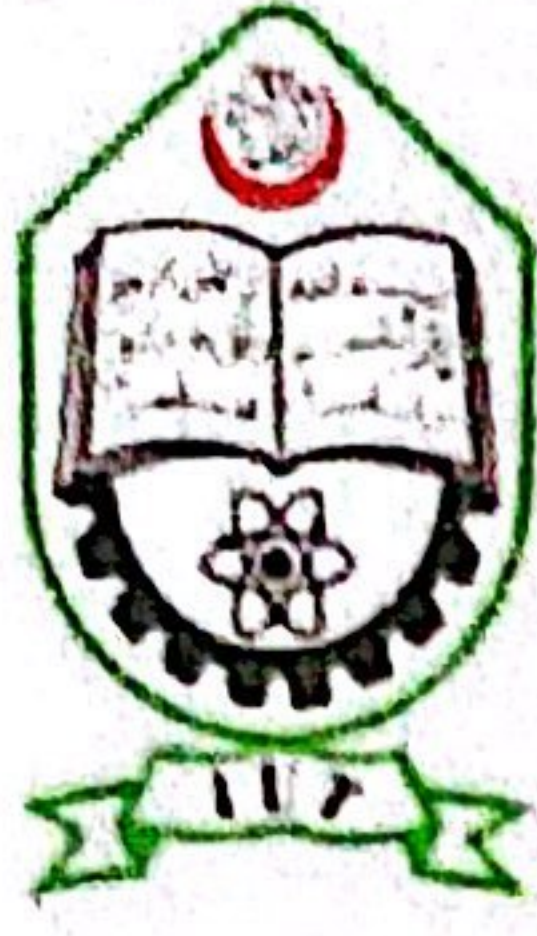


Internship report on

**Impact of Internet of Things (IoT) on Business Operations: A Case Study of
Bondstein's Solutions and Services.**



الجامعة الإسلامية للتكنولوجيا
UNIVERSITE ISLAMIQUE DE TECHNOLOGIE
ISLAMIC UNIVERSITY OF TECHNOLOGY
DHAKA, BANGLADESH
ORGANISATION OF ISLAMIC COOPERATION



Submitted to

Islamic University of Technology

In partial fulfilment of the requirements for the degree of
BBA in Business and Technology Management (BTM)

Submitted by:

I acknowledge that my ultimate report will be incorporated into the enduring archives of the BBA in Business and Technology Management Program at the Islamic University of Technology. The undersigned hereby grants permission for the dissemination of their final report to any interested party upon request.

Nahiyam

Name: Nahiyam Bin Rian

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**Department of Business and Technology Management
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Approved by:

S.M. Rakibul Anwar

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Assistant Professor

**Department of Business and Technology Management
Islamic University of Technology**

Submission Date: 18 May 2023

Internship report on
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Submission Date: 19 May 2023

Internship report on
Impact of Internet of Things (IoT) on Business Operations: A Case Study of
Bondstein's Solutions and Services.



This internship report is submitted to the Department of Business and Technology Management (BTM) at the Islamic University of Technology (IUT) for the course BTM 4800.

Letter of Transmittal

May 07, 2023

S.M. Rakibul Anwar

Assistant Professor

Department of Business and Technology Management

Islamic University of Technology

Subject: Submission of Internship report at Bondstein Technologies Limited.

Respected Sir,

I am delighted to present my report entitled "The Influence of the Internet of Things on Business Operations in Bangladesh," as a component of my internship program. Working under your direct guidance was a significant accomplishment on my part.

The document presents a thorough analysis of the Internet of Things (IoT) industry in Bangladesh, encompassing an evaluation of the present market dimensions, prominent stakeholders, and recent developments in the areas of adoption and advancement. The report culminates by deliberating on the future possibilities of IoT adoption and innovation in Bangladesh, along with its potential impact on businesses operating within the nation. Additionally, the report offers suggestions to both commercial entities and governmental decision-makers regarding the utilization of IoT technology to facilitate corporate expansion and enhance the progress of the country. It is my sincere hope that the report presented herein proves to be informative and insightful. In the event that you possess any inquiries or necessitate supplementary details, kindly do not hesitate to get in touch with me.

I express my gratitude for the time and thoughtful attention you have given me.

Your Faithfully,

Nahiyan Bin Rian

Id: 180061127

Department of Business and Technology Management (BTM)

Islamic University of Technology

Declaration

I, Nahiyan Bin Rian, a student of Business and Technology Management (BTM) department at the Islamic University of Technology, hereby declare that I am the author of the scholarly article entitled "Impact of Internet of Things (IoT) on Business Operations: A Case Study of Bondstein's Solutions and Services." I affirm that the present document has been produced without external aid and that all referenced sources have been duly cited. This article composed by myself under the supervision of S.M. Rakibul Anwar, Assistant Professor of Business and Technology Management (BTM) department at Islamic University of Technology.

The undersigned affirms that the present document has not been previously submitted, nor has any substantially similar document been submitted, for any other academic evaluation or purpose. I acknowledge the potential consequences of participating in any manner of academic misconduct, such as plagiarism or collusion, which may lead to disciplinary measures.

Student's Full Name & Signature:

Nahiyan Bin Rian

ID: 180061127

Department of Business and Technology Management

Islamic University of Technology

Supervisor Certificate of Acceptance

Nahiyah Bin Rian, ID: 180061127 has accomplished an internship from **29 January 2023** to **28 April 2023** according to the regulations for internship for the degree programme BBA in Technology Management under the Department of Business and Technology Management of Islamic University of Technology.

Supervisor's Full Name & Signature:

S.M. Rakibul Anwar

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Internship Starting Date: 29th January, 2023
Last Working Date: 3rd May, 2023

Mr. Rian,

We would like to thank you for your positive contribution and attributions during your time as intern at Bondstein Technologies Ltd. We had found you hard-working and responsible towards your tasks related to YBX panel Follow-up, Robi Tracker Panel checking, Installation & Maintenance, Client Visit, Billing & Churn Activities

Bondstein Technologies Ltd appreciate your efforts and hopefully this experience will help you to grow up.

Good Luck.

Mahmud Hassan
3/5/23



Mahmud Hassan
Senior Executive, People & Culture
Bondstein Technologies Limited

Acknowledgement

I would wish to extend sincere appreciation to their supervisor, **S.M. Rakibul Anwar**, Assistant Professor, for offering indispensable direction, assistance, and motivation during the course of this research endeavour. I like to express sincere gratitude to the Islamic University of Technology for affording me the chance to pursue my academic degree and for the exceptional resources at my disposal.

I express gratitude towards my colleagues at Bondstein for providing consistent support and encouragement throughout the period of my internship endeavour. I express gratitude my family members for providing steadfast affection, assistance, and motivation during the present period.

Ultimately, I wish to convey my appreciation to a higher power for the privilege of conducting this research and for the fortitude and determination to bring it to fruition.

Executive Summary

This internship report provides a comprehensive account of my experience and the various tasks I undertook while participating in the Advance Internship Program at Bondstein Technologies Limited, a company operating in the Internet of Things (IoT) sector in Bangladesh. The present discourse pertains to an experiential account obtained during a three-month internship period commencing on January 29, 2023 and concluding on April 28, 2023, within the VTS Operation department. This opportunity facilitated the improvement of my skills and knowledge, while also providing me with direct exposure to the corporate environment and the IoT industry.

The comprehensive delineation of tasks outlines the specific activities and corresponding duties that I undertook throughout my internship program. Upon further examination, an assessment of the obstacles encountered during this period highlights the ways in which my academic acumen proved beneficial.

The subsequent segment of the document scrutinizes the influence of the Internet of Things (IoT) on commercial activities, with an emphasis on pivotal domains such as supply chain administration, transportation, and client satisfaction. This report evaluates the prospective advantages and difficulties of implementing IoT in various business sizes and industries. Additionally, it furnishes instances of companies that have effectively utilized IoT to enhance their operations and attain business expansion. The report culminates with a discourse on the forthcoming possibilities for the adoption and innovation of IoT in Bangladesh, along with its plausible impact on businesses within the nation. The document offers guidance to both commercial entities and government officials regarding the utilization of IoT technology to foster economic expansion and promote the advancement of the nation.

The report posits that the current state of IoT adoption and innovation in Bangladesh is nascent, albeit with considerable potential benefits. With the increasing adoption of IoT, businesses can enhance their operations, improve customer experiences, and drive growth. Policymakers are capable of playing a pivotal role in enabling the growth of the Internet of Things (IoT) ecosystem. This can be achieved through the provision of research and development support, promotion of innovation and entrepreneurship, and facilitation of collaboration between academia, industry, and government.

The internship program afforded me the opportunity to gain practical experience while also enabling me to showcase my abilities and enhance my skill set. This experience will facilitate the advancement of my career and enhance my skillset, ultimately aiding in the realization of my desired profession.

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Chapter: 1

Introduction

The Internet of Things (IoT) has been identified as a disruptive technology that has the capacity to revolutionize the operational processes of businesses. According to the International Data Corporation's (IDC) report published in 2020, it is projected that the worldwide expenditure on the Internet of Things (IoT) will attain \$1.1 trillion by the year 2023. The observed expansion serves as evidence of the considerable influence that the Internet of Things (IoT) can exert on diverse sectors, such as manufacturing, healthcare, transportation, and logistics. Bondstein, a prominent technology enterprise situated in Bangladesh, has been spearheading the development and implementation of Internet of Things (IoT) solutions for commercial entities.

The objective of this report is to conduct an analysis of the effects of the Internet of Things (IoT) on commercial activities, with a particular emphasis on the solutions and services provided by Bondstein. This report aims to present an overview of the current state of Internet of Things (IoT) adoption in Bangladesh. It will also delve into the IoT solutions and services offered by Bondstein, while highlighting the potential benefits and challenges that businesses may encounter in their adoption of IoT. Furthermore, the report will analyse the influence of the Internet of Things (IoT) on critical domains, including operations, supply chain management, logistics, and customer experience.

This report will delve into the historical context of the Internet of Things (IoT) and its potential implications for business operations. Additionally, it will provide an analysis of the future prospects of IoT adoption and innovation in Bangladesh, concluding with recommendations for businesses and policymakers on how to effectively utilize IoT for the purposes of business growth and national development.

The primary objective of this report is to offer an analysis of the potential impact of IoT on business operations in Bangladesh, using Bondstein's solutions and services as a case study.

1.1 Background of the Report

Bondstein Technology Ltd was founded in 2013 and is currently a subsidiary of Runner Group, a prominent national company that has been at the forefront of the IoT, ML, and AI industries. Bondstein encompasses three primary domains, namely Vessel Traffic Services (VTS), Non-VTS, and digital solutions. The solution offers a comprehensive package for both service providers and customers. This report aims to elucidate my internship experience at Bondstein Technologies Limited. During a three-month internship at Bondstein's VTS Operations department, I gained experience working alongside the operation team. The purpose of this

communication is to provide a summary of the knowledge and skills acquired during the internship experience and to elucidate how they will be advantageous for future endeavours.

1.2 Origin of the Internship Report

The completion of an internship program is a mandatory requirement for undergraduate students pursuing Business and Technology Management at the Islamic University of Technology. The principal objective of this program is to facilitate the integration of the second cohort of graduates from the BTM department into the labor market and business sector. The primary objective of the Department of Business Technology Management (BTM) is to provide its students with practical exposure to the industry. The internship program was designed to provide students with an opportunity to apply theoretical concepts of the business world to real-world scenarios and gain professional experience, leveraging their existing familiarity with the theoretical concepts. The primary difficulty in this instance lies in the application of scholarly expertise to practical, tangible concepts and encounters.

