

Report On

“The Challenges Typically Faced by Small-Scale Bangladeshi IT Companies that Practice Agile Methodology: A Case Study of Titan Technologies”

By

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ID: 17204010

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

BRAC Business School

BRAC University

April 2025

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Declaration

It is at this moment declared that;

1. The internship report submitted is my/our original work while completing a degree at BRAC University.
 2. The report does not contain material previously published or written by a third party, except where this is appropriately cited through complete and accurate referencing.
 3. The report does not contain material that has been accepted or submitted for any other degree or diploma at a university or other institution.
 4. I have acknowledged all primary sources of help.
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Name: Abdullah Arafin Anim

ID: 17204010

Supervisor's Full Name & Signature:

Supervisor's Name: **Dr.Tarnima Warda Andalib**
Designation: Assistant Professor
Institution: BRAC Business School

Letter of Transmittal

Dr.Tarnima Warda Andalib

Designation: Assistant Professor

BRAC Business School

66 Mohakhali, Dhaka-1212

Subject: Internship Report

Dear Ma'am,

I am pleased to introduce my role as an Product Analyst and Scrum Master Intern at Tian Technologies LTD focusing my report and research on the selected topic "*The challenges typically faced by small scale Bangladeshi IT companies that practice Agile Methodology, from the perspective of Titan Technologies.*"

I have finished the report with the essential data and recommended proposition as compact and comprehensively as possible.

The information will meet the desires.

Sincerely yours,

Abdullah Arafin

17204010

BRAC Business School

BRAC University

Date: April 2025

Acknowledgement

First and most importantly, Assistant Professor, BRAC Business School Dr. Tarnima Warda Andalib deserves my most sincere gratitude. The guiding north star of this whole trip has been your wisdom, patience, and relentless encouragement. Every thoughtful comment on my drafts, every soft prod toward better standards, and every spark of inspiration you offered raised this report far above what I could have accomplished on my own. I really appreciate your mentoring and the kind of time you dedicated to help me to develop academically.

I also really owe a great deal to the amazing Titan Technologies family. The team enveloped me with love, trust, and contagious enthusiasm for excellence from the first day. Your open door policy, willingness to share acquired knowledge, and relentless support turned abstract ideas into rich, practical experience. Every sprint meeting, brainstorming session, and open hallway conversation deepened my knowledge of Agile techniques and helped to shape the gathered research insights.

Please accept my sincerest gratitude to every colleague who responded to my never-ending questions, provided helpful criticism, or just cheered me on approaching deadlines. Your combined knowledge and friendship made this internship an inspirational, unforgettable chapter of my professional life.

I appreciate all helping me to learn, develop, and generate this report.

Executive Summary

Serving as a Business Analyst and Scrum Master at a small technology company in Bangladesh, this internship report documents the professional practices I observed and the scholarly research I conducted.

Techniques Acquired:

- Daily stand-ups, sprint planning, backlog maintenance, reviews, and retrospectives comprise agile frameworks.
- Serving leaders, obstacle removal, and cross-functional coordination define Scrum facilitation.
- Eliciting, recording, and improving user stories and acceptance criteria constitutes requirement engineering.
- Managing stakeholders by means of correspondence to both internal teams and outside partners helps to match expectations.
- Working with QA staff, one can embed testing activities inside every sprint.

Lean Product Thinking:

Business value and user comments guide iterative feature prioritizing.

Research Topic:

The report also contains a qualitative study called "Challenges Associated with the Practice of Agile Methodology in Small-Scale IT Companies in Bangladesh." Researchers analyzed five semi-structured interviews using NVivo to find common themes that have an impact on Agile adoption in local start-ups. These themes include resource limitations, ceremony consistency, leadership involvement, and communication barriers. The study sums up these problems and provides general suggestions to implement Agile more in similar situations.

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Limited resources were consistently identified as the most important challenge. The small team size makes employees have to tackle many roles, not specializing for example in thorough testing or detailed coding. Nafiz said that “coding and bug fixes are often at the same time because we have only so many people on the team.” Others agree with this sentiment, they point out that having more staffing or better tools would go a long way in relieving the operational burden.	37
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While Agile ceremonies are a regular part of Titan Technologies, there are a few iterations as to their execution. The daily stand-ups may be quick updates, but they do not facilitate a lot of deep problem solving. Syed also said that stand-ups are good for fast updates, but deeper issues still remains unsolved. Sprint planning and backlog grooming may lead actually to ambiguous task definitions and then rework in the middle of the sprint. This theme is evidenced by the 13 references where their need for further structured and consistent ceremonies has clear follow up actions.	37
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Despite the fact that senior leadership pushes for Agile at a strategic level, they are not actually involved at the operations level. These leaders are aware of our challenges, but mostly say ‘quickly fix it’ without putting your hands on,” Farh said. Since this is a limited	

engagement there is no time to address the critical issues especially when there is a change in scope or a shortage of resources. The 10 references provide suggestions that active leadership participation, such as sprint review attendance, might close the distance between strategy and execution.	37
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Short, two week sprints was also a common worry; it forced the teams to focus more on speed over thoroughness. "This leaves us with only two weeks. If something changes, we lose a big chunk of time to catch up," Nafiz stated. The 9 out of 10 references in this article show that time pressure does not only stress the team but diminishes the depth of testing and planning which may affect some quality.	38
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Based on our analysis, here are several strategic recommendations that would foster the adoption of Agile at Titan Technologies. These recommendations are intended to address the primary difficulties: scarce resources, ensemble ceremonies, dissociated Agile, scope changes that occur frequently, and communication flaws in order to facilitate the organization in balancing quick development with good results.	39
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Chapter One: Overview of Internship

1.1 Student Information

The Name of the student: Abdullah Arafin

The Student Identification Number: 17204010

The program of the student: Bachelor of Business Administration

The concentration of the Program: Computer Information Management

1.2 Internship Information:

1.2.1 Period, Company Name, Department/Division, Address

Period of the internship: I have been working for the company as a full-time employee from November 2021 to the present. I initially joined as a Business Analyst & Scrum Master and later on, in April I was promoted to the position of Technical Product Analyst & Scrum Master. And I am continuing here at this company as a Product Analyst & Scrum Master till now.

Company Name: Titan Technologies Limited

Department: Product Team

Address: Flat 1B, House 2E, Road 29, Gulshan-1, Dhaka-1212.

1.2.2 Internship Company Supervisor's Information:

Name: Syed Naimul Hussain

Designation: Project Manager

Mr. Syed Naimul Hussain has been working at the company since Mid 2021 and has been one of the primary stakeholders in managing, and strategizing some of the significant and valuable projects of the company. Mr. Syed Naimul Hussain has extensive experience in the start-up & technical project management scenario of Bangladesh which made him the perfect profile to supervise me throughout my internship journey.

1.2.3 Job Scope - Job Description/ Duties & Responsibilities

Job Description

A Product/Business Analyst & Scrum Master at Titan Technologies is responsible for coordinating cross functional collaboration with teams in multiple functions in order to deliver software products meeting business aims. Combining the responsibilities of a Business Analyst and a Scrum Master, this role requires a deep understanding of the business and technical aspects of software development. The ideal candidate for this role has strong knowledge of the software development life cycle, capable of dealing with business analysis and Scrum methodologies. They should have excellent communication and leadership skills and be able to bridge the gap between the business and technical aspects of software development projects. They should also be able to work in a fast-paced environment and be able to adapt to change as needed. In summary, the Product/Business Analyst & Scrum Master at Titan Technologies will be responsible for collaborating with cross-functional teams to deliver software products that meet business needs by leveraging their understanding of business processes, industry trends, and Scrum methodologies. They will be responsible for facilitating Scrum ceremonies, acting as a servant leader for the development team, and collaborating with different teams to design and implement software solutions that meet business needs.

Job Responsibilities:

As a Business Analyst and Scrum Master at Titan Technologies, I had to undertake a mix of responsibilities.

As a Business Analyst, my responsibilities included:

- Conducting market research , inspecting industry trends and identifying new opportunities
- Gathering and analyzing customer data to help in the informed development of new products or services
- Working with cross-functional teams to identify and document business requirements for new software or system development projects
- Collaborating with IT and software development teams to design and implement software solutions that meet business needs
- Identifying process inefficiencies and suggesting improvements
- Communicating with stakeholders to understand their needs and concerns and as well as ensuring that solutions align with the overall business strategy

As a Scrum Master, my responsibilities included:

- Spearheading Scrum ceremonies such as Sprint Planning, Daily Scrums, Sprint Reviews, and Sprint Retrospectives
- Acting as a servant leader for the development team, aiding in their daily requirements
- Ensuring that the team follows Scrum principles and practices
- Protecting the team from outside interruptions and distractions
- Helping the team to improve their process and increase productivity
- Acting as a liaison between the team and other stakeholders such as product owners and upper management

As a Business Analyst and Scrum Master at Titan Technologies, I served as a bridge between the business and technical aspects of software development projects. I used my understanding of business processes and industry trends to identify areas of improvement and recommend solutions while making sure my

suggestions were in line with the organization's overall strategy. For the business aspects, I coordinated and worked with cross functional teams, gathering and document what the business requires in terms of new software of system development projects. Then I helped design and implement the aforementioned projects.

