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Assessment of Agile Project Management System on Project Success: A case study of
Heineken Ethiopia

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Declaration

I, Hosanna Temesgen, declare that this final project work entitled “Assessment of Agile Project Management System on Project Success: A case study of Heineken Ethiopia” represents my work with the guidance of my advisor and it has not been previously included in any project work, dissertation or report submitted to any university for a degree, diploma, or other qualification. It is conducted for the partial fulfillment of the requirement for the Degree of Master of Arts in Project Management and submitted to the School of Graduate Studies of AAU, School of Commerce.

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Certifications

This is to certify that this final project work prepared by Hosanna Temesgen entitled “Assessment of Agile Project Management System on Project Success: A case study of Heineken Ethiopia” submitted in partial fulfillment of the requirement for the Degree of Master of Arts in Project Management complies with the regulations of the university and meets the accepted standards concerning originality and quality.

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Abstract

Agile project management (APM) has gained widespread adoption, but its effectiveness in large organizations remains debated. This study investigated the role of specific APM practices on project success at Heineken Ethiopia, a leading beverage company. Data was collected through a census of 30 project team members and interviews with five individuals representing diverse roles within Agile projects. The findings revealed that while Heineken Ethiopia has made progress in adopting Agile, particularly in well-defined project planning, effective resource allocation, and fostering strong team dynamics, there's room for improvement in risk management and monitoring and control practices. Interviews highlighted the importance of collaborative teams, adaptable risk management strategies, and a culture that values continuous improvement. The integration of Agile with Lean Six Sigma approaches was also positively perceived, suggesting potential for enhancing efficiency and waste reduction. The study concluded that while Heineken Ethiopia has demonstrated progress, prioritizing a robust risk management framework, strengthening monitoring and control systems, and further investing in team development will be crucial for optimizing Agile implementation and achieving greater project success. The research provides actionable recommendations, including targeted risk management training, enhanced monitoring systems, and ongoing team development initiatives, offering valuable insights for both Heineken Ethiopia and other organizations considering Agile adoption.

Key Words: Agile Project Management, Lean six sigma, Team dynamics, Beverage Company

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List of Acronyms

PRINCE2: Project in Controlled Environments 2, a structured project management methodology widely used in various industries.

IT: Information Technology.

APM: Agile project management

TPM: Traditional project management

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CHAPTER ONE

1.1. Introduction

The modern business landscape is characterized by rapid change and increasing competition. This necessitates a shift towards project management methodologies that can adapt to evolving requirements and deliver value quickly. Agile project management (APM) has emerged as a prominent approach, emphasizing iterative development, continuous feedback, and cross functional collaboration. However, the effectiveness of APM in different organizational contexts remains a topic of ongoing research.

This project work investigates the role of APM on project success in the case of Heineken, a leading global brewer that also operates here in Ethiopia. Heineken operates in a dynamic and competitive industry, where innovation and responsiveness to market trends are crucial. By implementing APM, Heineken aims to enhance project efficiency, increase customer satisfaction, and achieve a competitive advantage.

This research outlines an analysis that evaluates the role of APM on project success at Heineken. The analysis considers various success factors, including project scope and planning, monitoring and control, risk management and others.

The following sections of this will delve deeper into the research methodology, outlining the data collection techniques, analysis framework, and expected outcomes.

1.2. Background of the Study

Agile methodologies, with their emphasis on collaboration, communication within teams, and engagement with stakeholders, including top management, are instrumental in aligning project objectives, identifying potential risks, and resolving issues promptly.

Agile Project Management emerged as a response to the limitations of traditional, plan-driven project management approaches, which were often criticized for their rigidity, excessive documentation, and inability to adapt to changing requirements (Nerur et al., 2005). The Agile

Manifesto, published in 2001, outlined the core values and principles of the Agile methodology, which include: Individuals and interactions over processes and tools, Working software over comprehensive documentation, Customer collaboration over contract negotiation and Responding to change over following a plan.