1.3 Main purpose of the Internship Programme

This section will provide an overview of the primary objective of the internship program. The aforementioned objectives are the primary aims.

1. Acquire practical knowledge in a genuine corporate setting.
2. It is recommended that students be provided with an introduction to the employment market.
3. Establishing a connection between theoretical concepts and practical applications.
4. It is important to gather and arrange accurate and specific details pertaining to the job duties and responsibilities.
5. The completeness of the prerequisites for a Bachelor of Business Administration program.

The document presented is a culmination of a three-month internship program at Bondstein Technologies Ltd. and has been prepared in accordance with the guidelines set forth by the Business and Technology Department of the University. The document comprises details pertaining to the organization and its products, alongside insights into the relevant industry.

1.4 Objective of the Internship Report

Generic Objectives:

The primary objective of the three-month internship was to gain comprehension of the operations department's functions and their methods for attaining their objectives. The program can be perceived as a corporate apprentice for undergraduate students. The present document provides a comprehensive account of the tasks and responsibilities I undertook during the course of my internship. The objective of this report is to demonstrate my comprehension of the completed task and the knowledge acquired throughout the internship program. This is an analysis that compares various activities and their impact on my learning outcomes, with the aim of evaluating my overall learning yield within the organization.

Specific Objectives:

1. Provide a detailed account of the responsibilities and expectations associated with the role of an intern.
2. In order to accurately represent the company's current condition and position within the national market.
3. Acquiring knowledge regarding the comprehensive operational procedures of the electronic commerce sector.

1.5 Methodology used and Data Source

During the composition of this internship report, I collected data and perspectives from a variety of primary and secondary sources.

The study places significant emphasis on delineating the primary sources of data obtained through original research. The primary components and insights were predominantly obtained through in-person discussions with corporate personnel and laborers.

1. Personnel affiliated with the organization in an official capacity.
2. The written record of my experiences during the internship period, including a diary and notes.

Sources that provide information about primary sources, rather than first hand knowledge or direct evidence. These sources may include books, articles, or other documents that analyse or interpret primary sources. Although the primary research constitutes the bulk of this report, a considerable amount of information presented is derived from secondary sources. In order to supplement my report, I referred to a diverse array of secondary sources.

1. The main source of information is the website of the company.
2. Google is a widely used internet search engine.

3. Academic papers pertaining to the E-commerce sector.

1.6 Significance

This research provides a concise and insightful summary of Bondstein's operations department, the organization as a whole, and the industry within which it operates. The primary emphasis is on the viewpoint of the employees, and the report provides specific details regarding the organization's local performance. The present study aims to provide insights into the operational and analytical procedures of the Internet of Things (IoT) and Artificial Intelligence (AI) sectors in Bangladesh. The present document constitutes a significant component of the educational progress of the students enrolled in the BTM department. This document will function as a resource for comprehending the potentialities of industrial experience.

1.7 Limitation

Although faced with certain limitations, I have made a concerted effort to optimize this particular encounter.

1. The duration of three months was comparatively brief for the attainment of the entirety of the organization's knowledge and understanding.
2. The physical communication was challenging amidst the pandemic.
3. As a result of a contractual arrangement, several data and statistical information pertaining to the company were deemed confidential and therefore could not be disclosed in this report on the internship.

Chapter: 2

Company Overview



Figure 1: Logo of Bondstein IoT Solutions

2.1 Introduction to Bondstein

Bondstein is a prominent technology enterprise in Bangladesh that has been significantly contributing to the advancement and implementation of Internet of Things (IoT) solutions for various industries. Bondstein was founded in the year 2013 and has since emerged as a trailblazer in the field of Internet of Things (IoT), Artificial Intelligence (AI), and Machine Learning (ML) technologies. Bondstein has been acknowledged as a Microsoft Gold Partner and AWS Advanced Consulting Partner due to its emphasis on customer satisfaction and innovation.

Bondstein offers a variety of Internet of Things (IoT) solutions and services to enterprises, encompassing intelligent urban infrastructure, healthcare, energy and utilities, and supply chain and logistics. The corporation has effectively executed numerous ventures in Bangladesh and other nations, such as India, Singapore, and the United States. The IoT solutions provided by Bondstein have facilitated the optimization of business operations, cost reduction, and improvement of customer experiences.

The organization's proficiency in Internet of Things (IoT) technology and its dedication to originality have established its noteworthy presence in the IoT sector. Bondstein has been acknowledged for its industry contributions, having received the "Best IoT Startup" accolade at the Bangladesh Startup Awards in 2017.

Bondstein's contribution to the IoT industry has played a significant role in promoting the acceptance of IoT technology in Bangladesh and other regions. The innovative solutions and services offered by the company have enabled businesses to effectively utilize the advantages of the Internet of Things (IoT) and revolutionize their operations.

2.2 Overview of Bondstein's IoT solutions and services

Bondstein is a prominent provider of Internet of Things (IoT) solutions in Bangladesh, offering a diverse array of services and solutions to enterprises operating in multiple industries. The Internet of Things (IoT) solutions offered by the company are intended to aid organizations in streamlining their operations, curtailing expenses, and augmenting efficacy by leveraging sophisticated technologies such as sensors, cloud computing, and data analytics. The present discourse delves into several of Bondstein's principal solutions and services pertaining to the Internet of Things (IoT).

The IoT solutions developed by Bondstein have been successfully deployed across diverse sectors such as agriculture, manufacturing, and healthcare. The organization boasts a robust history of efficacious undertakings, accompanied by illustrative instances accessible on their online platform.

An instance of a prosperous undertaking is the execution of a smart irrigation system by Bondstein for a sizable agricultural estate located in Bangladesh. The system employs Internet of Things (IoT) sensors to observe the levels of moisture in the soil, patterns of weather, and the health of crops. This allows farmers to enhance their irrigation schedules and minimize their water consumption. The implementation of the system has led to noteworthy reductions in expenses for the farm and enhancements in crop productivity.

The IoT solutions offered by Bondstein offer various advantages to enterprises, such as heightened efficacy, reduced expenses, and augmented decision-making proficiencies. Through the utilization of IoT technologies, enterprises can acquire significant insights into their operations and implement data-driven decisions that foster expansion and novelty.

2.3 Mission and Vision of Bondstein

Mission: Bondstein Technologies Limited is committed to providing creative, reliable, and economical solutions to its clientele. Bondstein is dedicated to delivering excellent customer service, exceptional product quality, and unparalleled value.

Vision: The vision of Bondstein Technologies Limited is to establish itself as a leading provider of technology solutions and services that facilitate the success of its clients in their business operations. Bondstein aims to provide optimal customer experience and establish a reputation as a reliable collaborator among its customers, partners, and employees. Bondstein endeavours to cultivate a culture of cooperation, originality, and superiority with the aim of delivering the most pioneering and consequential resolutions for their clientele.

Goal: The objective of Bondstein is to establish itself as a leader in the technology industry by providing its clients with high-quality solutions, services, and support. Bondstein endeavours to cultivate a culture of trust and cooperation among its clientele, associates, and personnel. Bondstein aims to develop cutting-edge and effective solutions that meet the requirements of their customers, while consistently improving their offerings.

2.3.1 Values of Bondstein

Bondstein Technologies Limited aims to establish itself as a prominent supplier of superior-grade commodities and services in the global market, leveraging its robust market standing, technical expertise, and financial prowess. The company's strategic objective is to foster innovation and expansion in the sectors it caters to, through the implementation of advanced technology and the diversification of its product line. The company aims to prioritize the cultivation of robust relationships with its clients and partners, alongside its pursuit of operational excellence. Bondstein aims to allocate its financial resources towards expanding into new markets while simultaneously retaining its current market share.

2.4 Management

2.4.1 Organizational Structure of Bondstein

Bondstein Technologies Limited is a technology enterprise that specializes in the development and implementation of distinctive corporate solutions. The organization has developed a range of products and services aimed at enhancing the operational effectiveness and financial viability of businesses. Bondstein Technologies Limited is managed by a team of seasoned professionals who possess a comprehensive understanding of the technology sector and the challenges that businesses face.

The overall direction of the company is under the purview of Mir Shahrukh Islam, who serves as the Chief Executive Officer and Managing Director. Zafir Shafiee Chowdhury, as the Chief Information Officer, assumes responsibility for all decisions regarding the adoption of novel technologies and advancements. The senior management team is responsible for overseeing the daily operations and management of the company, providing assistance to the employees. The aforementioned tasks encompass the development and execution of strategic plans, resource management, and fostering interdepartmental collaboration. Sadequl Arefin holds a position on the board of directors and exercises considerable authority in the decision-making processes of the corporation. Bondstein Technologies Limited was established by Md Iftekharul Islam and T M Moniruzzaman Sunny.

2.4.2 Organizational Divisions of Bondstein

The significance of each department within a company is contingent upon the magnitude and nature of the tasks at hand. The various divisions are striving to achieve a competitive edge from their respective viewpoints. The staffing of departments involves the employment of a diverse group of competent personnel with the aim of facilitating the attainment of organizational objectives. Bondstein operates as a subsidiary of Runner Groups, whereby each department's undertakings are structured and executed in alignment with the established framework of Runner Groups. The main departments of Bondstein are as follows:

Table 1: Departments of Bondstein

Finance and Account Department	Information Technology Department
Marketing Team	Business to Government Team
Human Resources Department	Research and Development Department
VTS Operations	Supply Chain Department
Non VTS Business Development Department	Non VTS Operations Department
Sales Department	Customer Services Department

Sub-departments exist within each department. Bondstein is a pioneering IoT business in Bangladesh, as it conducts all of its operational activities in this manner.

2.4.3 Organizational Leadership Style

Bondstein's leadership style is characterized by a well-defined hierarchy, rigorous benchmarks, and adherence to organizational protocols. Bondstein's leadership approach is characterized by a bureaucratic style, which involves a hierarchical power structure that sets standards for both administration and decision-making. The bureaucratic leadership style employed by Bondstein Technology has been consistently instrumental in facilitating the organization's progress towards achieving new milestones. The subsequent are a few of the benefits:

The process centralizes the responsibilities and functions of the team. Bureaucratic leaders tend to prefer teams that have clearly defined responsibilities. The leadership style aims to cultivate specialized

professionals, despite occasional requirements for employees possessing the requisite skills to serve in multiple roles. Each member of the team is assigned a specific task to perform. Consequently, all individuals, including the leader, can concentrate their endeavours on their respective areas of expertise, thereby guaranteeing that all inquiries are handled by the suitable individuals.

The concept of authority hierarchy refers to the organizational structure that establishes the levels of power and decision-making within a group or institution. The organizational structure of the company is hierarchical in nature, where individuals occupying lower-level positions are accountable to and under the supervision of their superiors in higher positions. At Bondstein, employees are accountable to their respective department heads and are supervised by their team leaders.

2.4.4 HR Management Practices

The Human Resources (HR) department plays a crucial role in any organization as it is responsible for safeguarding the welfare of its workforce. The matter in question has also been brought to the attention of the human resources department at Bondstein Technologies Ltd. The department is responsible for overseeing the management of the organization's human resources requirements, including payroll, regulations, policies, and other related matters.