I was also responsible for collaborating with the development team in following the Scrum framework and organizing Scrum ceremonies such as Sprint Planning, Daily Scrums, Sprint Reviews, and Sprint Retrospectives. I acted as a servant leader for the team, working to keep the path to success smooth and free from obstacles, ensuring that the team adheres to Scrum principles and practices, protecting the team from outside interruptions and distractions, and helping the team to improve their process and increase productivity.

Moreover, I had a key role acting as contact point between external stakeholders and the organization. I consulted them to gather their expectations and implemented them in a manner cohesive with organizational goals. I acted as a liaison between the team and other stakeholders such as product owners and upper management.

To reiterate, I played a vital role in driving software development projects forward by bridging the gap between the business and technical aspects of the projects, and for this I had to employ both a robust understanding of business processes and industry analysis and also make use of communication skills to act as a liaison between stakeholders and the company, integrating their wants and needs into solutions that benefit both them and the organization. Additionally, I was responsible for collaborating with the development team in following the Scrum framework.

1.3 Internship Outcomes

1.3.1 My Contribution at Titan Technologies:

Software Automation Testing Platform

During my tenure at Titan Technologies, I worked closely with cross functional teams with the aim of delivering software solutions addressing business needs. I was closely involved in the development of Software Automation Testing Platform, a UI-based no-code software testing platform. As part of this development process, I worked on the business requirement document to conduct a reverse analysis of completion, identifying and implementing hook canvas-focused features on the backlog. I also had to work on primary stakeholder management, creating a sales pitch for the product, conducting user interviews and undertaking market research.

My primary focus was on the creation of a business requirement document, where I employed my expertise in business process analysis and industry trend analysis to determine the areas of improvement and recommend solutions, making sure these were feasible from the perspective of organizational goals. The outcome was a comprehensive document that served as a blueprint for the development team to follow. This was instrumental in ensuring the final product was congruent with the target markets needs and thus poised for success.

I executed a reverse analysis of competition. This meant identifying areas for potential improvement on the platform and also providing recommendations on how best to deal with these issues. This was a crucial step in optimizing the final product to be as user friendly and high quality as possible.

I also played an instrumental role in the identification and implementation of hook canvas-focused features on the backlog. I worked closely with the development team to include and prioritize these features, features that ensured that Software Automation Testing Platform is engaging and interactive for users, in

When it came to primary stakeholder management, it entailed conferring and consulting external stakeholders, addressing their wants and concerns and implementing their solutions in a way aligning with business needs. This helped ensure that the final product met the target market's needs and was well positioned for success. My efforts in primary stakeholder management also contributed to the successful implementation of the go-to-market strategy for the MVP of the product.

I created a sales pitch for Software Automation Testing Platform. This pitch vastly helped in illustrating the value proposition of the product to potential customers. As part of working on the development of this platform, I took user interviews and well as carried out market research so that I could best understand the needs of the customers and their specific pain points. This allowed me to go on producing a top notch and user friendly digital solution.

NLP Powered HR Assistant Tool

Titan Assist is an innovative AI powered HR assistant. I played a crucial role in its development as the primary stakeholder of the project. I chiefly worked on taking the product from the concept stage to the launch.

Out of the many contributions I made to this project, a notable one was landing pre-seed funding for the product from key investors. I did this by creating a compelling pitch deck and presenting the product along with my teammates to the investors in order to demonstrate the potential and value of our offering to the investors. The funding was instrumental to kickstart the development of the product

I also played an important role in the proof of concept development of the product. Using Kanban methods, I kept track of and deftly managed the development process using the Kanban methodology. This organization and coordination made sure that the development team was on track to deliver a functional prototype.

On top of these, I conducted thorough investigation and research into the market and industry to procure the necessary product requirement document, product roadmap, launch and market penetration. Without this research, we could not have identified the needs of the target market and thus would have failed to create a product poised for market success. When building the launch and market penetration, I employed the help of the marketing team to devise the best and most effective strategies to take the market by storm.

1.3.2 My Learning Outcomes:

My time at Titan Technologies in my role as a Business Analyst and Scrum Master has left me with a reservoir of knowledge and experience in the software development industry. I learned about industry

practices such as the Software Development Life Cycle (SDLC) and the Software Testing Life Cycle (STLC). I gained a deep understanding of how these practices are carried out in practical contexts.

I acquired many valuable skills but perhaps one the best was improved communication skills and better technical expertise. I got these through working with many cross functional technical teams. To be able to work with these teams, I had to understand and explain complex technical concepts to non-technical stakeholders, cohesively connecting the technical aspects of the work with the more human or business-oriented aspects of software development projects. I also learnt about product management, including creating product requirement documents and roadmaps- which helped me understand how to create a comprehensive product strategy that would further the overall business strategy.

Product management wasn't all I learned, I also had the opportunity to learn about start up funding, budgeting and valuation. I learned about how startups raise money, budget their finances and determine their valuation. This will surely be invaluable knowledge for future endeavors.

Another skill I learned was internal and external stakeholder management. This meant learning effective communication strategies in order to address their needs and concerns as well effectively manage the expectations of stakeholders and ensure that the final product met the needs of the target market and had high market potential.

I had the opportunity to learn about technical documentation and wrote documents such as Business Requirement Documents (BRD), Product Requirement Documents (PRD), and Functional Requirement Documents (FRD). This led me to understand how to communicate software requirements in a universally accessible and simple, concise manner.

As part of my involvement in production level system analysis, I analyzed use and edge cases and created UML diagrams. My takeaway from this helped me to understand how to analyze and design software systems, and to identify potential issues that may arise during the development process.

I also had the opportunity to learn about UI/UX design principles. I learned about the importance of user-centered design and how to create interfaces that are both visually appealing and easy to use. This knowledge will be valuable in any future endeavors.

I learned how to manage software project management tools and frameworks such as Jira, Click-up, Kanban, and Scrum. This helped me to understand how to effectively manage software projects, and to identify and deal with any issues that may arise during the development process.

During my time at Titan Technologies, I gained exposure to several industries for different projects and learned about the no code software testing platform industry, the HR tech industry, and the NLP & AI industry. I learned about the specific challenges and problems unique to each industry and come up with solutions that addressed these issues to satisfy the target market.

Lastly, I learned about popular tech stacks, dev ops, DBs, and system architecture. I began the process of designing and developing software systems that are scalable, reliable, and performant, and to identify and address any issues that may arise during the development process.

Overall, my time at Titan Technologies provided me with a wealth of knowledge and experience in the software development industry. I learned about industry-level practices, product management, startup funding, stakeholder management, technical documentation, system analysis, UI/UX design, software

project management, and various industries and technologies. These skills and knowledge will be valuable in any future endeavors, and I am glad for the opportunity to have worked here.

1.3.3 Challenges

Despite such enriching learning experiences and intellectually stimulating projects, I faced several challenges during my time at Titan Technologies. To overcome these challenges, I had to adapt and learn new skills. Particularly, being a cross functional employee came with its share of hurdles. As someone with a non-technical academic background, it was difficult for me to understand and communicate with the highly technical teams I was working with. For example, when working on a project for a no-code software testing platform, I had to learn about the technical aspects of software testing and how it was implemented in the platform. I had to learn new technical concepts and terminology, and to develop my ability to explain complex ideas in a clear and simple manner.

Setting priorities for my work was another difficulty I encountered. I frequently had to manage several tasks concurrently. This was really hard for me to handle, and I frequently felt anxious and exhausted. For instance, I was given the task of working on two projects at once: one for an AI-powered HR assistant and another for a no-code software testing platform. I came to the realization that I had to learn how to efficiently manage my time if I wanted to continue. To stay organized and finish all of my responsibilities on time, I learnt how to prioritize activities and use project management software.

Constantly jumping between projects was another difficulty I faced. Because I worked on several projects in various phases of development, I occasionally had to deal with one that was in the development stage and another that was in the testing phase. Because these initiatives needed various skill sets, I would have to continuously employ separate knowledge bases. It was challenging to monitor each project's requirements and development while making sure my effort on one didn't have an adverse effect on another.

I turned my attention to leading technical teams to deal with all of these issues. I met stakeholders' expectations by using project management techniques. To effectively manage these teams, I needed to be well-versed in their communication and work procedures and modify my approach accordingly. For instance, I had to constantly communicate with the technical team while learning about the technical facets of AI and NLP while working on the AI-powered HR assistant project. Using project management techniques, including making task lists and timetables, was what truly helped me remain on top of my work. To make sure the project goals aligned closely with what the stakeholders wanted, I had to use my communication skills to keep all the relevant parties in the loop and informed of any potential issues.

Implementing project management practices such as creating task lists and timelines, helped me to organize my work and better prioritize tasks. Managing stakeholder expectations helped me to align their needs with the project's goals, and to effectively communicate progress and potential issues.

