the report.

Lastly, there could also be some quality-of-life changes. One of the improvements could be the inclusion of an option to search for input and report forms. Furthermore, the user interface could also be polished up a bit by reorganizing the input and report forms by putting them together in a group as shown in figure 8 to increase the accessibility of the system.

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Appendix A.

1. Financial Ratios

Years		2016-17	2017-18	2018-19	2019-20	2020-21
Liquidity	Current Ratio	1.42	1.79	2	2.18	2.3
	Quick Ratio	1.05	1.28	1.52	1.7	1.81
Solvency	Times Interest Earned Ratio	3.86	7.05	7.13	5.66	4.67
Profitability	Net Profit Ratio	12%	17%	17.10%	16.30%	14.58%
	EBITDA Margin	29.13%	29.45%	28.90%	29.10%	26.52%
Efficiency	Accounts Receivable Turnover Ratio	3.46	4.62	4.22	2.88	2.22
Leverage	Debt to Equity Ratio	1.42	0.92	0.82	0.78	0.73
	Debt to Total Assets	0.59	0.48	0.45	0.44	0.42