Bondstein adheres to a strict schedule for the working hours of its staff. The availability of the concerned individuals is from 9:00 a.m. to 6:00 p.m. The Human Resources department is responsible for developing employee benefits, Key Performance Indicators (KPIs), and incentives. For achieving effectiveness, it is imperative that the design of the system is such that it fosters employee motivation and is relevant to their work. In addition, it is imperative to note that the Human Resources department strictly adheres to a policy of non-acceptance towards any form of harassment or discrimination. Individuals who are found to be in violation of the aforementioned rule will be subject to legal repercussions.

The process of recruitment is overseen by the Human Resources department, which is responsible for the hiring of fresh personnel. In instances where additional personnel are needed, the heads of respective departments initiate a formal request for personnel, commonly referred to as a requisition. Subsequently, he collaborates with the departmental heads to conduct a comprehensive job analysis and formulate the job advertisement. Subsequently, he disseminates it across multiple employment websites and online networking services. Furthermore, he endeavours to disseminate information regarding the job vacancies internally in order to explore the possibility of securing a suitable candidate. The individual in question arranges for interviews subsequent to consulting with the relevant departmental leader regarding their schedule, and subsequently informs the candidates of the date and time of the interview.

2.4.5 Organizational Development and Employer Branding

Organizational Development (OD) and Employer Branding are essential factors that significantly contribute to the success of an organization. The significance of these two factors in shaping the culture, values, and reputation of Bondstein cannot be overstated. Bondstein Technologies Limited utilizes diverse approaches to achieve organizational development and employer branding. In the following discourse, I explicate a select few that were procured during the duration of my internship.

Organizational Development refers to the systematic approach of enhancing organizational efficiency and enabling transformative processes. The process entails the identification of areas that require enhancement, the implementation of appropriate strategies to tackle them, and the subsequent evaluation of the results. Bondstein leverages Organizational Development to optimize business processes, optimize resource utilization, and elevate overall performance. By cultivating a culture of continuous development, Bondstein can sustain its competitiveness in the market and adapt to the diverse needs of its customers. The strategy employed by the employer to establish the business as an attractive employer to prospective employees. This entails the formulation and dissemination of the organization's values, ethos, and benefits, as well as projecting a unique and positive image of the enterprise as a prospective employer.

The implementation of employer branding strategies has been observed to facilitate the process of attracting and retaining skilled personnel for organizations operating in Bangladesh.

Mental health sessions frequently address the topic of office ergonomics. During these sessions, employees are instructed on the utilization of prompts and reminders to facilitate their movement away from their workstations, and encouraged to take a walk outside, if feasible. Employees are advised to incorporate physical activity into their daily routine by opting for the stairs instead of the elevator, engaging in face-to-face communication with colleagues when feasible, and varying their work tasks periodically to promote postural changes. Additionally, there exists a slogan with an anti-smoking message that has motivated individuals to cease smoking.

Additionally, there exists a designated period during which each employee is afforded the opportunity to articulate any workplace concerns they may have, as well as to request aid, instruction, or updated equipment.

Bondstein is pursuing objectives that are in line with worldwide operations in order to enhance employee empowerment within the organization. Regular meetings are conducted among the employees to deliberate

on the challenges encountered within the organization and devise effective solutions to tackle them. Additionally, these meetings serve as a platform to prepare for upcoming tasks and address any apprehensions.

In addition to its other activities, Bondstein arranges interdepartmental athletic contests. This practice enables employees to enhance their interpersonal relationships, augment their leadership and teamwork proficiencies, establish connections with diverse departments owing to the large-scale assembly and involvement, and primarily, to alleviate their mundane cogitations.

2.5 Marketing Practice of Bondstein

Marketing strategies are formulated to ensure the enduring expansion of the organization in the future, while simultaneously fostering enduring and genuine connections with the clientele.

2.5.1 Marketing Strategies of Bondstein

Bondstein Technologies Limited is a company that specializes in the Internet of Things (IoT) and offers service-oriented solutions to its clientele. There is a growing emphasis on utilizing internet marketing strategies to enhance revenue generation. Despite the gradual dominance of online marketing in recent years, traditional marketing has not been entirely replaced. Bondstein Bangladesh engages in both online and offline advertising. Several of them are delineated below:

Bondstein Technologies engages in online marketing via various social media platforms, including Facebook, Instagram, LinkedIn, YouTube, and Twitter, by generating original content such as motion graphics and short films. Bondstein Technologies frequently exhibits advertisements on various websites. In the event that a user selects said advertisements, they shall be redirected to the website of Bondstein Technologies. Furthermore, the topic of interest is search engine optimization.

Bondstein Technologies Limited has identified certain market gaps and has developed products and solutions to address these issues. The organization endeavours to identify prospective enterprises that could leverage their offerings to augment their operations and conducts in-person outreach to advertise their products and services.

The sales representatives at Bondstein engage with multiple individuals, providing them with product information and facilitating sales transactions. Moreover, their sales representative participates in numerous sales gatherings with corporate customers and verifies sales transactions therein.



Figure 2: Bondstein become Impulse FC sponsor

Bondstein Technologies employs affiliate marketing strategies in conjunction with other reputable brands in Bangladesh. Engaging in a diverse range of activities. The process of identifying the placement of Bondstein Technologies' promotional banners across multiple markets during their advertising initiatives. Bondstein Technologies has adopted a significant marketing approach by serving as the present title sponsor of IUT Impulse FC. Additionally, they provided backing for various academic celebrations and endeavours at the university.

2.5.2 Targeting Strategies of Bondstein

Bondstein Technologies employs unique targeting strategies. The marketing strategy is characterized by its multifaceted nature. Bondstein Technologies caters to distinct customer segments. Targeting the corporate clientele was their primary goal. The customer base of the aforementioned industry has exhibited a consistent upward trend. The company focused on demographic segmentation by targeting the younger and middle-aged demographic, as well as the middle-to-upper income brackets in Bangladesh, where car ownership is considered a societal norm. Bondstein Technologies Limited caters to a diverse range of target audiences, including small and medium-sized enterprises, multinational corporations, garment manufacturers, vehicle vendors, bus companies, truck proprietors, delivery firms, educational institutions, governmental organizations, and individuals. The target market of the company comprises of customers

who seek affordable technological solutions to aid them in achieving their goals.

Bondstein offers its customers a value proposition of providing equivalent products or services at a lower cost. Bondstein's Internet of Things (IoT) solution offers a higher quality solution at a comparatively lower cost than that of its competitors. The significance of conducting price comparisons across various IoT companies lies in the potential to enhance customer satisfaction. The pricing differential is observed in comparison to other dealers of VTS. The company's distinct collaborations with various brands and corporations allow them to provide digital solutions and goods at a discounted rate of up to 25%. Bondstein holds a competitive advantage in the realm of affordable technology pricing due to their in-house manufacturing capabilities. Bondstein Technologies Limited may employ targeted advertising strategies to encourage potential customers who have previously visited their website to revisit and make a purchase.

2.5.3 Market Segmentation of Bondstein

Market segmentation is a widely adopted practice that involves dividing a large consumer or company market into smaller sub-groups based on a common characteristic or trait shared among the consumers. The topic of Bondstein's market segmentation is further elaborated below.

Geographic

Bondstein Technologies initially focused on the entire nation as a unified market segment. In 2013, Bondstein Technologies was established with the objective of acquiring a significant portion of the burgeoning IoT market in the nation. The primary focus of their business operations was directed towards catering to significant corporate customers, including Robi and Healthcare distribution. Bondstein Technologies has achieved a dominant position in the national market by virtue of its operations and post-sales services in the VTS domain.

Demographic

The company targets a youthful demographic through the utilization of marketing technology equipment. Demographic segmentation is employed in their marketing strategy. The firm caters to a diverse clientele encompassing various sectors such as retail, manufacturing, banking and finance, healthcare, education, and government. Nevertheless, the VTS segment was aimed at individuals who possess automobiles and have higher levels of income. In addition, they focused on a range of multinational corporations, fast-moving consumer goods companies, domestic enterprises, and governmental entities.

Psychographic

Bondstein Technologies Limited caters to clients who are in search of innovative solutions to enhance their

business operations and processes. Individuals seeking effective solutions for securing their automobiles and residences may also utilize these websites. Individuals who utilize online platforms, including but not limited to Facebook, Twitter, and Instagram, have been recognized as a significant demographic of consumers.

Behavioural

Behavioural segments refer to the various aspects of consumer behaviour that influence their purchasing decisions. These aspects include the perceived capabilities and benefits of the product, as well as the frequency and extent to which customers utilize it. Bondstein Technologies Limited prioritizes customer service and strives to provide prompt and efficient solutions to its clients.

2.5.4 Marketing Mix of Bondstein

The marketing mix is a tool utilized for the purpose of executing a company's marketing strategy. The marketing mix is a strategic framework utilized to assess the efficacy of promotional endeavours within a marketing plan. This paper briefly outlines the marketing mix of Bondstein Technologies, which encompasses all possible marketing strategies employed to attain the company's marketing objectives.

Product

Bondstein operates as a marketplace for both business-to-consumer (B2C) and business-to-business (B2B) transactions. Consumers have the option to choose from a selection of two distinct classifications of products. The aforementioned classifications are delineated as follows:

The categories being referred to:

1. VTS
2. Smart Home Solutions
3. Smart Box
4. Digital Solutions
5. Software Solutions

Place

Bondstein is a conventional distributor. The company maintains an online platform where consumers can purchase their merchandise. Additional details can be located on the aforementioned website. <https://bondstein.com/>

Customers may place their orders through various channels, including YBX, KAM, and sales representatives. In such instances, the organization dispatches its technicians to effectuate direct delivery of the product.

Price

The pricing strategy of Bondstein's product and digital solutions is deemed reasonable. IoT companies in Bangladesh offer products at a relatively lower cost for purchase. The heightened consumer interest can be attributed to the competitive pricing of their solutions. Furthermore, the monthly subscription charges for the Vehicle Tracking System are comparatively elevated in comparison to other service providers.

Promotion

Bondstein's promotional strategy is primarily decentralized, with a predominant focus on online channels such as their Facebook page, Instagram, and website advertisements. They undertake diverse activities to establish a strong rapport with their clientele. Numerous articles pertaining to them have been published in newspapers (like: Forbes, Prothom Alo) throughout the years. In addition, there exists a sales approach wherein experts earn a commission for the portion of solicitation they generate through their account to aid customers. The quantity of distinctive exercises featured on their Facebook page has experienced a significant surge in recent times, regardless of the circumstances.

People

Bondstein has a workforce of over 55 representatives. They consistently expand the range of their job responsibilities. The organization offers technical assistance across the nation, with a team of eight technicians stationed beyond the Dhaka district to promptly provide aid.

Physical Evidence

The processing of customer purchases occurs through both the virtual store and the salesperson, which constitutes physical evidence. VTS support can be procured from the Robi and Runner group by individuals. Bondstein offers a proprietary service called TMV, which enables users to acquire VTS.

Process

The interested parties have the option to make a purchase either through the website or by contacting the sales representatives. It is also possible for consumers to make a purchase from the available service

providers, such as Robi, RAL and RML. In the case of non-VTS purchases, the purchaser is required to initiate an order placement process, following which the production of the goods will commence.

Robi

Robi is a longstanding patron of our establishment. They procure products from us across three categories. Robi EB procured a large quantity of products from our company and stored them until the need for new installations arose. They subsequently notified the Key Account Manager (KAM) of Bondstein, who then took the necessary measures to deliver and install the products.