Along with these difficulties, I also had to deal with stakeholder management issues. I was in charge of controlling internal and external stakeholders' expectations in my role as a business analyst. In order to do this, I had to comprehend their requirements and worries and make sure that the remedies complemented the overarching business plan. For instance, to develop a product that satisfied the needs of the target market for the AI-powered HR assistant project, I had to perform user interviews and market research

All things considered, my internship at Titan Technologies was a worthwhile educational opportunity that gave me a plethora of information and expertise in the software development sector. I was able to overcome a number of obstacles by concentrating on leading technical teams, putting project management techniques into effect, and controlling stakeholder expectations. I gained important abilities that will aid me in my future undertakings and a more thorough understanding of the software development process as a result of these obstacles. I acquired knowledge about the significance of stakeholder management, project management, and effective communication in software development. I also learned how to collaborate with cross-functional teams and oversee several projects at once.

1.3.4 Recommendations

After my time at Titan Technologies, I have become familiar with the company's strengths and weaknesses. I believe there are some areas where the company needs to pay particular attention to and refine some issues.

Human capital should be prioritized. The state of training and resources for non-technical employees was very lackluster and the company should definitely invest into their workers via training. This could include workshops, seminars, or training programs that cover technical concepts and terminology and help employees to develop the necessary skills to work with cross-functional teams.

The management process does not provide employees with the necessary structure to deal with their workload and time management. The organization could improve the process by introducing a standard project management framework or utilizing project management tools to help employees stay organized and on schedule.

The company does not have clear guidelines for the procedure that needs to be followed for project switching. To remedy this, the company could start training employees so that they can gain a clear understanding of the different demands of each stage of project development. The company could also provide a detailed transition plan which would help employees to easily switch between tasks.

Communicating with stakeholders and trying to meet their expectations but also making sure that company goals are being met is a really difficult task. The company should provide support for employees who have to do this in the form of the necessary resources needed to conduct market research, user interviews and other forms of stakeholder communication and engagement.

Lastly, while at Titan Technologies, employees should have more chances to gain exposure to different industry and markets. This could be done through workshops, seminars or training programs on specific industries in order to build a comprehensive understanding of different markets and build more skills.

Regardless, while there are a few areas of improvement, my internship was a fulfilling and enriching experience. The company has a great team of professionals who are passionate about technology and its potential to revolutionize the way we work. However, addressing these recommendations will further improve the company's ability to deliver cutting-edge technology that simplifies the workflow and automates repetitive tasks.

Chapter 2: Organization Part

2.1 Company Introduction

2.1.1 Organizational Overview

This part of the report will explore the structure of the organization in depth, covering multiple perspectives and topics to construct a holistic and faithful portrait of the company, its operations and its industry positions. The topics include company introduction, management practices, financial and accounting practices, operational management and information system practices, and industry and company practices.

Let's begin with the company introduction. It is a brief history of Titan Technologies (founding, mission, values). It is a brief overview of the company's offerings and target market. This will provide context and background information for the remaining parts of the report.

The section on management practices is about the operational details of Titan Technologies- how it is run and managed along with information on the organizational structure, decision-making processes, and culture. We will also examine the company's leadership style and the roles and responsibilities of the management team.

The financial and accounting practices part is vital because it will address the practices of financial management and accounting. The spotlight will be on the company and its procured budgeting, forecasting, and financial reporting processes— illuminating the pathways to Titan Technology's existing fiscal sustainability. Accompanying it will be documentation on revenue and expense generation as well as profit compilation

Titan Technologies' operational management and information systems practices will be the focus of the next part. I will examine the software development processes the company employs, with an eye to what those processes might reveal about the company. The focus will be on the company's application of project management, software testing, and quality assurance in the software development process, and on how those applications might be indicative of the company's operational management practices.

To sum the picture out, I will also look at the company's information systems and the practices associated with managing those systems, both as an operational unit and in terms of overarching strategy. Ultimately, the practices of the company and its industry will be laid bare in this report. An overview of the software development field, written from the perspective of Titan Technologies, will be included. This overview will cover competitors, market trends, and both kinds of prospects—growth and decline—relative to Titan. It will provide an understanding of how Titan fit into both the past and the present of the field and the future growth opportunities claimed by Titan in its marketing materials.

2.1.2 Company Introduction -

Titan Technologies, which is a sister concern of Titian Technologies LLC, is engaged in the software development business with headquarters in California. The company was established in the year 2012 and it focuses on creating high quality and dependable software solutions for businesses or even the personal users. Titan Technologies believes that the best quality and latest technology automation improves the efficiency and decision-making of any organization irrespective of its size.

With a group of professionals who have a considerable amount of experience and who are enthusiastic about the use of technology, Titan Technologies has been able to emerge as a reliable provider of services

to Fortune 500 companies. The corporate is engaged in the development of different kinds of WYSIWYG graphical user interface no-code software testing platforms, AI based virtual HR assistants, among others.

Titan Technologies acknowledge the necessity of being conversant with new technological advances and industry standards. It's for this reason that the firm also emphasizes research and development in addition to consulting with the clients on their needs then coming up with solutions that meets their goals. There is also concern on usability and integration to bring about scalable solutions that are user friendly and simple to deploy.

One of the key strengths of Titan Technologies is its ability to work with cross-functional and highly technical teams. The company's team comprises professionals from different backgrounds, including software developers, designers, business analysts, and project managers, who work together to deliver the best solutions to clients.

In summary, Titan Technologies is a forward-thinking software development firm that helps businesses of all sizes improve their operations and make better decisions by providing innovative software solutions. The company specializes in developing reliable software systems for both corporate and consumer industries and strives to make clients' lives simpler by offering high-quality product user experience and seamless integration with leading-edge technology.

2.1.3 Titan Technologies logo

2.1.4 Mission

Titan Technologies' mission is to design technological solutions that are simple and effective. This mission is at the core of everything the company does and guides its approach to software development. The company's focus on simplicity and effectiveness is reflected in its software products and services, which are designed to be easy to use, intuitive, and efficient.

While Titan Technologies pursues its mission in multiple ways, one is by prioritising the user experience. The development team in the company develop both easy to use and navigate software solutions. This ensures wider user accessibility of the software.

The other focus of the mission is effectiveness for Titan Technologies. Their software solutions are designed to automate the mundane and increase efficiency, effectively helping businesses optimize their operations and make better decisions.

Titan Technologies also places a strong emphasis on innovation. The company's development team is always looking for new and innovative ways to improve its software solutions. This approach allows the company to stay ahead of the curve in the software development industry.

In addition to its focus on simplicity, effectiveness, and innovation, Titan Technologies is also dedicated to providing its clients with high-quality customer service.

2.1.5 Company Vision

I was fortunate to serve as a Business Analyst and Scrum Master for a company with a clear and ambitious vision. Not only that, the vision is one that aligned with my own wishes- to enhance client's

lives via high quality product user experience by taking into account their wants and desires and using leading edge technology to create scalable solutions that meet business objectives. This vision is reflected in the company's approach to software development. Titan Technologies places a strong emphasis on user experience, ensuring that its software solutions are easy to use and intuitive.

The company also prioritizes automation with the aim streamlining workflows in order to optimize daily operations. The company's dedication to innovation is also a key aspect of its vision. The development team is always looking for new and innovative ways to improve its software solutions. This approach allows Titan Technologies to stay ahead of the curve in the software development industry and offer its clients the latest and greatest technology.

Overall, the organization's concept of seamless integration with state of the art technology is demonstrated through its application of information systems. With a high data management and analysis and cybersecurity focus, the company's development team delivers scalable solutions to its clients to meet their business needs. At the end of the day, Titan Technologies wants to simplify their clients' lives by providing quality user-experience with their products and integrating with best-in-class technology for an iterative solution.

2.2 Management Practices

Favoring a democratic management style, collaboration is highly encouraged in Titan Technologies. It has an open and inclusive work environment where all employees can freely speak up about their opinions and ideas. Furthermore, the management team listens to this input and values it deeply, letting all employees know how much their contribution is appreciated in the decision making process.

An example of how this collaborative management style manifests itself is the regular team meetings we had. These meetings were held to have discussions on the progress of ongoing projects and to identify and rectify any possible issues that may arise. All team members were free to speak up and in fact encouraged to share feedback, thoughts and ideas. The management team would always actively listen to our input and constructively implement them in further decisions.

Another example is the use of Kanban and Scrum methods. These methods were designed with collaboration in mind, and it helped cross functional teams to work closely on their shared projects and make remarkable progress. It also gave us more scope and places where we could share our knowledge and skills with others as well as gain knowledge ourselves. Another benefit of this was the sense of teamwork and unity it fostered.

The culture at Titan Technology heavily supports open communication and transparency. The management team is always available to lend a ear to the concerns and ideas of employees, supporting them whenever possible. We would receive regular updates on the company's current performance and its future plans, building a strong sense of identification with the company and helping all employees feel like organizational citizens with a stake in Titan Technology's future.

In summary, Titan Technologies uses a collaborative management model which is governed by a democratic management model. This approach promotes an open and inclusive work environment. All team members are encouraged to share their thoughts and opinions. The management team values the input of all employees and encourages them to be active participants in the company's decision-making processes. The company's management model promotes a culture of continuous learning and

improvement. Open communication and transparency This helps build trust and a sense of belonging among team members.