The agile management approach in terms of project development process remains rather a novel practice for most of the organizations of today to adapt and practice. Regardless, recent studies have indicated that organizations around the globe considering their long terms benefits are adapting the agile management practices more, in comparison to the traditionally followed waterfall management practices; especially in the IT sector. Research so far has highlighted the relevance of the agile management practices as well as has justified its constructive impact on the performance of an organization. In specific to the management trends being followed, a recent global report of PMI comprising opinion of 727 executive members deployed on 3,234 projects across Europe, Asia Pacific, North America, Latin American, Middle East, Africa, and Caribbean Regions, proposed the implementation of agile management practices as a potential reason to trigger organizational productivity. Therefore, signifying the role of agile management practices upon the performance of the firms. Moreover, another recent study conducted by Ambysoft indicated agile management practices to deliver a success rate of 55% in comparison to the waterfall management practices with a success rate of 29% only. (Dybå & Dingsøyr, 2008; Serrador & Pinto, 2015)

The report further indicated that 36% of the projects completed under the agile management practices remained challenged and required limited fulfillment of constraints to accomplish the projects. In contrast, the waterfall management practices were credited 67% of the challenged projects. The study also revealed the agile management practices to be attributed with only a mere 3% of project failure rate. Thus, justifying the constructive role of agile management practices in terms of enhanced performance measures. Regardless, the precise study indicating the role of implementing agile management practices upon the project performance while considering all of its related aspects is yet to be explored. Considering the potential research gap, the current study took into account of all relevant aspects of project performance including ‘time’, ‘finances’, ‘magnitude of efforts’, ‘work environment moral’, ‘fulfillment of quality criterions’ as well as the

‘satisfaction of regarding stakeholders’ and further observed the variation, in terms of the implementation of the agile management practices.

Agile methodologies, such as Scrum, Kanban, and Extreme Programming, have been widely adopted across various industries, including software development, IT, and project management. Studies have shown that Agile approaches can lead to improvements in team productivity, software quality, and customer satisfaction (Dybå & Dingsøyr, 2008; Serrador & Pinto, 2015).

However, the adoption of Agile Project Management is not without its challenges. Transitioning from traditional to Agile methods can be complex, requiring significant changes in organizational culture, processes, and mindsets (Nerur et al., 2005). Additionally, Agile approaches may not be suitable for all types of projects, and organizations need to carefully evaluate their suitability based on their specific needs and constraints.

Agile project management is a methodology that focuses on breaking the larger project lifecycle into more approachable portions of time and smaller tasks. Rather than delivering project deliverables and products at the conclusion of a project, Agile project management prioritizes the delivery of a working product throughout the process, allowing the project team and stakeholders to work closely together during the course of the project execution while providing feedback—not just during the project post-mortem.

Compared to other more traditional methods of project management, Agile project management is less rigid, which gives teams the ability to pivot in new directions as needed and adapt to changing circumstances or project needs. (Nerur et al., 2005)

1.3. Background of Heineken Ethiopia

Heineken is a Dutch multinational brewing company, founded in 1864 by Gerard Adriaan Heineken in Amsterdam. As of 2019, Heineken owns over 165 breweries in more than 70 countries. It produces 348 international, regional, local and speciality beers and ciders and employs approximately 85,000 people. (HEINEKENCorp, 2015)

With an annual beer production of 24.14 billion litres in 2019, and global revenues of 23.894 billion euro in 2019] Heineken is the number one brewer in Europe and one of the largest brewers by volume in the world Heineken's Dutch breweries are located in Zoeterwoude, 's-Hertogenbosch and Wjlrre. The original brewery in Amsterdam, closed in 1988, is preserved as a museum called Heineken Experience. Since the merger between the two largest brewing empires in the world, Anheuser-Busch InBev and SABMiller, in October 2016, Heineken has been the second-largest brewer in the world. (@HEINEKENCorp, 2015)

Heineken, a global brewing giant, operates in a competitive and ever-evolving market. Embracing innovation and adapting to changing consumer preferences is crucial for their success. Agile methodologies, with their focus on flexibility and responsiveness, could potentially offer Heineken significant advantages. (@HEINEKENCorp, 2015)

Heineken Ethiopia was born in Ethiopia in 2011 with the acquisition of Harar and Bedele breweries. In 2015, Heineken Ethiopia inaugurated Ethiopia's biggest brewery at a greenfield site in Kilinto on the outskirts of Addis Ababa with an investment of EUR310mln

1.4. Statement of the Problem

While Agile project management (APM) methodologies have gained widespread adoption, their impact on project success, particularly within large, established organizations like Heineken, remains a subject of debate. Traditional research often shows positive correlations, but the effectiveness of Agile can depend on various factors. (*Agile Alliance*)

The core problem lies in the limited understanding of how Agile methodologies specifically influence project success at Heineken. There is a lack of in-depth research exploring the interplay between Agile practices, project characteristics, and Heineken's unique organizational context. This knowledge gap hinders Heineken's ability to optimize its use of Agile and maximize project success. (*Agile Alliance*)

Furthermore, existing research often focuses solely on successful Agile implementations. By neglecting to examine less successful projects, we miss valuable insights into the potential pitfalls and challenges associated with Agile adoption within a large organization like Heineken.