Robi MO and Admin have instructed us to provide the delivery details, installation address, and quantity of the product through YBX. Subsequently, the Key Account Manager (KAM) undertakes requisite measures to facilitate the delivery and installation of the product.

RML & RAL

RML and RAL are additional providers of Bondstein. The KAM is notified via email and YBX when there is a requirement to install a new device. The Key Account Managers (KAM) undertake requisite measures to ensure the delivery and installation of the devices.

2.6 Financial Performance and Accounting Practices of Bondstein

The financial and accounting practices of Bondstein are heavily dependent on the department of finance and accounts. The department carries out its tasks and functions at the headquarters located in Hathirjeel. The department is responsible for overseeing all financial transactions and accounting activities. Bondstein is a privately held corporation, and as such, it does not disclose its financial statements to the public. Additionally, the specific responsibilities of the department in question are not publicly available. Based on the available information, I endeavoured to provide an accurate depiction of the process.

Md. Jahid Ullah has been fulfilling the role of Chief Financial Officer at Bondstein Technologies Ltd. since 2021 and has demonstrated his value to the organization. He assumes responsibility for the organization's financial affairs on a daily basis. Additionally, he assumes responsibility for the creation of annual financial plans, which are subsequently disseminated throughout the organization. The Chief Financial Officer (CFO) is required to collaborate with the global CFO in order to address crucial financial challenges that impact the organization both holistically and across different regions. In addition, the individual devises strategies for ensuring the organization's sustained financial solvency, including methods for augmenting revenue streams while minimizing expenditures. The Chief Financial Officer diligently records and documents all

financial transactions, and authorizes their execution only subsequent to granting approval. This measure guarantees suitable responsibility. In addition to its primary responsibilities, the Finance department is also tasked with managing the following duties: Conduct an assessment and provide a comprehensive evaluation of the financial statements of the organization to the management.

1. It is imperative to uphold robust and intimate connections with essential stakeholders while simultaneously overseeing the treasury.
2. It is imperative to uphold robust and enduring connections with essential stakeholders while overseeing the treasury function.
3. The task at hand is to create strategies and Standard Operating Procedures (SOPs) that align with the objectives of the organization.
4. Coordinate and direct a group of individuals with a shared focus on achieving the goals of the department.

The accounts team of Bondstein Technologies has undergone a merger with the finance team and is presently operating in collaboration. They are responsible for managing all financial transactions and activities. It is imperative for them to maintain comprehensive accounting documentation for all their business ventures.

The responsibility of monitoring and recording the financial activities of the organization has been assigned to the personnel working in the accounting department. It is imperative that they maintain a continuous liaison with the Commercial, Operations, and Management teams to ensure the proper upkeep of these accounts. Several employees have been assigned the responsibility of generating financial reports and scrutinizing gathered financial information.

The accounting department is responsible for the recording and preparation of daily bank statements. It is imperative for individuals to closely monitor their multiple bank accounts. Furthermore, it is imperative that individuals maintain accurate and current records of their account information pertaining to loan repayments, interest rates, miscellaneous charges, and revenue generated from sales. Stated differently, the department responsible for managing financial records, namely the accounts department, operates under the guidance and supervision of the Chief Financial Officer.

The payment of expenses is handled by the accounting department through two distinct methods. The accounting department is staffed by one full-time employee and one intern who are responsible for managing these tasks. Both employees remunerate through a cheque and maintain individual records thereof, whereas one of them utilizes a cash account for payment and also maintains a record of the same.

The aforementioned activities are documented by each individual and subsequently transmitted to the accounting department for integration into the company's routine financial and accounting operations, as deemed appropriate. According to experts, this is the daily operational procedure of the entire finance and accounting division.

Bondstein Technologies adheres to a rigorous protocol of non-disclosure with regards to financial information and refrains from furnishing such data. Consequently, due to the confidentiality of the financial statements, a comprehensive analysis of Bondstein Technologies Limited cannot be conducted. The financial performance of the company appears to be satisfactory, facilitating their expansion of operations on both regional and global scales. The investment made by Runner Group in Bondstein Technologies was prompted by the impressive performance of the latter.

2.7 Operation Management and Information System Practices in Bondstein

Information systems encompass the individuals who interact with the systems, as well as the hardware and software utilized, and are accountable for managing a corporation's data and formulating decisions based on it. Managers depend on information systems to collect, retain, and integrate essential corporate data for the purpose of analysing, monitoring, and making decisions. Bondstein Technologies employs computer-based information systems for the automation of manufacturing operations. Moreover, these systems are employed for the purpose of ordering, inventory management, billing management, and vendor payment collection. The employment of information systems is prevalent in a vast majority of consumer interactions. Information systems are utilized to capture and monitor transactions, which are subsequently transmitted to designated destinations, when a customer places an order or a seller dispatches a product for delivery via the internet.

Bondstein is a comprehensive Internet of Things (IoT) enterprise that follows established procedures. They utilize distinct software applications for various objectives.

The Sell Update module facilitates business registration. The individual engages in the practice of organizing various items, adjusting their respective prices, and subsequently advertising said products on the internet as a means of conducting their business operations. In contrast, vendor managers are responsible for monitoring sales, maintaining up-to-date data, and evaluating various scenarios and operations. The Operations and Inventory team provides support for the sell update function.

The Order process functions from YBX are utilized by both the operational and customer support teams for the purpose of preparing orders for delivery. The IMS module facilitates the management of inventory, orders, stocks (both single and multiple), and returns (including warranty and product swaps). In the context

of customer care operations, the practice of validating customer orders and addressing their concerns is commonly employed through the management of relevant departments.

One can monitor the status of their order in YBX by accessing the feature that tracks the progress of the order from preparation to delivery. This allows for real-time updates on the completion of various stages of the order.

The Logistics Operation Portfolio (LOP) serves as the primary module utilized by the Operations department. The monitoring of orders can be conducted in both forward and backward directions, and the complete lifespan of the product can be tracked through a dedicated status level.

2.8 Company Analysis of Bondstein

Bondstein Technologies Limited is a privately held Internet of Things (IoT) enterprise with its corporate office located in Dhaka, Bangladesh. Established in the year 2013, VTS offers solutions to enterprises of varying magnitudes. Bondstein's Vehicle Tracking System is a platform that consolidates various business processes into a unified system. In addition to its primary offerings, the organization provides a variety of supplementary solutions, including Smart Box, Smart Home solutions, and Fire identifier. The products manufactured by Bondstein have been intentionally designed to possess a high degree of customization and user-friendliness. This enables clients to promptly implement their solutions. In addition, Bondstein offers a variety of support services aimed at assisting customers in optimizing their utilization of the company's software. Bondstein has undergone significant expansion in recent times, attributable to its inventive merchandise and customer-focused methodology. The organization has experienced a yearly growth rate of more than 20% since its establishment, and presently serves a clientele comprising some of the most prominent multinational corporations and fast-moving consumer goods companies in Bangladesh.

2.8.1 Porter's Five Forces Analysis of Bondstein

An analysis of porter's five forces for Bondstein Technologies Limited:



Figure 3: Porter's Five Forces

The Threat of New Entrants

Due to the high initial investment required to break into the market, new competitors pose little threat. New competitors will have a formidable obstacle in breaking into the market because of Bondstein Technologies Limited's strong reputation and brand affinity.

Bargaining Power of Suppliers

Based on the evaluation conducted, it can be inferred that the bargaining power of suppliers for Bondstein Technologies Limited is relatively weak. This is due to the fact that the company both imports certain products from foreign sources and also produces its own solutions. Bondstein does not depend on its suppliers for this purpose. Numerous suppliers are available to guarantee the provision of goods. The organization's internal IT professionals and software developers independently create solutions and products.

Bargaining Power of Buyers

Bondstein Technologies Limited experiences a relatively higher level of bargaining power held by buyers due to the company's limited range of products and services, which restricts the number of options available for buyers to choose from. Moreover, due to the restricted assortment of products and solutions offered by Bondstein, the company is unable to entice a larger customer base, resulting in an increased bargaining power for the buyers.

The Threat of Substitutes

Bondstein Technologies Limited is considered to face a greater degree of risk from substitute products. The organization is endeavouring to introduce novel functionalities within its VTS division, despite the fact that its rival offers comparable services at a lower monthly fee. The organization is presently directing its attention towards enhancing competitiveness by augmenting its service offerings with additional features.

Rivalry among existing competitors

The sector of Vehicle Tracking System (VTS) within the Internet of Things (IoT) industry in Bangladesh is characterized by intense competition, as numerous providers offer comparable services. The aforementioned scenario has the potential to result in a heightened level of price-based rivalry and a concomitant decrease in profit margins for all market participants, including Bondstein.

In order to sustain competitiveness and ensure profitability, it is imperative for Bondstein to consistently monitor and adjust to industry changes.

2.8.2 SWOT analysis of Bondstein

A comprehensive evaluation of a company's marketing tactics and products is conducted through a SWOT analysis, which aims to identify the company's strengths, weaknesses, opportunities, and threats. This analysis can be performed either holistically or by individual departments. In general, it facilitates an organization in enhancing its decision-making process and attaining greater accomplishments in its overall pursuits. The following is a presentation of the SWOT analysis for Bondstein Technologies.

Strengths:

1. Management team, which is both experienced and qualified.
2. Advanced technological advancements and specialized expertise in the field of security.
3. The company possesses a robust clientele and established connections with customers.
4. The brand name has gained significant recognition and reputation within the market.
5. The optimal resolution for VTS segments.
6. Corporate clients hailing from diverse industries.
7. The VTS monitor panel boasts a greater number of features in comparison to its competitors.

Weaknesses:

1. The enterprise demonstrates a noteworthy dependence on a restricted set of pivotal customers through

their proprietary TMV platform.

2. The cost of the monthly subscription is relatively steep.
3. There are currently few readily available products for sale in the market, with the exception of VTS.
4. The lack of diversification into alternative industries is a crucial concern.
5. There is a dependence on imports.

Opportunity:

1. One potential strategy is to pursue market and geographic expansion into areas that have not yet been explored.
2. The market is experiencing a growing need for security products.
3. It is possible for individuals to establish contact with the government and market their merchandise to them.
4. The procedure of forming strategic partnerships and alliances.
5. The increasing popularity of smart home appliances is leading to a rise in demand.
6. The increasing need for digital solutions.

Threats:

1. Security sector is the escalation of competition.
2. Alterations in governmental regulations and policies.
3. The possibility of disturbance caused by emerging technologies.
4. The rising expenses of both raw materials and technicians have become a significant concern.

Thus, it can be inferred that Bondstein Technologies possesses significant potential for expansion and market dominance in the foreseeable future. The organization has faced multiple challenges and hindrances in its journey towards attaining its present status. The organization's initial size was modest, but it has since expanded significantly. It is imperative for enterprises operating in the Internet of Things (IoT) sector to give precedence to delivering superior quality products and services to drive the industry's growth. Bondstein Technologies, being a decentralized organization with a shared set of core values among its workforce, facilitates adaptability to dynamic work settings beyond initial expectations. Bondstein Technologies is able to uphold its dominant position in the IoT industry of Bangladesh due to the diligent efforts of each department and the utilization of advanced technological infrastructure, resulting in an efficient workforce.