2.2.1 Recruitment & Selection Process

At Titan Technologies, the recruitment and selection process is a well-defined process that follows the six stages of the recruitment life cycle. The company follows a strategic approach to recruitment, starting with the planning phase. The company starts with the planning phase, which is crucial for a project focused company like Titan Technology. A workforce forecast is conducted based on the resources the different projects will need. This helps the company to anticipate the workforce's needs and plan accordingly to ensure that they have the necessary resources to meet their project goals.

After planning comes sourcing where employees are sought out through various channels such as media, job portals, and secondary referrals. This allows the company to reach a wide range of potential candidates and increases the chances of finding the right fit for the role.

Once a good pool of potential candidates has been secured, it is time for the third stage- screening. The HR department reviews the interested candidates, filtering them for desired characteristics and forwarding shortlisted people to the relevant managers for further management. Screening ensures that the selected candidates are a good fit for the role and can deliver what the company is looking for.

The fourth step is the selection process. This includes the first phone call, a related work task and a preliminary interview. And the final interview with the inline manager who reported. Then comes the appointment, which includes negotiations and examination tests. This step is important because it ensures that the company complies with legal and regulatory requirements, and the applicant is suitable for this position.

The final step is onboarding. This is an important process to ensure new recruits are well integrated into the company, and receive the support they need to succeed in their new role. This includes training and orientation, as well as support and opportunities for continuous development.

2.2.2 Training & Development

With a commitment to human resource development Titan Technology focuses on training and development. The business recognizes that the success of its workforce is not only an asset, but an investment needed to ensure that they are all trained to do their jobs. Employees' development plans and managers' input form the basis of the company's staff training and development process.

At Titan Technologies, employees can also select course online every 6 months as part of the added value proposition to be an employee of the company. Employees earn knowledge for completing these courses as per their role and their upskilling needs to advance in their career. This empowers employees to take control of their own professional development by picking courses that are relevant to their career path.

Besides online classes, the company partially helps with some certification costs. This is good for workers to get certifications that show what they can do, and maybe it helps them find better jobs. The company also says workers should go to conferences and workshops to know the newest things in their field. This keeps the workers updated about changes, so the company can compete better too.

Also, there are training sessions ran by higher-ups and other knowledgeable people in the company. This gives workers a better grasp of how things work at the company and helps them do their jobs more smoothly.

Pay & Perks:

Titan Technologies is committed to giving competitive pay and perks to its staff. The company understands that attracting skilled people is key to success, so it offers various benefits for employees' health, growth, and money. The main perk at Titan Tech is free lunches and snacks. This makes sure employees get healthy food while working, which might help them be more productive. Plus, there's flexible office hours, letting workers juggle work and life better.

The company also provides life and health insurance to its employees. This helps to protect employees and their families in case of unexpected events and ensures that they have access to the medical care they need. This benefit is something that is important to both the employees and the company as it ensures the well-being of the employees which will in turn lead to a better performance at work.

2.2.3 Performance & Appraisal

Titan Technologies has a comprehensive plan for performance evaluations and appraisals to reward employees for their contribution to the organization. As a result of the process, employees will get feedback on their work, both positive and negative, in addition to opportunities for growth and development. Setting up goals for each employee at Titan Technologies is through a process of assessment. These objectives, which are based on the general objectives and priorities company of performance.

Yearly the performance company, feedback are to designed employees to is assist provided the through employee various in means, understanding including how one-on-one his or her efforts contribute to sessions, team sessions, and performance evaluations. This is where employees are able to identify their strengths and weaknesses and how they can improve.

Each year, employees are involved in a formal performance review, which is a comprehensive evaluation of their role for the past year. During the review, employees are able to identify their accomplishments, discuss areas for improvement, and set goals for the coming year.

2.3 Marketing Practices

2.3.1 Marketing Practice Overview

In the realm of marketing, Titan Technologies Ltd. has a unique business model. In contrast to many companies that pour a lot of resources into direct marketing and promotional activities, Titan pours its resources into forming long-lasting ties with its clients.

The company's marketing strategy is fundamentally centered on word-of-mouth and referral marketing.

The company strategy is to provide great service and great products because they understand the power of a satisfied customer. A happy customer, it is believed, is more likely to send business the company's way.

Titan Technologies recruits with the help of social media but lacks a solid marketing strategy in general. The firm uses some traditional marketing tactics—pricing, for instance, and product positioning—but doesn't seem to have a coherent overall strategy. If the company plans to "engage" with its target market, for example, it should tell a compelling and clear story about what it does. Instead, one gets the impression that there's not much story to tell. The company's main offering appears to be software that helps other companies "streamline their processes" and "enhance productivity."

The LTV:CAC ratio is yet another measure of marketing success at Titan Technologies. It specifically looks at the relationship between the long-term value of a customer and the cost of obtaining that customer. A favorable LTV:CAC ratio suggests that Titan's marketing efforts are giving it good leads at a low cost. What's more, those leads appear to be yielding customers who provide relatively high long-term revenues.

In conclusion, Titan Technologies Limited employs a distinctive strategy for marketing, relying on word-of-mouth and commercial alliances to fuel its operations. Even without a conventional marketing strategy, the corporation nonetheless uses marketing techniques like price, promotion, distribution, and product positioning. To assess the success of its marketing initiatives, the organization also uses a marketing roadmap and the LTV: CAC ratio. Overall, Titan Technologies' marketing strategy has been effective for the business, and it will continue to rely on similar tactics to expand its clientele.

2.3.2 Target Market of the Company

The international clientele is the main target market for Titan Technologies. They are skilled at assisting high-net-worth clients, like Fortune 500 corporations, that outsource work. Titan Technologies also has a soft spot for helping investors and entrepreneurs with transformative ideas become the next big thing. They partner with these clients to conjure up a reality from the digital ether when necessary and hand over a ready-to-use product when they're done with it.

Titan Technologies is aiming at a very diverse target market that covers many sectors and types of businesses. Its services are particularly appealing to business owners and investors in the technology, software, and internet sectors, where Titan's track record of providing high-quality, cost-effective solutions has built a strong reputation.

Additionally, a large part of Titan Technologies' target market includes small and medium-sized businesses that are eager to bring their operations into the modern digital age. These firms are usually attempting to achieve a greater online visibility, a better business operational flow, and more overall productivity. With its wealth of knowledge and experience in web development, digital marketing, and other digital solutions, Titan Technologies is well-suited to serve this nascent niche market.

Last but not least, companies on the Fortune 500 list that seek to outsource their work also fall into the target market for this company. These firms have large-scale, complex demands that require a partner with the wherewithal to meet them. Titan Technologies is just such a partner. Its skilled workforce, sound infrastructure, and state-of-the-art technologies equip it to serve complex, large-scale clients both well and profitably.

2.3.3 Marketing Channels:

A sales funnel's initial touchpoint can be referred to as a marketing channel. This is closely related to a company's growth strategy. Therefore, before discussing a company's marketing channels, it is essential to briefly understand the growth strategies that the company is implementing.

For this specific company, the growth strategy focuses on two subclasses: Product-Led Growth and Founder-Led Growth. Each of these growth strategies demands a distinctive marketing approach and an array of different marketing channels. We'll describe these in detail below.

2.3.3.1 Founder Led Growth Marketing Channels:

Titan Technologies employs a Founder-Led Growth model of development based on the exploitation of current founder's personal and professional networks for generating leads and gaining new business. Two crucial marketing channels are used in this technique to promote growth: networking and referrals. Since its founders have network, Titan Technologies can harness its network to founded new alliance and grab new commercial chances. Sometimes the founders can meet with prospective customers and partners at conferences, or industry get togethers. Also, the organization encourages their staff to attend pertinent events and network with potential people that can help the constantly evolving business. Referrals: For Titan Technologies, happy clients and partners recommending Titan Technologies is likely to be one of the most effective ways to market. Your business places a lot of premium on meeting customer requirements and tries to establish good relationships with its customers so this might attract recommendations from word of mouth and recommendations by other people in your network. The firm also runs referral programs and offers rewards to entice consumers to recommend new clients to Titan Technologies.

2.3.3.2Future Product Led Growth Channels:

For their upcoming products, Titan Technologies expects product led growth. Product led growth is the approach that concentrates on utilizing item itself as a showcasing resource to pull inside a chance and hold on to clients. This is the method that is becoming popular among businesses because of its more customer centric approach towards marketing and its ability to offer consumers opportunity to directly experience the product and its advantages.

If Titan Technologies is to take the product led growth approach, it should be using various marketing channels to notify potential buyers regarding the product and the perks associated with it. In this plan, Titan Technologies may make use of many marketing avenues, such as:

The term in app messaging identifies using the product itself to interact with consumers and provide relevant news and update. If they want to tell customers about new features and benefits or pitch them for paying more for the software, this could be done.

Getting current consumers to spread the word about the product is what constitutes referral marketing. You can do this by rewarding consumers with say discounts or awards for recommending new users, or for example making it easy for them to spread word of the product to their contacts.

The content marketing needs to produce and disseminate information that's useful, relevant and consistent enough to draw in and keep your target audience. It may consist of articles on a blog, videos, or various kinds of marketing material which inform the clients about the product, about its advantages.