The successful implementation of agile project management practices has become increasingly important for organizations to achieve project success in today's dynamic and rapidly changing business environment. Agile methodologies, with their emphasis on iterative development, continuous feedback, and adaptability, have the potential to enhance project performance across various dimensions, such as scope, time, cost, and quality. (*Agile Project Management: A Practitioner's Guide* by Robert K. Wysocki)

However, the specific role and contribution of agile project management practices in driving project success is not well understood, especially in the context of Heineken Ethiopia. While the benefits of agile approaches have been widely documented in the literature, the alignment between the implementation of agile practices and the realization of project success factors within the Heineken Ethiopia context remains a gap that needs to be addressed. (*Agile Project Management: A Practitioner's Guide* by Robert K. Wysocki)

This research aims to investigate the complex relationship between the adoption of agile project management practices and the achievement of project success at Heineken Ethiopia. By examining the influence of key agile practices, such as project planning and scope, resource allocation and team dynamics, risk management, and monitoring and control, the study seeks to provide a comprehensive understanding of how the agile project management system can contribute to project success in this specific organizational setting.

Additionally, the research has explored the role of integrating agile and Lean Six Sigma approaches, which have been proposed as a complementary approach to enhance project management effectiveness and efficiency. The study will assess the synergies and challenges in combining these methodologies to deliver superior project outcomes at Heineken Ethiopia.

By addressing this problem, the research contributes to the existing body of knowledge on agile project management and its role in driving project success, with valuable insights for both academic and practitioner communities in the context of Heineken Ethiopia

1.5. Research Questions

To evaluate the role of Agile project management system on project success, this study has addressed the following research questions:

1. Do agile project management practices, such as project planning and scope, resource allocation and team dynamics, risk management, and monitoring and control, influence project success at Heineken Ethiopia?
2. Do the specific agile practices, including the integration of Lean Six Sigma tools and techniques, contribute to the overall effectiveness and efficiency of project management at Heineken Ethiopia?
3. What are the key challenges and enablers in implementing agile project management practices to achieve project success at Heineken Ethiopia?

1.6. Research Objectives

1.6.1. General Objective

The general objective of this study is to assess the role of Agile project management practices on project success within Heineken Ethiopia, examining the influence of specific Agile elements, the effectiveness of integrating Agile with Lean Six Sigma, and identifying key enablers and challenges in implementing Agile practices within this specific organizational context.

1.6.2. Specific Objectives

To achieve the general objective, the following specific objectives have been pursued:

1. To examine if agile project management practices, including project planning and scope, resource allocation and team dynamics, risk management, and monitoring and control, on project success at Heineken Ethiopia.
2. To assess the role of integrating agile and Lean Six Sigma approaches on project management efficiency and effectiveness at Heineken Ethiopia.
3. To identify the critical factors that enable or hinder the successful implementation of agile project management practices for project success at Heineken Ethiopia.

1.7. Significance of the Study

By assessing the role of Agile on Heineken's project success, this research has the potential to provide valuable insights for both the company itself and the broader project management field.

This research holds significant value from empirical, conceptual, and insightful perspectives as follows:

Bridging the Knowledge Gap: This study aims to address the limited understanding of how Agile methodologies specifically influence project success at large, established organizations like Heineken. By conducting an analysis of successful and less successful projects, the research will provide empirical evidence to inform future Agile adoption strategies within Heineken.

Informs Best Practices: The findings will contribute to the development of best practices for implementing Agile methodologies in organizations with similar characteristics to Heineken.

This includes identifying the most effective Agile approaches for different project types and highlighting key factors influencing successful Agile adoption.

Refines Existing Knowledge: The study will contribute to the broader body of knowledge on Agile project management by providing a real-world case study from a major corporation. By

analyzing both successful and unsuccessful implementations, the research can refine existing understanding of Agile's strengths and weaknesses in specific contexts.