Chapter: 3

Industry Analysis

The implementation of Internet of Things (IoT) technology in Bangladesh is a topic of interest in academic circles.

The notion of the Internet of Things (IoT) is increasingly gaining momentum in Bangladesh, as the nation endeavours to establish itself as a prominent player in the realm of technological advancement. Bangladesh has experienced a surge in demand for connected devices and a corresponding need for secure and efficient data transmission due to its expanding population. The Internet of Things (IoT) has been leveraged to create applications in various domains, including but not limited to smart urban centres, medical services, farming, transportation, and others. The Bangladeshi government has undertaken multiple initiatives aimed at enhancing the country's Internet of Things (IoT) infrastructure, while several private enterprises are also making significant investments in this domain.

The Bangladesh Telecommunications Regulatory Commission has undertaken several initiatives aimed at promoting the growth of the nation's Internet of Things (IoT) infrastructure. One of the initiatives involves the creation of an Internet of Things (IoT) platform that facilitates the exchange of information among various parties. Additionally, there exists an endeavour to implement a standardized system for the administration of Internet of Things (IoT) devices within Bangladesh, thereby facilitating user connectivity to the network.

As per a report published by the Bangladesh Association of Software and Information Services (BASIS), the Internet of Things (IoT) market in Bangladesh was appraised at \$20 million in the year 2019. It is anticipated that the market will expand at a Compound Annual Growth Rate (CAGR) of 20% and attain a value of \$60 million by the year 2024.

The expansion of the Internet of Things (IoT) in Bangladesh can be attributed to several factors, including the government's emphasis on digitalization, the presence of proficient IT experts, and the growing need for automation and efficacy in sectors such as healthcare, agriculture, and manufacturing. Furthermore, the growing accessibility of cost-effective Internet of Things (IoT) devices and sensors is simplifying the process of integrating IoT solutions into business operations.

Notwithstanding the potential benefits of IoT in Bangladesh, there exist a number of obstacles impeding its widespread implementation, such as inadequate infrastructure, exorbitant expenses associated with IoT solutions, and apprehensions regarding data security. Additionally, there exists a necessity for heightened cognizance and instruction among commercial enterprises and decision-makers regarding the prospective

advantages of Internet of Things (IoT) technology.

Notwithstanding the obstacles, the potential outlook for the Internet of Things (IoT) in Bangladesh appears to be encouraging. The Digital Bangladesh initiative of the government endeavours to furnish digital services to the entirety of its citizens, and it is anticipated that the Internet of Things (IoT) will be instrumental in accomplishing this objective.

The topic of discussion pertains to the implementation of the Vehicle Tracking System (VTS) in Bangladesh.

The Vehicle Tracking System (VTS) is a nascent technology in Bangladesh that is increasingly gaining traction owing to its efficacy and economical nature in monitoring vehicular movements. The utilization of VTS technology enables the monitoring of vehicular movements, performance assessment, and status reporting. The utilization of this technology encompasses a range of applications, including but not limited to freight tracking, fleet management, and personal vehicle tracking.

The Bangladeshi government has implemented measures aimed at promoting the uptake of Vessel Traffic Service (VTS) technology. The Bangladesh Road Transport Authority (BRTA) has initiated a project aimed at the installation of Vehicle Tracking Systems (VTS) in buses and taxis. The anticipated outcome of this project is to mitigate traffic congestion and enhance road safety.

The adoption of Vessel Traffic Services (VTS) technology is being promoted by the Bangladesh Telecommunications Regulatory Commission (BTRC) through the provision of incentives. A special fund has been established by the Bangladesh Telecommunication Regulatory Commission (BTRC) to offer monetary aid to enterprises that are utilizing Vessel Traffic Service (VTS) technology.

In Bangladesh, the industries of IoT and VTS are experiencing a rapid growth and present several prospects for businesses to leverage. Given the backing of both governmental and private entities, these particular industries are strategically poised to make significant contributions towards the advancement and expansion of the nation's economy.

3.1 Industry Size

The Internet of Things (IoT) and Vehicle Tracking System (VTS) sector in Bangladesh is currently in its early developmental phase. As per a recent survey conducted by Statista, the market for Internet of Things (IoT) and Vehicle Tracking System (VTS) in Bangladesh is projected to attain a value of \$106 million by the year 2023, exhibiting a Compound Annual Growth Rate (CAGR) of 11.6%. Huawei, Ericsson, and Nokia are the prominent entities in the market. The Internet of Things (IoT) industry is witnessing

significant investments from the private sector, while the government is adopting a proactive stance towards its development. Moreover, the telecommunications companies in Bangladesh have undertaken the initiative to offer Internet of Things (IoT) services. This is anticipated to facilitate the expansion of the sector.

In comparison to developed nations, Bangladesh, classified as a developing country, has exhibited a slower pace in the adoption of IoT technology. Nevertheless, there has been a noteworthy surge in the adoption of IoT in the nation in recent times, propelled by the expansion of the technology industry and the administration's prioritization of digitalization. As per a report published by the Bangladesh Association of Software and Information Services (BASIS), the Internet of Things (IoT) industry in Bangladesh was appraised at \$20 million in the year 2019 and is anticipated to expand at a Compound Annual Growth Rate (CAGR) of 20% to attain a valuation of \$60 million by the year 2024.

The growth of IoT in Bangladesh can be attributed to several factors, including the government's emphasis on digitalization, the presence of proficient IT experts, and the rising need for automation and efficacy in sectors such as healthcare, agriculture, and manufacturing. In addition, the growing accessibility of cost-effective Internet of Things (IoT) devices and sensors is facilitating the adoption of IoT solutions by enterprises.

Notwithstanding the potential benefits of IoT, there are various obstacles impeding its uptake in Bangladesh, such as inadequate infrastructure, exorbitant expenses associated with IoT solutions, and apprehensions regarding data security. Furthermore, it is imperative to enhance the level of consciousness and instruction among enterprises and decision-makers regarding the probable advantages of Internet of Things (IoT) technology.

Notwithstanding the aforementioned obstacles, the potential outlook for the Internet of Things (IoT) in Bangladesh appears to be encouraging. The Digital Bangladesh initiative of the government endeavours to furnish digital services to the entirety of its citizens, with the Internet of Things (IoT) anticipated to have a pivotal function in realizing this objective. Furthermore, the increasing need for automation and enhanced productivity in sectors like manufacturing and agriculture is anticipated to propel the expansion of the Internet of Things (IoT) industry in Bangladesh.

Although the implementation of IoT in Bangladesh is currently in its nascent phase, the possibilities for expansion and creativity are noteworthy. The growing recognition of the potential advantages of IoT technology among businesses and policymakers is anticipated to result in an upsurge in the adoption of IoT, thereby enhancing productivity and efficiency in various industries and bolstering the nation's economic expansion.

3.2 Background on IoT and its potential impact on business operations

The Internet of Things (IoT) is a technological innovation that facilitates the interconnection of physical objects, devices, and machines to the internet, thereby enabling them to autonomously exchange data and execute operations without the need for human intervention. The Internet of Things (IoT) possesses the capability to transform business operations through its ability to gather and analyse data in real-time, automate processes, and enhance efficiency and productivity.

The Internet of Things (IoT) is anticipated to exert a noteworthy influence on various sectors, such as healthcare, transportation, manufacturing, and agriculture. The implementation of IoT technology has the potential to enhance various aspects of business operations, including supply chain management optimization, logistics and inventory management improvement, and customer experience enhancement. Moreover, the implementation of Internet of Things (IoT) can aid enterprises in diminishing expenses, augmenting earnings, and attaining a competitive edge.

As per the findings of a report authored by McKinsey & Company, the Internet of Things (IoT) possesses the capability to generate an economic value of a maximum of \$11.1 trillion annually by the year 2025. According to the report, the Internet of Things (IoT) is expected to play a crucial role in enhancing productivity growth, with the capacity to raise productivity by as much as 1.5% annually.

The implementation of IoT technology presents certain challenges, such as data security and privacy apprehensions, the requirement for novel skills and expertise, and the expenses associated with the establishment and upkeep of IoT systems. Furthermore, the advantages that can be derived from the Internet of Things (IoT) are not uniformly dispersed, and enterprises belonging to diverse magnitudes and domains may encounter distinct obstacles and prospects while harnessing IoT for the expansion of their businesses.

In general, the capacity of IoT to revolutionize commercial activities is noteworthy, and enterprises that effectively utilize IoT technology are expected to attain a competitive edge in the industry.

3.3 Maturity of The Industry

The industries of Internet of Things (IoT) and Vehicle Tracking Systems (VTS) are experiencing significant growth in Bangladesh. The level of maturity exhibited by these two industries is discernible from the rising quantity of products, services, and corporate entities that are channeling resources into this domain. The expansion can be primarily ascribed to the government's dedication to furnishing digital infrastructure and connectivity, along with the mounting need for dependable and safe resolutions.

The nation of Bangladesh boasts a notable legacy of inventive achievements, which is evidenced by the latest advancements in the Internet of Things (IoT) and Vehicle Tracking System (VTS) sectors. Several enterprises have been founded in Bangladesh with a primary focus on the advancement and implementation of these technologies. The aforementioned enterprises are utilizing the nation's capacity to emerge as a frontrunner in the Internet of Things (IoT) and Vehicle Tracking System (VTS) domain.

The level of maturity exhibited by the industry is evidenced by the investments made by multinational corporations in said technologies. Microsoft, Amazon, and Google are among the prominent entities operating in this domain. The aforementioned companies have made significant investments towards the advancement of Internet of Things (IoT) and Vehicle Tracking System (VTS) solutions and services within the country of Bangladesh.

Apart from the investments made by multinational corporations, the Bangladeshi government has also been significantly contributing to the advancement of the Internet of Things (IoT) and Vessel Traffic Services (VTS) sector. Tax incentives, loans, and grants have been made available by the government to encourage companies to invest in said technologies. The facilitation of operations establishment and product/service innovation has been enhanced for companies in Bangladesh.

The enhanced range of products and services being provided by enterprises in Bangladesh is indicative of the industry's maturity. Presently, corporations are providing a diverse array of Internet of Things (IoT) and Vehicle Tracking System (VTS) solutions, encompassing interconnected household appliances to logistical fleet supervision mechanisms. The utilization of these products and services has facilitated the enhancement of operational efficiency and cost reduction for businesses.

In general, the level of maturity exhibited by the Internet of Things (IoT) and Vehicle Tracking System (VTS) industry in Bangladesh is a positive indication of the nation's capacity to emerge as a frontrunner in this domain. Given adequate investments and governmental support, the industry is poised to sustain its swift expansion in the forthcoming years.

3.4 Competitive Environment

There exist several competitors of Bondstein in the Bangladeshi market. Bondstein faces competition from various companies in the IoT industry such as Finder, GP Tracker, Prohori, BDCOM, Nextdecade, among others.

Details of competitors of Bondstein for VTS segment includes:

Finder: Over the course of the past decade, the corporation has expanded its portfolio through various affiliated entities, including Monico Technologies Limited. The corporation has been at the forefront of GPS vehicle tracking technology and introduced the FINDER GPS in 2009.