Paid promotion: This involves the purchase of space, on many websites, social media sites and in search engines to advertise the goods. This could be a very powerful strategy for bringing in new customers and raking in the sales.

Collaborating with prominent figures/influencers in your market to sell the product to them through influencing the follower base may be a very efficient technique to attract interest in the product from a specific audience.

Building a user community around a product is known as community building. Users may connect with one another and the product via online forums, social media groups, or other channels.

Titan Technologies can successfully exhibit the advantages of their product to a broad and diversified audience by employing these marketing platforms. The organization will see more growth and revenue as a result of enhanced client loyalty and customer acquisition.

2.3.4 Product Development Approach:

As their product development strategy, Titan Technologies has recently being engaging in lean product management. Lean product development is an iterative way to deliver products repeatedly by listening to the consumers and making product improvements according to the audience's input. The process starts by constructing a minimal viable product (MVP) using client data and iteratively improving the offering further to match those needs. This strategy has allowed the firm to develop items tailored to the wants and demands of its target audience, and because of this the firm moves forward with the ability to mass market items.

Titian Technologies has employed this technique to bring in new goods. The firm starts with a concept of product, then develops what it calls a 'minimal viable product' to see how it will work with potential customers. After, the corporation launches the MVP into the market and listens to users. The corporation uses this information to refine the product over time, increasing the likelihood that future orders will be fulfilled.

Lean product development helps Titian Technologies minimize the possibility of creating items that aren't what their target market wants. One way to ensure this happens is to have consumers actively participate in and provide input during the development of a product. Because of this, the corporation can fix any problems with the product before it hits the shelves. This contributes to the success of the product and its ability to fulfill the demands of the target audience.

2.4 Financial Performance & Accounting Practices:

Titan Technologies being a fairly new startup and dealing with large scale North American companies due to the lack of non-confidential financial data. I had to opt to conduct the analysis with the data I was provided and has the permission to use of. Which being the financial projection data of the product I am currently working in at the company. However, since the product itself is not yet out on the market the company uses the Discounted Cashflow valuation method to analyze and project on the Financial performance of this particular product

2.4.1 Financial Performance Considering Discounted cash flow method:

In order to conduct the discounted cash flow valuation method the first element which is required is the Profit and Loss Breakdown Projection based on the capex, opex, sales and profit projection of the product.

Particulars	Year 1		Year 2		Year 3		Year 4		Year 5	
	Amount	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	
Sales	\$0	\$358,375		\$1,784,175		\$4,047,500		\$8,240,500		
OPEX										
Salaries								\$544,294	6.61%	
Media Buying								\$65,702	0.80%	
PR & Activations								\$44,658	0.54%	
Administration								\$77,542	0.94%	
Misc. Expense								\$14,644	0.18%	
OPEX Total	\$148,886	\$221,676		\$495,301		\$603,864		\$746,840		
CAPEX										
Office Equipments								\$8,824	0.11%	
Office Furnitures and Fittings								\$4,394	0.05%	
Rent Advance								\$2,471	0.03%	
CAPEX Total	\$27,559	\$2,447		\$24,335		\$12,059		\$15,688		
Net Profit	-\$176,445	\$134,252		\$1,264,539		\$3,431,577		\$7,477,972		

Figure 2: Projected Profit and Loss Breakdown.

The profit and loss analysis for this specific product may be understood based on the preceding data. On the basis of sales, operational expenses (OPEX), and capital expenses, the profit and loss breakdown is computed (CAPEX). I'll explain the following table:

The cumulative sales for each of the five years are shown in the sales row. As previously indicated, the chart shows that the first year's total sales were \$0 owing to product development and fine-tuning to ensure product-market fit.

Considering that the first year's sales are zero dollars and the OPEX and CAPEX are, respectively, \$148,886 and \$27,559. That year's overall burn rate is reduced to \$176,445. The company did not turn a profit in the first year but instead made significant investments in product development. However, it is clear from the second year that the product is producing Net Profit. The product alone produced sales of over \$300K in the second year. After deducting OPEX and CAPEX, the net profit is reduced to around \$134K. The volume of sales will continue to rise during the next few years. The entire amount of sales at the conclusion of year five is around \$8.2 million. After deducting OPEX and CAPEX, the net profit is around \$7.5 million.

When we examine the profit and loss statement, we can see that the product is highly lucrative because of the consistent increase in sales as well as taking into account how little OPEX and CAPEX fluctuate.

Therefore of we consider the discounted cash flow method the figures will be

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5	Terminal Value
EBIT	\$0	\$358,375	\$1,784,175	\$4,047,500	\$8,240,500	
Operational Tax	0	0	0	0	0	
Net Operating Profit Less Adjusted Tax	\$0	\$358,375	\$1,784,175	\$4,047,500	\$8,240,500	
Investments (-)	0	0	0	0	0	
Depreciation (+)	0	0	0	0	0	
Investments in Working Capital (-)	0	0	0	0	0	
Free Cash Flow	\$0	\$358,375	\$1,784,175	\$4,047,500	\$8,240,500	\$29,965,455

Weighted Average Cost of Capital 30%						
Growth Rate 2.5%						
Discounted Period	1	2	3	4	5	
Discount Factor $1/(1+WACC\%)^{\text{Discounted Period}}$	0.77	0.59	0.46	0.35	0.27	0.27
Discounted Cash Flow	\$0	\$212,056	\$812,096	\$1,417,142	\$2,219,406	\$8,090,673
Value					\$4,660,701	
Aggregated Terminal Value						\$12,751,373

In this scenario, the table shows how well Titan Technologies' technology product is doing financially. First, we can see how much it costs to bring in a single client by looking at the Customer Acquisition Cost (CAC). If the CAC goes down over time, it suggests that the business is becoming better at bringing in new clients.

After the Unit Cost, the Average Purchase Value (APV) shows how much money buyers typically spend on a product. Due to the fact that the product is still under development, this figure is first set at zero and rises to \$19 after five years.

This metric measures how often a consumer buys the product on average. Value is modest at the outset but grows rapidly to 5.9 times by the end of the fifth year.

An estimate of how long a typical customer will keep using a product is provided by its "Average Customer Lifetime." We estimate that a consumer will be a client for a minimum of 6 months and a maximum of 10 years.

Customer LTV calculates how much money a customer is likely to spend on a product over the course of their lifetime. In only 5 years, the LTV goes from zero to \$1,125.

And finally the current valuation of this product considering the discounted cashflow method is 4.66 million USD Approx.

2.4.2 Accounting Practices:

Titian Technologies follows the accounting life cycle to monitor its finances and ensure compliance with laws and best practices. Recognition, recording, classification, summary, preparation, and interpretation are the main phases in accounting.

Titian Technologies first determines whether financial operations need documentation (this process is known as "identification of transactions"). Track company transactions like cash inflows and outflows.

Titian Technologies' general ledger records all financial transactions. "Double-entry accounting" records each transaction in two accounts to keep their books balanced.

Titian Technologies classifies transactions under CapEx, OpEx, and REV in the final process. It helps track corporate finances and make educated decisions.

Titian Technologies creates financial statements such the balance sheet, income statement, and cash flow statement in the fourth phase to summarize activities. The company's financial data is all in one location, offering decision-makers a complete view.

Titian Technologies interprets its financial statements at the third phase. Financial wellness is crucial. This research may change Titian Technologies' finances.

2.5 Operational and Information System Practices:

2.5.1 Operational Practices (Agile Ops):

Titan Technologies' operations follow AgileOps. This digital business operating model uses Agile and DevOps to enable the company change quickly.

AgileOps encourages ad hoc teams to address problems and seize opportunities. This method differs from management's encouragement of innovative ideas. AgileOps lets the IT department improve goods and processes instead of fixing software bugs.

AgileOps improves customer cooperation and communication. Agile operations development teams must communicate with stakeholders. As client needs change, iterative and incremental development makes customization easier.

AgileOps centralizes project management. Agile's iterative architecture gives developers and customers greater project control. Developers may adapt to market or client needs.

Finally, AgileOps ensures quality delivery. Daily production testing and validation may rapidly identify and address issues.

Finally, AgileOps keeps Titan Technologies running. This strategy helps teams collaborate, resolve problems quickly, and improve outputs and processes. AgileOps has helped Titan Technologies improve customer satisfaction and project management.

2.5.2 Informations Systems Practices (Jira & Ms Teams)

So first lets talk about Jira. Jira is a project management platform that Titan Technologies use for tracking their projects in order to make sure they are on track. And at any moment you can track an issue, create an agile board, and see where something is right now on a dashboard. Using Agile Operations as its main approach, Titan Technologies has completed its adoption of Jira as a key tool in this case. Agile Operations, or AgileOps, is a practice of development and operations teams working closely together. By use of Jira, this approach enables real time updates on progress and monitoring of where everyone stands as we collectively work toward the same goals.

Also, Teams allows company departments and divisions spanning software engineers, business execs, data analysts, and more to collaborate with each other more successfully. Among the many things Teams can do, it can have chat, video and voice calls, file sharing, screen sharing and much more. This instrument can help keep everyone in the loop around any changes or updates that happen. It's a great way to keep people who aren't physically together, well connected.

Both Jira and Teams have been important tools for Titan Technologies to run their business. Teams allows easy discussion leading to better collaboration, and Jira can help you keep track of your tasks and where projects are progressing. With these resources Titan Technologies is able to operate in an agile way that always creates room for the company to make one step ahead of the competition.

2.6 Industry & Company Analysis

2.6.1: Industry Analysis(Potters 5 Forces)

In Bangladesh, where Titan Technologies Limited is based, there are more than a thousand other IT firms competing for clients. The quantity of rivals and their capacity to undercut a firm is the first part of Porter's Five Forces analysis, which illustrates the fierce rivalry in the IT sector. When there is a lot of competition for a product or service, the providers of that product or service are forced to decrease their prices and improve their deals in order to stay profitable.

Titan Technologies prioritizes its international clientele, especially those in North America. The firm has found success in this area, but competition is growing as more and more clients in North America choose to outsource their job. Titan Technologies faces increasing pressure to innovate in order to keep up with the expanding competition in this market.

Secondly, supplier power is significant in the IT sector since businesses rely on suppliers for many key inputs and outputs. The supplier's bargaining position can have an effect on the cost structure and profitability of a business. Titan Technologies' financial success may be hampered if the company is forced by its suppliers to pay greater costs for components and services.

Customer bargaining power, or the capacity to set terms and prices, is the third factor. Customers in the IT sector have a lot of leverage because there is a huge number of vendors offering identical services. Titan Technologies' clients might put downward pressure on profits by demanding price reductions or more favorable payment arrangements.

The availability of replacement items or services is the fourth factor to consider. Offshore outsourcing, in-house development, and cloud-based solutions are just a few examples of the alternatives accessible in the IT sector. Due to the ease with which similar products can be found and purchased, businesses like Titan Technologies must strive to maintain and enhance their product quality in order to compete.

The fifth factor is the potential for new entrants to enter the market and pose a challenge to established players. New businesses in Bangladesh's IT sector have few obstacles when trying to break into the market and compete with industry giants. Companies like Titan Technologies are under continual pressure from new entrants to keep innovating and improving their products and services in order to preserve their competitive edge.

2.6.2 Company analysis (SWOT):

In strategic planning, the Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis can assist pinpoint areas of improvement. The following is a SWOT analysis of Titan Technologies:

Strengths:

- Heavy emphasis on catering to international, particularly North American, customers.
- Use of Agile and DevOps principles, which facilitate rapid and effective response to change.
- IT professionals with years of relevant experience.
- Powerful Jira-based project management software.

Weaknesses:

- Poor domestic market penetration.

- There is a lot of competition in the market for serving North American customers, so that niche is pretty much full.
- Limited monetary stability because of reliance on a small number of important customers.

Opportunities:

- Increased need around the world for IT services.
- Developing a presence in previously untapped regions.
- Changes to the range of services provided.

Threats:

- Competition is heating up from both domestic and foreign firms.
- The rapid pace of technological change is rendering many products obsolete.
- Demand for IT services declines when the economy slows.

2.7 Conclusion & Recommendations:

To conclude, Titan Technologies Limited is a Bangladeshi software company that serves foreign, particularly American, IT clientele. Its management is based on AgileOps, a technological company operating methodology. Agile and DevOps approaches promote teamwork and efficiency. The company prioritizes customer retention in its marketing. Financial documents are accurate and organized according to industry standards.

Titan Technologies' SWOT analysis highlights its skilled and dedicated personnel, customer service, and market position. The company faces challenges like tough rivalry and a constantly changing sector.

Porter's Five Forces analysis shows that many IT companies offer identical services, making the company's rivalry fierce. However, serving only North America distinguishes the firm. This market is underserved, giving it an edge.

Accordingly, Titan Technologies should focus on its customers. Consistent interaction may help the business predict client needs. By expanding its offerings and exploring new markets, the company should diversify its revenue. To be competitive, the company must train and promote its employees. Attracting and maintaining top talent would help it stay competitive.

Chapter 3

The challenges typically faced by small scale Bangladeshi IT companies that practice Agile Methodology, from the perspective of Titan Technologies.

3.1 Introduction

Popular Agile methods, for instance, Scrum, are widely accepted across the world for use in software development. In contrast, however, small-scale startup firms located in emerging economies such as Bangladesh face peculiar difficulties in adopting Agile methods. The limited financial resources, lack of adequate human capital, and unavailability of experienced Agile trainers tend to produce an implementation that can best be described as “fragile Agile”. These factors are compounded by the presence of rigid organizational structures and inadequate interdepartmental communication. However, it is important to resolve these issues, especially because better implementation of Agile methods can improve the quality of software developed, reduce the time taken to complete projects, and contribute to the development of Bangladesh’s technology industry (Syed, Khan, & Miah, 2021).

3.1.1 Background / Literature Review

Recent evidence from literature (2020-2025) describes several important barriers to Agile implementation in small IT companies. In Table 3.1 these barriers are summarized together with their core concepts, findings, and implications for Titan Technologies, for example, some IT firms have identified Agile method adoption as a challenge.

Table 3.1. Recent Literature on Agile Adoption Challenges in Small IT Firms (2020–2025)

Core Concept	Findings	Scholarly References	Consideration for Titan Technologies
Agile Adoption in Small IT Firms	Agile methods need to be adjusted to each unique context, failure to do so may result in “fragile Agile” practices that fail to deliver true benefits.	Wijayati et al. (2022); Hansen & Bøgh (2021); Prentice et al. (2023)	Titan Technologies must adapt Agile practices to its specific context and avoid mere ritualism.

Organizational and Cultural Factors	Success depends on leadership support, open communication, and a non-hierarchical culture; rigid structures impede genuine Agile adoption.	Wamba (2022); Bhalerao et al. (2022)	A supportive, collaborative culture is essential to facilitate a robust Agile transformation.
Resource Constraints	Limited budgets and small teams force role overlaps and shortcuts which compromises quality	Hansen & Bøgh (2021); Wamba (2022); Pillai et al. (2020)	Resource constraints require strategic role management and process optimization at Titan Technologies.
Technical Debt and Quality Issues	Rushed or partial Agile implementations may lead to technical debt when quality controls (e.g., refactoring, testing) are deferred.	Dabbous et al. (2022); Wijayati et al. (2022)	Emphasizing quality and scheduled refactoring is critical to preventing long-term technical debt.
Agile Training and Knowledge	Insufficient training and the lack of experienced coaches result in inconsistent and superficial Agile practices.	Wijayati et al. (2022); Hansen & Bøgh (2021)	Investing in comprehensive, ongoing training is vital to ensure consistent application of Agile methods.
Scalability and Process Maturity	As organizations grow, challenges such as inter-team coordination and process scalability become more pronounced, requiring adaptive frameworks.	Prentice et al. (2023); Dabbous et al. (2022)	Titan Technologies must evolve its Agile processes as it scales to maintain efficiency and cohesion.
Team Dynamics and Communication	Effective Agile practice relies on strong interpersonal communication and trust; poor dynamics can disrupt ceremonies and project outcomes.	Wijayati et al. (2022); Wamba (2022)	Enhancing communication channels and fostering trust are crucial for overcoming team-based challenges.
Customer Feedback Integration	Continuous customer feedback is essential yet challenging to secure, often due to client availability and misaligned expectations.	Pillai et al. (2020); Hansen & Bøgh (2021); Prentice et al. (2023)	Ensuring a streamlined, iterative feedback process is necessary to refine product development.

Findings of the Literature Review:

Recent research indicates that the effective adoption of Agile in small IT companies appears to depend on features that are much more than just the application of Agile ceremonies. Wijayati et al. (2022) and colleagues observed that companies that do not customize Agile to their realities and specific contexts run the danger of succumbing to ‘fragile Agile’ that pays more attention to the appearance rather than the substance. Furthermore, as presented in Hansen and Bøgh (2021), as well as Pillai et al. (2020), the lack of resources pushes companies to combine tasks, which results in the shortcuts that develop technical debt (Dabbous et al., 2022). Wamba (2022) and Bhalerao et al. (2022) highlight cultural issues such as the need for free communication and lack of supervision as important factors for successful Agile transformation. Moreover, Prentice et al. (2023) provide further explanation of the functionality that comes along with expansion and maturity of the organization’s processes which in turn renders Agile practices useful in the expansion of an organization. On the other hand, customer feedback incorporation is vital as a driver's feedback, yet external issues make it very difficult (Pillai et al., 2020). All things considered, patient tailored Agile approaches with the extensive training as well as the favorable strong organizational support aim at achieving a sustainable Agile deployment.

Conclusion of the Literature Review:

From 2020 to 2025, the literature reviewed reveals the fact that Agile methodologies grant huge gains for flexibility and improved device output. Nonetheless, these gains were not fully realized by small-scale IT companies located in emerging markets like Bangladesh due to the challenges associated with partial adoption of Agile, scarce resources, low-level communication, technical debt, lack of training, limited scalability, and poor customer feedback integration.