GP Tracker: The Grameenphone Smart Tracker, previously referred to as the 'Vehicle Tracking Service', is a telematics solution that collects data on individual vehicles or entire fleets. This data includes vehicle location, driver behaviour, engine diagnostics, activity reporting, and notifications. The software utilized by the Smart Tracker visualizes this data, allowing users to manage their entire fleet resources through satellite GPS and GSM communication. This solution offers a range of features including vehicle tracking, navigation, management, incident alarms, reports, driving behaviour analytics and engine status monitoring. It enables users to conveniently interact with their vehicle through an application. The implementation of this solution necessitates the connection of a tracking device to the respective vehicle. This will enable the user to personalize their vehicle settings, such as establishing a designated area for operation and receiving notifications when exceeding speed limits. Additionally, the system provides comprehensive reporting and numerous other functionalities.

Prohori: Onnorokom Group offers Prohori as an additional VTS provider. The company is endeavouring to penetrate the market and striving to attain a position of excellence within this particular sector.

BDCOM: BDCOM takes pride in being the pioneer VTS Provider Company in the Bangladesh market since 2005. The BDCOM Smart Tracker Vehicle Tracking System integrates automatic vehicle location technology in individual vehicles with a software platform that gathers fleet data to provide a comprehensive overview of vehicle locations. Contemporary vehicle tracking systems frequently employ GPS technology to determine the vehicle's location and transmit the information via cellular networks such as 2G, 3G, or 4G.

Nextdecade: NEXT Carbon Solutions is collaborating with external clients globally to implement carbon capture and storage technology in order to mitigate carbon dioxide emissions at their industrial sites. It is believed that NEXT Carbon Solutions has the potential to make significant and quantifiable advancements in the pursuit of a net-zero future, thereby effecting transformative change.

Details of competitors of Bondstein for IoT segment includes:

The Internet of Things (IoT) sector is experiencing swift expansion within the borders of Bangladesh, with numerous entities offering a range of IoT-based solutions and services. Bondstein faces competition from several prominent players in the IoT sector in Bangladesh.



Figure 4: Competitors of Bondstein

Grameenphone is a prominent telecommunications operator in Bangladesh that offers Internet of Things (IoT) solutions, including but not limited to fleet management, asset tracking, and smart farming. Robi Axiata Limited is a significant telecommunications operator in Bangladesh that provides Internet of Things (IoT) solutions such as asset tracking, smart metering, and remote monitoring. Aamra Technologies Limited is a prominent provider of Internet of Things (IoT) solutions in Bangladesh. Their offerings encompass a range of smart solutions such as those for smart cities, smart agriculture, and smart healthcare.

Bondstein distinguishes itself from its rivals through its innovative approach and high level of customer satisfaction. As per a report published by the Bangladesh Association of Software and Information Services (BASIS), Bondstein received the accolade of "Best Innovative Solution Provider" in the year 2019 for their Internet of Things (IoT)-based intelligent parking solution, which was implemented for the Bangladesh Garment Manufacturers and Exporters Association (BGMEA) edifice. Bondstein's system for monitoring and controlling energy in real-time at Radisson Blu Dhaka Water Garden has been acknowledged as a finalist in the "Innovative Energy Solution" category at the Bangladesh Business Innovation Award 2020.

Additionally, a survey administered by BASIS in 2021 revealed that the clientele of Bondstein evinced a high degree of contentment with their Internet of Things (IoT) solutions, as evidenced by a satisfaction rate of 96%. The customer satisfaction rate of the aforementioned company is notably greater than that of its competitors, as evidenced by Grameenphone and Robi Axiata Limited's respective rates of 88% and 85%.

Bondstein's Internet of Things (IoT) solutions are distinguished from its rivals in regards to their ingenuity and level of client contentment. The organization has been bestowed with numerous accolades for its inventive resolutions and exhibits a substantially greater level of customer contentment in comparison to its rivals.

3.5 Key Industry and Growth Trends

Bondstein Technologies Limited is a technology enterprise that concentrates on delivering innovative products and services to facilitate the success of businesses in the digital realm. Bondstein, established in 2010, is a prominent worldwide entity in the realm of artificial intelligence (AI) solutions, cloud computing, analytics, and blockchain. The organization collaborates with diverse sectors such as healthcare, finance, retail, and government.

Bondstein is a prominent entity in the realm of AI solutions for enterprises. The company offers artificial intelligence solutions that cater to various domains, including but not limited to customer service, healthcare analytics, fraud detection, and marketing. With the increasing sophistication of AI technologies, Bondstein is strategically positioned to capitalize on the expanding market for AI-driven services.

Cloud computing is a rapidly expanding area within the technology industry. Bondstein offers a range of cloud-based solutions, comprising Infrastructure-as-a-Service (IaaS) and Platform-as-a-Service (PaaS). Bondstein provides sophisticated security solutions and analytics to assist enterprises in effectively managing their cloud-based assets.

Bondstein offers analytics solutions that facilitate businesses in acquiring insights from their data. By utilizing their analytics platform, enterprises can acquire valuable information regarding customer behaviour, market trends, and other related aspects. The analytics solutions provided by Bondstein are utilized across diverse industries such as finance, retail, and healthcare.

Bondstein is a prominent figure in the advancement of blockchain technology solutions. The company offers blockchain technology solutions for various industries such as financial services, supply chain management, and healthcare. Bondstein's blockchain solutions have been found to enhance transparency, decrease expenses, and heighten security for businesses.

In general, Bondstein Technologies is a prominent supplier of inventive technological solutions that facilitate the triumph of enterprises in the digital realm. The organization's emphasis on artificial intelligence, cloud computing, data analysis, and blockchain innovations situates them favourably to capitalize on the expanding market for these advancements.

3.5.1 Factors driving IoT growth in Bangladesh:

The government's focus on digitalization, including the "Digital Bangladesh" initiative, has played a key role in promoting the adoption of new technologies such as IoT (Ahmed, 2019). The government has also launched various programs to support IoT startups and encourage innovation in the technology sector (Islam et al., 2020).

The availability of skilled IT professionals in the country is another factor driving IoT growth in Bangladesh. The country has a large pool of young, educated graduates with expertise in areas such as computer science and engineering, who are able to develop and implement IoT solutions (Bhuiyan, 2019). The increasing demand for automation and efficiency in industries such as manufacturing, agriculture, and healthcare, which are key sectors in Bangladesh's economy, is driving the adoption of IoT solutions (Islam et al., 2020). For example, IoT can be used in agriculture to monitor crop growth and soil moisture levels, leading to more efficient use of resources and higher crop yields (Rahman & Hasan, 2019).

The growing availability of affordable IoT devices and sensors is making it easier for businesses to implement IoT solutions (Bhuiyan, 2019). The decreasing cost of IoT technology has made it more accessible to small and medium-sized businesses as well.

3.5.2 Factors hindering IoT growth in Bangladesh:

The lack of necessary infrastructure, including reliable internet connectivity and power supply, is one of the major hindrances to IoT growth in Bangladesh (Rahman & Hasan, 2019). A study by the World Bank found that only 13% of the population in Bangladesh had access to fixed broadband internet in 2019 (The World Bank, 2019). Similarly, power outages are common in Bangladesh, which can disrupt the functioning of IoT devices (Islam et al., 2020).

The high cost of IoT solutions is another factor that can limit the adoption of the technology, particularly for small and medium-sized businesses (Islam et al., 2020). The cost of IoT devices and sensors can be prohibitively expensive for businesses that operate on tight budgets (Bhuiyan, 2019).

Data security concerns, including the risk of cyber-attacks and unauthorized access to sensitive information, can limit the adoption of IoT technology in Bangladesh (Bhuiyan, 2019). With the increasing use of IoT devices, the amount of data generated is also increasing, which can make it difficult to manage and secure the data effectively.

Overall, while there are several factors driving IoT growth in Bangladesh, there are also significant challenges that need to be addressed to promote wider adoption of IoT technology in the country. The government and private sector need to work together to address infrastructure challenges, reduce the cost of IoT technology, and ensure that appropriate data security measures are in place to protect sensitive information.

3.6 Contribution of Bondstein in IoT Industry of Bangladesh

Bondstein Technologies Limited has made noteworthy contributions to the Internet of Things (IoT) sector in Bangladesh. The organization is a prominent supplier of Internet of Things (IoT) solutions within the nation and has created an assortment of commodities and amenities tailored to satisfy the requirements of enterprises, establishments, and individuals.

The organization provides a variety of Internet of Things (IoT) solutions, including Vehicle Tracking System, wireless connectivity, cloud computing, sensor networks, and machine-to-machine (M2M) communication. Bondstein Technologies Limited has developed the Bondstein IoT Platform, an integrated platform that facilitates the swift and effortless development, deployment, and management of IoT applications by users. The platform offers a variety of functionalities including data analytics, machine learning, and device management.

Bondstein Technologies Limited has developed a variety of Internet of Things (IoT) devices that are equipped with connectivity features, including smart meters, sensors, and gateways. These technological devices facilitate the acquisition of data from the surrounding environment by the user, which can subsequently be transmitted to the cloud for the purpose of analysis and utilization.

The enterprise is actively engaged in the advancement of Internet of Things (IoT) standards and protocols within Bangladesh. Collaborating with the government and industry associations, the company is ensuring that the standards remain current and adhere to global standards.

Bondstein Technologies Limited has initiated various measures to facilitate the expansion of the Internet of Things (IoT) sector in Bangladesh. The Bondstein IoT Innovation Challenge offers financial support to emerging businesses and individuals who are engaged in pioneering Internet of Things (IoT) initiatives. In addition, the organization conducts a sequence of workshops and seminars that concentrate on the Internet of Things (IoT) to enlighten enterprises and individuals on the capabilities of this technology.

Bondstein Technologies Limited is contributing positively to the Internet of Things (IoT) industry in Bangladesh and is playing a significant role in the development of the country's digital economy.

3.7 Case studies of Bondstein's successful projects in Bangladesh and beyond

Bondstein analysed several case studies and provided solutions to the identified problems. The aforementioned case studies have been appended herewith.

3.7.1 Smart Water Management System for Dhaka Water Supply and Sewerage Authority (DWASA)



Figure 5: DWASA

Bondstein developed a Smart Water Management System (SWMS) for the Dhaka Water Supply and Sewerage Authority (DWASA) to address the water crisis in Dhaka, which is the capital city of Bangladesh and one of the most populous cities in the world. The SWMS utilizes IoT-enabled sensors, cloud computing, and machine learning algorithms to monitor the water supply and

demand in real-time, and optimize the water distribution network accordingly. The system can detect leakages, detect water quality, and prevent water theft, among other features (Rahman et al., 2020).

The SWMS has made significant contributions to the water management of Dhaka city by reducing water wastage, preventing waterborne diseases, and ensuring equitable distribution of water to all the consumers. As a result, the DWASA has reported an increase in water supply efficiency from 25% to 85%, leading to an annual savings of about USD 9 million (Huq, 2019).

3.7.2 IoT-based Asset Tracking and Management System for Robi Axiata Limited:



Figure 6: Robi Axiata Limited

Bondstein also developed an IoT-based Asset Tracking and Management System for Robi Axiata Limited, one of the leading telecommunication companies in Bangladesh. The system utilizes GPS-enabled IoT devices and cloud computing to track and manage the company's large fleet of vehicles and other assets in real-time. The system provides accurate location data, fuel consumption, and engine performance metrics, among other features (Bondstein, n.d.). The IoT-based Asset Tracking and Management System has helped Robi Axiata Limited to optimize its fleet management, improve operational efficiency, and reduce costs associated with vehicle maintenance and fuel consumption. The system has also enabled the company to enhance its customer service by providing accurate delivery and pickup times for its products and services (Bondstein, n.d.).

3.7.3 Real-time Energy Monitoring and Control System for Radisson Blu Dhaka Water Garden



Figure 7: Radisson Blu Dhaka Water Garden

Bondstein designed and implemented a system for monitoring and controlling energy consumption in real-time at Radisson Blu Dhaka Water Garden, a luxury hotel located in Bangladesh. The hotel's energy consumption is monitored and controlled in real-time through the utilization of IoT sensors within the system. The aforementioned system acquires data from diverse sources, including energy meters, HVAC systems, and lighting systems, and conducts an analysis of the data to detect potential avenues for energy conservation. Furthermore, the system has the capability to promptly notify hotel personnel of any irregularities in energy usage through real-time alerts. The implementation of the system has yielded a reduction in the hotel's energy consumption by as much as 20%, leading to considerable financial savings. The implementation of the system facilitated the enhancement of the hotel's sustainability and mitigation of its carbon emissions, a crucial objective for the hospitality sector. Furthermore, the system offers instantaneous insight into energy usage, empowering hotel personnel to promptly address any irregularities. The implementation of this measure has resulted in an enhancement of the hotel's operational efficiency and a reduction in downtime.

3.7.4 Smart Parking Solution for Bangladesh Garment Manufacturers and Exporters Association (BGMEA) Building:



Figure 8: Bangladesh Garment Manufacturers and Exporters Association

Bondstein devised a Smart Parking Solution for the BGMEA Building in Bangladesh, a multi-level edifice with restricted parking capacity. The system employs Internet of Things (IoT) sensors to continuously monitor the real-time availability of parking spots and subsequently disseminates this information to drivers via a mobile application. In addition, the system enables drivers to pre-book a parking space and furnishes them with step-by-step guidance to the designated area.

The contribution made by Bondstein in the development of this system was noteworthy. The implementation of the system has resulted in a reduction of traffic congestion in the vicinity of the BGMEA building, as it facilitates drivers in efficiently locating available parking spaces. The implementation of the system has contributed to the enhancement of the parking experience for motorists by obviating the necessity of scouring for available parking spaces. In addition, the aforementioned system offers instantaneous information regarding parking utilization, thereby allowing facility managers to efficiently manage parking operations and enhance profitability. In general, the implementation of Bondstein's Smart Parking Solution has contributed to the enhancement of user experience and operational efficiency of parking facilities at the BGMEA building.

3.7.5 Remote Patient Monitoring System for United Hospital Limited



Figure 9: United Hospital Limited

The implementation of Bondstein's remote patient monitoring system at United Hospital Limited is a noteworthy endeavour aimed at enhancing the calibre of healthcare services rendered by the hospital. The implementation of this system enables medical practitioners to remotely monitor the health status of their patients, thereby mitigating the necessity for physical consultations and enhancing the overall health outcomes of patients

The system comprises diverse medical apparatus, including blood pressure gauges, glucose measuring instruments, and pulse oximeters, which gather patients' health information and transfer it to a cloud-oriented platform. Medical professionals have the capability to remotely retrieve this information through a web-based platform, enabling them to continuously monitor the well-being of their patients in real-time. The system has the capability to produce notifications in the event of a decline in a patient's health status, thereby enabling medical professionals to promptly intervene.

The remote patient monitoring system developed by Bondstein presents a multitude of advantages for both healthcare providers and patients. The provision of healthcare services to patients in their homes can result in a reduction in hospital visits and an enhancement in their overall quality of life. The utilization of the system additionally aids in the mitigation of healthcare expenses by reducing the necessity for hospitalization and other healthcare-related services. In contrast, healthcare professionals possess the ability to more efficiently oversee the health status of their patients, thereby administering prompt interventions that enhance patient results and diminish healthcare expenditures.

The project has demonstrated a high degree of success, as evidenced by United Hospital Limited's notable enhancements in patient outcomes and satisfaction rates. The innovative remote patient monitoring system has been recognized and awarded for its significant contribution to the healthcare sector in Bangladesh.

Chapter: 4

Description of Main Duties

4.1 Internship Information

The present chapter centre on pertinent details concerning my internship experience at Bondstein Technologies Limited. The present study aims to emphasize the specific details pertaining to the period, company, department, interactions with company personnel, as well as job responsibilities and assigned tasks.

Period, Company, Department and Address

I have been granted the opportunity to undertake an internship at Bondstein Technologies Limited. Bondstein Technologies is a company that has played a pioneering role in the field of IoT. It has introduced a new trend in the IoT industry and has contributed to a shift in the software and solution concept in Bangladesh. The company offers VTS products and IoT solutions sourced from reputable entities within Bangladesh. Information pertaining to the temporal and occupational circumstances is as follows:

1. The duration of my internship spans a period of three months, commencing on January 29, 2023 and concluding on April 28, 2023.
2. The duration of my workday was 9 hours, commencing at 9 a.m. and concluding at 6 p.m.
3. I was employed for 5 days each week, with Fridays and Saturdays designated as days off.
4. My internship was conducted at the Bondstein Head-office, specifically within the Vehicle Tracking System Operations department. The location of the headquarters is situated in Tejgaon I/A, Dhaka, Bangladesh.

Interactions with Company's Employee

The act of engaging in communication and collaboration among colleagues holds significant value in the context of my internship experience. In this exposition, I endeavour to explicate the modality of communication, frequency of interaction, and my rapport with the personnel at Bondstein Technologies.

1. My internship is being overseen by Md Hasan Tareq, a Senior Manager of Operations at Bondstein Technologies. The individual's primary responsibility entails collaborating with operational teams to exchange best practices and information, as well as executing innovative solutions at minimal

cost for device installation. Additionally, this role involves creating business cases to support strategic and operational choices.

2. It is noteworthy that the individual was primarily supervised by Md Shakibur Rahman, KAM of Robi at Bondstein Technologies. His responsibility is to provide care for the clients of Robi. The individual in question assumed responsibility for generating new sales, fostering customer relationships and liaising with Robi KAM. Additionally, they ensured the proper installation and maintenance of devices, generated monthly billing statements, provided solutions to any issues related to Robi panel and delivered briefings to users.
3. The primary point of contact for this individual was their two supervisors. During my internship period, I received active support from four colleagues. We maintained regular communication to collaboratively generate ideas for enhancing the decision matrix.
4. In addition, I engage in meaningful interactions with members of cross-functional teams such as the Supply Chain Management (SCM) and Product Development (PD) teams.
5. Our primary means of communication is face-to-face interaction, supplemented by the use of social media platforms such as WhatsApp.

Job Roles and Assigned Tasks

I have been selected to serve as an intern within the Vehicle Tracking System Operation Department of Bondstein Technologies Limited. I have been gainfully employed at the aforementioned organization for a duration of several months and have been entrusted with distinct duties and obligations. Although I had specific responsibilities to fulfil, my scope of experience extended beyond those tasks. I acquired knowledge regarding additional undertakings within my locality, their respective significance, and potential contingency plans in the event of any obstacles.

Within the Claims project, I am accountable for fulfilling the following responsibilities:

1. Generate an invoice for the services rendered by Robi admin, a vendor affiliated with Bondstein Technologies, for the month of January.
2. Collaborate with Unilever user sheets to establish sub-administrators, allocate vehicles, and configure vehicle details.
3. Review the maintenance records of Robi for the past three months. Determine the date of installation, recurring maintenance, and the vehicle that underwent maintenance during the first, second, and third month subsequent to installation.
4. I participated at the Basis Soft Expo 2023, where we had a stall. At the expo, I spoke with various groups of people (visitors and corporate personnel) who would be our possible customers about the features of

our VTS device and forthcoming products. Also, I attended two of the sessions organized by Basis and the closing ceremony.

5. Check SIM data pack status, subscription expiry date through accesscon for Robi MO panel users.
6. Find out the count of device SIM card damage issues from the previous 3 months of maintenance history.
7. Attend a sales meeting with the Madina Group to brief them about our panels and their features.
8. Attend a sales meeting with the BD Finance to brief them about our panels and their features.
9. Find out BSTID from Robi MO March Bill against the VTS MSISDN.
10. Determine the overall number of installed devices, damaged or swapped devices, and how many devices are in the hands of technicians for Robi panel users using IMS (Inventory Management System).
11. Set the Virtual Fench's boundary region for all the vehicles of the Jalil group from RVT.
12. Use the geofence vehicle assignment for assigning the vehicles to the geofence based on their registration numbers.
13. The individual consistently monitored the dashboard and identified issues pertaining to primary corporate clientele. To access the dashboard:

<https://rvt.bondstein.com/>

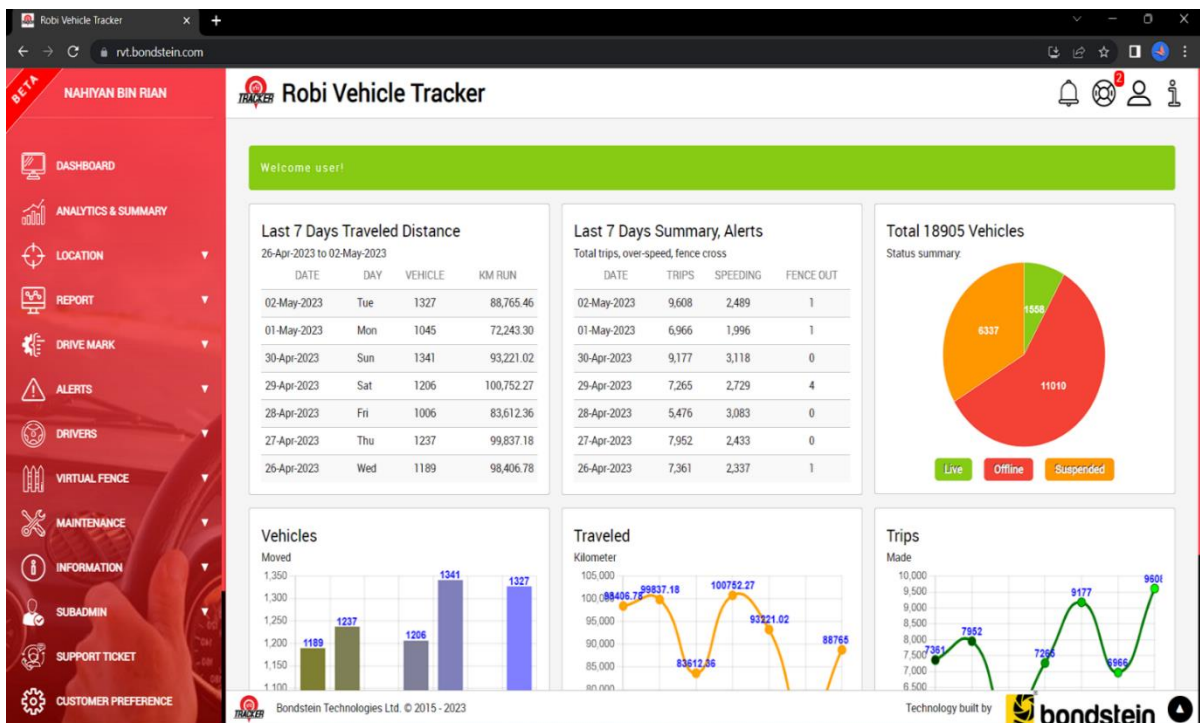


Figure 10: Dashboard of Robi Vehicle Tracker

To accomplish the aforementioned tasks, I had to depend on several tools. The aforementioned tools, namely Pivot Table, Vlookup, and Sum, are utilized in Microsoft Excel for the purpose of work in regular task.