3.1.2 Objectives

3.1.2 Objectives

- ***Objective 1:*** *To explore the challenges of Agile methodology in small-scale IT companies in Bangladesh from the perspective of Titan Technologies.*
- ***Objective 2:*** *To identify key obstacles in Agile implementation.*
- ***Objective 3:*** *To propose solutions for improved Agile adoption.*

In alignment with these objectives, the study addresses the following research questions:

- ***RQ1:*** *What are the key challenges faced by the agile team at Titan Technologies in Agile implementation?*

- **RQ2:** *How do Agile ceremonies (stand-ups, retrospectives, backlog grooming) affect project outcomes and software quality?*
- **RQ3:** *What factors hinder the consistent adoption of Agile principles in small IT firms? (titan technologies)*
- **RQ4:** *How dose Titan Technologies agile team perceive Agile's impact on project delivery and team dynamics?*
- **RQ5:** *What strategies can enhance Agile adoption and effectiveness in Titan Technologies?*

3.1.3 Significance

This research is specifically important for the new technology industry of Bangladesh. With the growth of the software industry, its Agile adoption becomes strategically important for startups to stay relevant. This research examines the problem areas faced at Titan Technologies with the aim of providing practical solutions that can ease resource bottlenecks, enhance internal operations, and consequently improve the overall software quality and project delivery. The results of this study have local practical implications, but they also add to the existing literature on Agile practices in the underdeveloped context (Syed, Khan, & Miah, 2021).

3.2 Methodology

Research Design:

The design of this study is qualitative, exploratory research. The complexities surrounding the use of Agile in small-to-medium IT businesses require a more nuanced approach to be able to have adequate understanding from the respondents' perspectives and experiences.

Data Collection:

Data was obtained via semi-structured interviews with five employees holding essential positions in Titan Technologies (Business Analyst, Scrum Master, Junior Engineer, QA Engineer, Project Manager). These interviews were guided conversations which allowed the respondents to freely express their thoughts as well as attempt to capture their basic sentiments around the questions. The participants were informed beforehand that the interviews would be recorded with their approval, and each took about 30 minutes to conduct. The semi-structured interviews enabled discussion on all relevant issues while allowing for free discussion.

Sampling Strategy:

Participants who were directly engaged in the Agile projects were purposively chosen as a sample because it was important to obtain information from those who had an understanding of Agile and its implementation issues.

Data Analysis:

Thematic analysis was performed on the interviews which were transcribed verbatim. Coding and the analysis of the recurring themes, in this case, resource issues, communication problems, technical debt, and training deficits, were done thoroughly, with the assistance of NVivo software. As with all qualitative research, this inductive analysis enabled the findings to be derived from the data while still considering the literature review.

Interview Questions:

The following seven questions guided the semi-structured interviews. These questions are presented verbatim as in the original design:

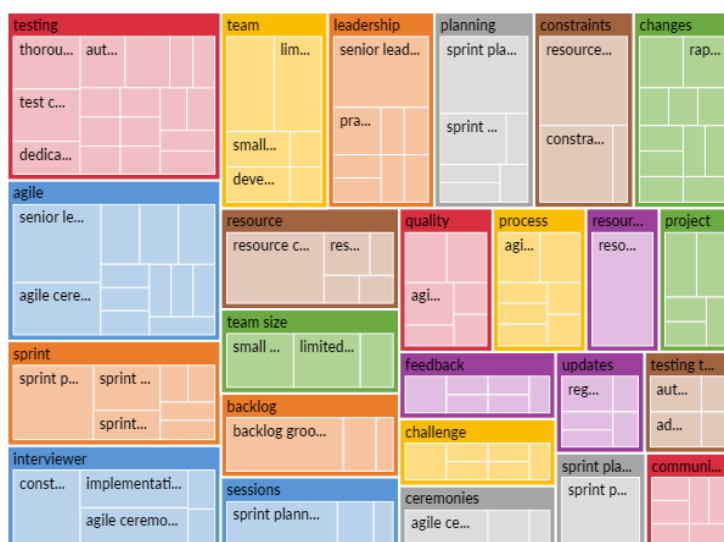
1. **Can you describe the biggest challenges you face in Agile implementation?**
2. **How do resource constraints affect Agile adoption in your company?**
3. **What role does senior leadership play in supporting Agile methodologies, and where do you see gaps?**
4. **How often are Agile ceremonies (stand-ups, retrospectives, backlog grooming) practiced in your company, and how effective do you find them?**
5. **How do Agile processes impact software quality and project success in your experience?**
6. **What factors contribute to inconsistencies in Agile implementation at your company?**
7. **What improvements or additional support would help enhance Agile adoption in small-scale IT firms?**

3.3 Findings and Analysis

This part integrates the most salient themes resulting from the analysis of Titan Technologies' Agile practices. The research relying on five interviews exposed such challenges as resource limitations, Agile ceremonies not being held on a regular basis, lack of involvement by leaders, constant changes to the project scope, gaps in communication, and the ever-present struggle between speed and quality assurance. Figures 1, 2, and 3 illustrate a Word Cloud, Word Tree Map Sentiment Analysis, and show what the prominent themes such as "Agile," "testing," "resources," and "leadership" are all blended together. The node-wise memo table (Table 1) further details each theme with frequency data and a key quotation from the transcripts.

3.3.1 Visual Overview

signify large discussion points while small blocks such as “updates”, “session” talk about narrow areas of discussion. From clustering themes (“team,” “testing,” and “resource constraints”), it is also evident there was combining problems with staffing, time, and QA.



3.3.2 Node-Wise Memo Table

The following table summarizes the eight key themes (nodes) identified in our analysis, their frequency counts, and a brief memo that includes a representative quotation for each.

Theme	Frequency	Memo Summary & Representative Quote
Resource Constraints	15	Limited resources are a major barrier. Participants note that multitasking and outdated tools hinder productivity. <i>Key Quote:</i> “I often have to manage coding and bug fixes at the same time because our team is so small.” (Nafiz)
Agile Ceremonies	13	While Agile ceremonies (stand-ups, sprint planning, retrospectives, backlog grooming) are held regularly, they often lack depth and consistency. <i>Key Quote:</i> “Stand-ups are

effective for quick updates, but deeper issues remain unresolved.” (Syed)

Leadership Support 10

Leadership supports Agile in theory but is rarely present during critical sessions, leaving teams to address issues on their own. *Key Quote*: “Leadership is aware of our struggles, but they usually say ‘fix it quickly’ without offering hands-on help.” (Farh)

Scope/Requirement Changes 14

Frequent mid-sprint changes force rework and disrupt established plans. *Key Quote*: “When new requirements are added mid-sprint, our testing schedule is thrown off and we have to redo many test cases.” (Ishmam)

Communication 12

Communication gaps, especially regarding requirement changes, create misalignment between teams. *Key Quote*: “Changes in requirements are not always communicated immediately, leading to misalignment between devs and QA.” (Dilruba)

Testing & Quality 18

Testing issues are the most frequent concern, with rushed cycles leading to bugs post-release. *Key Quote*: “When testing is rushed, bugs slip through and have to be fixed post-release.” (Farh)

Time Pressure 9

Tight sprint cycles create significant pressure, often at the expense of detailed work and quality assurance. *Key Quote*: “We only have two weeks, so if something changes, we lose a big chunk of our time adjusting everything else.” (Nafiz)

Quality vs. Speed 11

There is a constant trade-off between rapid delivery and maintaining high quality. *Key Quote:* “We try to release MVPs quickly, but sometimes the rush means we miss critical bugs, leading to additional fixes after deployment.” (Ishmam)

3.3.3 Detailed Thematic Analysis

3.3.3.1. Resource Constraints

Limited resources were consistently identified as the most important challenge. The small team size makes employees have to tackle many roles, not specializing for example in thorough testing or detailed coding. Nafiz said that “coding and bug fixes are often at the same time because we have only so many people on the team.” Others agree with this sentiment, they point out that having more staffing or better tools would go a long way in relieving the operational burden.

3.3.3.2. Agile Ceremonies

While Agile ceremonies are a regular part of Titan Technologies, there are a few iterations as to their execution. The daily stand-ups may be quick updates, but they do not facilitate a lot of deep problem solving. Syed also said that stand-ups are good for fast updates, but deeper issues still remains unsolved. Sprint planning and backlog grooming may lead actually to ambiguous task definitions and then rework in the middle of the sprint. This theme is evidenced by the 13 references where their need for further structured and consistent ceremonies has clear follow up actions.

3.3.3.3. Leadership Support

Despite the fact that senior leadership pushes for Agile at a strategic level, they are not actually involved at the operations level. These leaders are aware of our challenges, but mostly say ‘quickly fix it’ without putting your hands on,” Farh said. Since this is a limited engagement there is no time to address the critical issues especially when there is a change in scope or a shortage of resources. The 10 references provide suggestions that active leadership participation, such as sprint review attendance, might close the distance between strategy and execution.

3.3.3.4. Scope/Requirement Changes

Agile process is disrupted by frequent and unplanned changes in project requirements. Ishmam said, “Whenever mid sprints, new requirements are added and all of a sudden testing schedule is out of whack and we have to do a lot of test cases again.” Mid range sprint changes thus require teams to keep changing their work every other time causing confusion and delays. This theme has 14 references around cutting disruptions, indicating that better change management and clearer initial planning is needed to minimize interruptions.