4.2 Internship Outcomes

The present chapter is centered on the outcomes of the internship program at Bondstein Technologies Limited. In this discourse, I endeavour to explicate my contributions to the organization, the experiential knowledge I have acquired, and the challenges I have encountered throughout my internship.

My contribution to the company

I am currently interning with the VTS operation department. My primary duty involves providing assistance to both the clientele and the service provider, Robi. I establish connections with various corporate clients of Robi, such as Unilever, Bashundhara Group, and Healthcare Distribution, among others. During my collaboration with them, I established a rapport with all of their Key Account Managers and liaisons, and attentively gathered insights from them regarding their needs and challenges in operating the Robi portal. Furthermore, I established a connection with the customer and attentively listened to their concerns. Subsequently, I offered tailored solutions to address their specific issues. Furthermore, I analyse provided data and discern relevant information from a vast dataset. Additionally, I was responsible for overseeing the monthly billing process, generating invoices, and procuring purchase orders from Robi. In addition, I conducted comprehensive data analysis utilizing software such as Pivot Table and Vlookup to ascertain the primary accountable entity and conduct performance evaluations of various vendors. Ultimately, I gather feedback from both customers and service providers to gain a comprehensive understanding of their experiences.

What experiences I have gained

The following is a summary of the significant experiences acquired during my internship at Bondstein. The following items are:

1. During my internship at Bondstein Technologies, I gained valuable experience that will prove to be advantageous in my future corporate endeavours. Specifically, I acquired technical skills, interpersonal skills, and personal development while working at Bondstein.
2. Possessing a multitude of technical skills is a prerequisite for employment within the VTS Operation Department. During my internship, I utilized MS Excel and its diverse features, which provided me with numerous opportunities for learning and development.
3. Acquiring each of those character dimensions and speech patterns is a unique experience. Bondstein's open office strategy fosters frequent and balanced communication among employees, as there are no restrictions on interdepartmental interactions and work is often intertwined across divisions. The

enhancement of my relational skills and acquisition of knowledge regarding team collaboration were facilitated by this experience.

4. My transition from a novice in the corporate world to a seasoned professional was largely attributed to the invaluable development provided by Bondstein. During my experience, I gained insight into various aspects of corporate culture, lifestyle, and challenges.

Difficulties Faced During Internship

Throughout the course of my internship, I encountered various challenges pertaining to the unfamiliar work environment and the nature of the tasks assigned to me. Several of them are enumerated as follows:

1. The VTS operations team adheres to a demanding and challenging work schedule, particularly during the initial and final phases of each month, which can be attributed to my active involvement. Consequently, there are instances where I am compelled to exceed the designated work hours or even work days to provide assistance to various teams and departments.
2. Given that I was the sole intern within the operation team, I had to acclimate to a working environment that was primarily geared towards permanent employees. My colleagues and supervisor provided valuable assistance in facilitating my adjustment to the work environment, thereby preventing any potential boredom during office hours.
3. Furthermore, being a privately held corporation, the aforementioned entity is disinclined to disclose extensive details, particularly pertaining to their financial statement. As a result, the report could not incorporate a comprehensive evaluation of Bondstein's financial circumstances. The limited information provided by the organization posed a challenge for me in composing my internship report, as I found myself in a difficult situation.

Chapter: 5

Analysis

5.1 Company Level Analysis

Drawing from my internship experience, I observed certain internal processes that exhibited remarkable efficiency and inefficiency. In the following discourse, I expound upon the matter in great detail.

1. Efficient Process:

The data input, data analysis, and decision matrix procedures have proven to be highly effective within the VTS Operation Department at Bondstein Technologies Limited. The vetting process has been conducted meticulously to mitigate waiting periods and effectively address a wider range of customer and technical support provider-related concerns. Additionally, efforts are being made to enhance the accessibility and user-friendliness of their portal, with the aim of enabling customers to conveniently access all their required reports from a single location. In order to ensure customer satisfaction and retention, prompt issuance of authorized refunds is implemented.

2. Inefficient Process:

Despite being a robust programming-based and technologically advanced organization, Bondstein Technologies Limited had a highly inefficient process for final reporting. Rather than utilizing a unified platform for all services, the operational team opted for a conventional approach using Google Sheets. The process of preparing for conventional reports was time-consuming and often unpredictable. As a research assistant, I proposed the implementation of a novel type of document management system that would allow for the consolidation of information into a single cohesive unit, thereby eliminating the need for individual retrieval. Subsequently, a dashboard was created in collaboration with the customer support team to exhibit the daily count of resolved cases, the primary payers of reimbursements, the underlying reasons for these predicaments, and a predictive segment to pre-empt future reimbursement complications. Nevertheless, the current state of this dashboard is rudimentary and necessitates further refinement to attain a robust analytical capability. The efficacy and inefficacy of the internal processes within the VTS operation department of Bondstein Technologies Limited are apparent.

5.2 Market Level Analysis

During the culminating phase of my internship, I was assigned the responsibility of performing competitive analysis with a focus on the client's behavioural perspectives, as informed by their self-reported engagement and behavioural patterns. I am able to furnish an instance of a competitive analysis that is germane to my duties within the Operation division of Bondstein Technologies Limited. In this study, an examination was conducted on competing entities within the industry, namely Finder, GP Tracker, and BDCOM, in order to acquire crucial insights. From a market-level standpoint, I provide a comprehensive analysis of the market-level factors.

1. Prioritizing the cost-effectiveness of clients.

Based on the analysis of pricing comparison data conducted by the business analysis team, it can be inferred that Walton and Bondstein are considered to be the most customer-oriented and cost-effective firms.

2. Projects undertaken by well-known brands.

Bondstein Technologies Limited has effectively positioned itself to attract customers and secure government contracts. The noteworthy undertakings that Bondstein has undertaken thus far have established a sturdy foundation upon which to cultivate its standing in due course.

3. Post-purchase monitoring and management.

Bondstein Technologies Limited boasts an exceptional customer support team that is readily available to provide assistance at any given moment. The support team exhibits professionalism through three distinct modes of delivery.

4. The team offers remote support to clients through virtual communication platforms such as Zoom or Google Meet. The utilization of Microsoft Teams has been found to enhance the efficiency of the support provided, resulting in a reduction of time required.

5. The support team manages minor client inconveniences through brief telephone conversations.

5.3 Professional Level Analysis

From a professional standpoint, my internship experience has contributed to a more refined understanding of my career aspirations. In the following discourse, I provide a detailed analysis of the aforementioned topic.

1. Based on my extensive experience in working with a diverse range of websites and overseeing daily operations, I am inclined to pursue a career in the fields of Operations, Administration, or Supply Chain.
2. Additionally, I have utilized various data analysis tools such as VLookup, Pivot Charts, Pivot Tables, and Deep Learning to extract valuable insights from customer claims, which has enabled Bondstein to mitigate customer and provider claims. Undoubtedly, this experience has contributed to my future planning by augmenting my industry acumen.
3. Furthermore, it is my contention that the courses I have completed within the BTM department have facilitated my acquisition of the aforementioned technical skills during the duration of my internship. The acquisition of technical skills in data visualization was facilitated by courses such as decision support systems, management information systems, and computer science and technology II (database management).
4. Additionally, the development of decision-making matrixes and project management skills were fostered by courses in operations research and project management. Consequently, it is my belief that the knowledge acquired during my university studies was closely interconnected with the tasks and responsibilities undertaken during my internship, thereby significantly contributing to my professional development.
5. Notwithstanding the aforementioned, there were several obstacles encountered throughout my internship tenure. The department of operations at Bondstein is predominantly reliant on technology and necessitates a substantial degree of proficiency in the field of information technology. I encountered some challenges in augmenting my rudimentary proficiency in Excel due to my limited exposure to the software during my undergraduate studies, where I only completed a single course on the subject. In my opinion, the acquisition of additional technology-based coursework would have mitigated the challenges encountered during the initial stages of my internship.

Chapter: 6

Conclusion

Conclusion and Recommendation

6.1 Conclusion

During my tenure in the operations department at Bondstein Technologies Limited, I have acquired significant insights into the company's operations and culture. Throughout my temporary tenure, I had the opportunity to collaborate with a highly talented and dedicated team that demonstrated a remarkable level of proficiency and commitment towards achieving the organization's objectives.

During my internship, I had the opportunity to participate in diverse projects and initiatives, such as engaging with customers, engaging with providers, and facilitating customer migration. I was impressed by the company's dedication to remaining at the forefront of industry trends and its emphasis on fostering innovation. The emphasis placed by the organization on employee development, as evidenced by its investment in training and career advancement opportunities, was particularly appreciated by me.

While there may be room for improvement in certain aspects such as process optimization and interdepartmental communication, Bondstein Technologies Limited appears to possess the necessary attributes for sustained prosperity. The company's robust leadership, committed workforce, and unwavering focus on innovation are compelling reasons why I would take pride in being employed by this organization in the future.

Ultimately, the internship I completed at Bondstein Technologies Limited provided me with valuable insights into the operations of various industries, contributing to my overall comprehension of business practices. I express my gratitude to the organization for affording me this valuable opportunity and to my colleagues for their mentorship and assistance during the course of my internship.

6.2 Recommendations

Employment at a leading Internet of Things (IoT) enterprise is typically challenging. There exist perpetual prospects for skill acquisition and problem-solving. Throughout my tenure at Bondstein Technologies Limited, I acquired a significant amount of expertise and knowledge. I have conducted significant observations and consequently, I am capable of providing substantial recommendations.

1. Bondstein's time management practices require enhancement with respect to event and work schedules.
2. The organizational framework of the company ought to be more methodical to enhance its efficacy.
3. It is recommended that the company increase its involvement in social media marketing.
4. It is recommended that companies allocate greater attention towards the production of ready-made products.
5. The organization's operational processes would benefit from further enhancements in technology and resources. Despite being recognized as a leading company in the VTS sector within the country, Bondstein Technologies Limited exhibits shortcomings in various aspects.
6. The identification and resolution of any deficiencies should be a top priority for the organization through all available means.
7. Bondstein Technologies Limited, being an IoT enterprise, must enhance its level of integration within its operational framework. As a trailblazer in its domain, the company should prioritize the frequent adoption of novel technologies and lead the industry towards an optimal future.
8. To support the existing workforce, the organization must recruit additional personnel and establish streamlined work methodologies. Ultimately, it is imperative that the organization focuses on enhancing its employer-employee interactions.

By adhering to the aforementioned recommendations, Bondstein Technologies Limited has the potential to fortify its dominance in the IoT industry of Bangladesh and uphold its status as a significant contender.

Chapter 7

7.1 Glossary of key terms

IoT - Internet of Things

M2M - Machine-to-Machine

AI - Artificial Intelligence

DWASA - Dhaka Water Supply and Sewerage Authority

RFID - Radio-Frequency Identification

GPS - Global Positioning System

BGMEA - Bangladesh Garment Manufacturers and Exporters Association

NB-IoT - Narrowband Internet of Things

LPWAN - Low-Power Wide-Area Network

LoRa - Long-Range

WAN - Wide Area Network

LAN - Local Area Network

WAN - Wireless Area Network

Wi-Fi - Wireless Fidelity

Industry 4.0 - Fourth Industrial Revolution

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Appendix