3.3.3.5. Communication

Effective communication is key, but still, there are gaps especially around rapid changes. While not all the changes in requirement is communicated immediately, there may also be misalignment between dev and QA, Dilruba said. Delay and inconsistencies in both the development and testing processes are caused by these communication lapses. The 12 references in this theme emphasize that the communication protocol might not be adjusted much in order to coordinate work in parallel between the departments.

3.3.3.6. Testing & Quality

The most critical theme that originated from testing and maintaining software quality with 18 references. While participants talked about the benefits from Agile’s iterative testing, some of them remarked that compressed sprint cycles tend to involve rushed testing. “I explained: when testing slips, that means bugs will go through and have to be fixed after the release.” said Farh. The repeated occurrence of this issue indicates that the time it takes to test and the creation of the product can be balanced to improve overall product quality by investing in such areas as automation.

3.3.3.7. Time Pressure

Short, two week sprints was also a common worry; it forced the teams to focus more on speed over thoroughness. “This leaves us with only two weeks. If something changes, we lose a big chunk of time to catch up,” Nafiz stated. The 9 out of 10 references in this article show that time pressure does not only stress the team but diminishes the depth of testing and planning which may affect some quality.

3.3.3.8. Quality vs. Speed

There is always a tension between needing fast delivery and wanting high quality outputs. Ishmam says: “We try to do MVPs quickly and sometimes we race and forget bugs, causing additional fixes once we go live.” This trade off is captured by the 11 references in this theme, and the importance of making realistic sprint planning and being more balanced in our approach to be successful with Agile in the medium term.

3.4 Summary and Conclusions

The comprehensive analysis of interview transcripts at Titan Technologies reveals that while the company has embraced Agile methodologies, significant challenges remain. Limited resources, inconsistent execution of Agile ceremonies, minimal leadership engagement, frequent scope changes, and communication gaps all contribute to a tension between speed and quality. The visual representations—a Word Cloud and a Word Tree Map—further confirm that these issues are central to participants' experiences.

Key findings include:

- **Resource Constraints:** Multitasking due to limited staff and outdated tools hampers productivity.
- **Agile Ceremonies:** Regular but inconsistently executed, reducing their potential to resolve deep-seated issues.
- **Leadership Support:** Strategic support is evident, yet practical, day-to-day guidance is lacking.
- **Scope/Requirement Changes:** Frequent mid-sprint alterations disrupt workflows and lead to rework.
- **Communication Gaps:** Inadequate, timely communication between departments creates misalignment.
- **Testing & Quality:** Rushed testing due to time pressure results in post-release bugs.
- **Time Pressure & Quality vs. Speed:** The compressed sprint cycle forces a trade-off between rapid delivery and thorough quality assurance.

Overall, the findings suggest that Titan Technologies can improve its Agile processes by investing in resources, enhancing leadership involvement, standardizing Agile ceremonies, formalizing communication protocols, and balancing the need for speed with robust testing.

3.5 Recommendations and Implications

Based on our analysis, here are several strategic recommendations that would foster the adoption of Agile at Titan Technologies. These recommendations are intended to address the primary difficulties: scarce resources, ensemble ceremonies, dissociated Agile, scope changes that occur frequently, and communication flaws in order to facilitate the organization in balancing quick development with good results.

Invest in Additional Resources

- **Increase Staffing to Reduce Role Overlap:**

It was seen that interviewees work in teams that often multitask in different priorities, which means diluted focus and less efficiency. Based on Titan Technologies current workload distribution, Titan Technologies is advised to reassess its current staffing levels and may want to hire more personnel, most notably in critical positions like QA as well as specialized development roles. The organization can increase staffing levels for each team member to ensure that they address their principal area of specialization and as a result, this decreases the number of errors and increases its work productivity.

- **Upgrade Tools for Automation and Project Management:**

According to a few participants, the use of old tools, such as testing and project tracking, was what was lacking. A significant way to achieve this, especially when necessary, is to invest in some modern, automated testing frameworks and some very good project management software. The replacement of the current technology with these upgrades would result in the reduction of manual workload, as well as producing a more accurate and reliable testing outcomes, and a more accurate and real time progress tracking of the project.

Enhance Agile Ceremony Effectiveness

- **Allocate Sufficient Time for Key Ceremonies:**

All Agile ceremonies like daily stand up, the sprint planning and backlog grooming are performed but the real efficacy of them is curtailed by time being a constraint. Titan Technologies should reconsider the length and layout of these meetings. Just as an example, you can extend the time allotted for sprint planning and backlog grooming sessions so that discussions are more thorough or task breakdowns are clearer, and hence you will have less mid sprint confusion.

- **Implement a Robust Tracking System for Retrospectives:**

Action items from retrospectives are rarely used. Tracking retrospective outcomes should be a form, so it should also become a part of a formalized system adopted by the organization, this could include assigning people for each item, deadlines, and review in the follow sprints. Such a system will allow feedback to get translated into actual process improvements and also ensure that lessons learned are implemented successfully in the future sprints.

Improve Leadership Engagement

- **Encourage Active Participation in Agile Ceremonies:**

Senior leadership support Agile principles at a high level, but their hands on does not go

far. The gap should be bridged by enticing leaders to be more actively involved in important Agile ceremonies including sprint reviews and retrospectives. They can offer immediate feedback, resolve issue with resource, and their purpose is to align strategic goal with day to day operation.

- **Establish Regular Feedback Sessions Between Leadership and Teams:**
Structured feedback loops between those who lead the Agile teams and those who are leading the leaders can help identify potential problems before they are big and solve the problems right away. With such sessions, leaders would not only be able to improve their decision making but stimulate team morale too. The integration of such sessions to the project calendar would ensure their active follow up.

Strengthen Change Management

- **Develop Clear Protocols for Mid-Sprint Changes:**
Most frequent of the disruptors are mid sprints requirement changes. It's time that Titan Technologies created a fixed plan for managing these changes. This could involve something as formal as a process to test out how changes will affect things before they are acted on, and whether or not changes are communicated to all of the relevant teams. The organization can limit disruptions in workflow and a more consistent sprint outcome by creating guidelines on how to deal with unexpected improvisation.
- **Enhance Communication of Change:**
Clear and timely communication regarding scope changes is essential. Implementing a structured method for disseminating changes—such as a dedicated change log or update bulletin during each sprint—will ensure that all team members are informed. This will reduce ambiguity, prevent rework, and help teams adjust their priorities more effectively.

Formalize Communication Channels

- **Introduce Structured Communication Methods:**
Although informal channels (e.g., quick stand-up updates) facilitate daily check-ins, they often fail to capture complex, critical updates. Titan Technologies should consider establishing formal communication protocols, such as regular inter-departmental briefings or scheduled update sessions. These meetings can serve as forums for discussing significant changes, sharing detailed feedback, and aligning expectations across teams. A structured approach will ensure that important information is communicated comprehensively and consistently.
- **Standardize Documentation Practices:**
Standardized documentation for user stories, sprint goals, and change requests can

significantly reduce miscommunication. Establishing templates and guidelines will help ensure that all teams document and share information uniformly. This consistency will aid in clarity and facilitate smoother transitions when changes occur.

Balance Quality and Speed

- **Reassess Sprint Durations and Build in Buffer Time:**

The current two-week sprint cycle is often too compressed to allow for both rapid development and thorough testing. It may be beneficial to reassess the sprint length or incorporate buffer periods within each sprint. These buffers can provide the time necessary to address unforeseen issues without compromising the quality of work.

- **Invest in Automated Testing Frameworks:**

Automated testing can bridge the gap between rapid iteration and comprehensive quality assurance. By integrating automated testing into the workflow, the team can perform more efficient regression checks and reduce the risk of post-release bugs. This will help maintain the integrity of the product while keeping pace with Agile's iterative nature.

3.6 Conclusion

The implementation of Agile methodologies at Titan Technologies encounters ongoing practical obstacles which prevent the organization from achieving maximum benefits from its Agile methodologies. Multiple issues that affect Agile implementation relate to resource shortages and inconsistent delivery of Agile ceremonies as well as lack of leadership support and numerous scope variations and ineffective communication practices. Organizational tension persists because urgent deadlines oppose the essential requirement for maintaining output excellence.

The data, supported by visual insights from a Word Cloud and Word Tree Map, and summarized in the node-wise memo table, indicate that testing and quality assurance are particularly vulnerable under current conditions. Participants continuously observed that tight sprint deadlines make the team reduce testing efforts thus causing post-release maintenance work and bug repair. Time limitations as well as insufficient follow-ups hamper the effectiveness of Agile ceremonies despite their implementation. Leadership provides strategic backing to the organization yet does not supply adequate operational direction for regular practice.

Resolving these problems requires an integrated strategic method that includes funding resources and tools along with workforce education alongside improved communication systems and leadership participation and change implementation processes. The implementation of the recommendations will enable Titan Technologies to achieve maximum efficiency in their Agile processes which subsequently ensures better software quality and stronger market position in Bangladesh's technological market.

This report provides a detailed set of improvements intended to help Titan Technologies manage the tradeoff between speed and quality which would produce better project success and sustainable Agile practice adoption.

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