Expands Theoretical Frameworks: This research will contribute to the ongoing discourse surrounding the factors influencing project success in Agile environments. It will explore the interplay between project characteristics, Agile methodology choice, implementation and organizational context. This can potentially lead to the expansion of existing theoretical frameworks on Agile project management.

Identifies Contingency Factors: The study will identify contingency factors that moderate the relationship between Agile methodologies and project success. These contingent factors, such as project type and organizational culture, can inform the development of more nuanced theoretical models for understanding Agile effectiveness.

Actionable Recommendations: This research will provide actionable recommendations for Heineken to optimize its use of Agile methodologies. This includes recommendations on methodology selection, implementation strategies, and organizational changes that could facilitate successful Agile adoption.

Improved Decision-Making: The insights gained from this study can empower Heineken to make informed decisions regarding project management approaches and resource allocation.

Invaluable Learning: The findings will offer valuable learning opportunities for other large organizations contemplating Agile adoption for their business. Understanding the challenges and opportunities experienced by Heineken can help them navigate their own Agile journey.

1.8. Scope of the Study

This project work research focused on evaluating the role of Agile project management methodologies on project success at Heineken. The scope encompassed two main aspects: Analysis and Context-Specific Evaluation. Firstly, an analysis was conducted to understand how Agile methodologies influence project success.

Secondly, the research has delved into the specific case of Heineken, employing a mixed-methods approach that combines quantitative data analysis of project metrics and qualitative interviews with project team members and stakeholders. By focusing on Heineken's project experience with Agile methodologies, the research aims to provide insights into the effectiveness of Agile practices within the beverage industry context. This research is limited to a single case study, and the findings may not be generalizable to all industries. However, it will contribute valuable knowledge to the understanding of Agile project management in a specific industry setting and inform future research directions. The study will compare the effectiveness of these methodologies within the context of Heineken's project landscape.

The scope of this research is limited to projects undertaken by Heineken Ethiopia.

1.9. Organization of the Study

This study is organized into several chapters, including an introduction, literature review, research methodology, data analysis, results, discussion, conclusions, and recommendations.

Each chapter will contribute to fulfilling the research objectives outlined in this concept note.

1.10. Limitations of the Study

This study was limited in its scope due to the use of a single case study and a census sampling design. The findings, therefore, might not be generalizable to other organizations. The potential for social desirability bias in responses is also acknowledged. Future research with a larger sample size, diverse case studies, and longitudinal data collection could help to address these limitations and provide a more comprehensive understanding of Agile implementation in different organizational contexts.

1.11. Definition of Key Terms

Agile Project Management:

Agile project management is an iterative approach to delivering a project throughout its life cycle. Agile project management focuses on continuous improvements, scope flexibility, team input, and

delivering essential quality products." (Source: Project Management Institute, "Agile Practice Guide", 2017) Agile methods, such as Scrum and Kanban, emphasize rapid, incremental delivery of working software, close collaboration with customers, and the ability to respond quickly to change. The agile approach contrasts with more traditional, plan-driven project management methodologies.

Project Success:

Project success is the completion of a project that meets or exceeds the stakeholders' needs and expectations." (Source: Project Management Institute, "A Guide to the Project Management Body of Knowledge (PMBOK® Guide)", 6th edition, 2017) Project success is typically evaluated based on criteria such as meeting the project's scope, schedule, and budget goals, as well as delivering the expected business value and customer satisfaction. Factors that contribute to project success include effective project planning and management, strong stakeholder engagement, risk mitigation, and continuous monitoring and control.

PRINCE2 (Projects in Controlled Environments):

PRINCE2 is a structured project management method that provides an easily tailored and scalable management framework for the successful delivery of projects." (Source: AXELOS, "PRINCE2 6th Edition", 2017) PRINCE2 is a process-based approach that provides a common language and set of processes for managing projects. It emphasizes the business case, defined roles and responsibilities, and a step-by-step process for managing a project from start to finish. PRINCE2 is widely used in the public and private sectors, particularly in the UK and Europe.

Kanban:

Kanban is a visual workflow management system that aims to help teams work together more effectively." (Source: David J. Anderson and Andy Carmichael, "Essential Kanban Condensed", 2019) Kanban uses a Kanban board to visualize the workflow, with columns representing different stages of the process and cards or sticky notes representing work items. Kanban emphasizes

continuous improvement, just-in-time delivery, and the elimination of waste. It helps teams manage and improve the flow of work by limiting work in progress and identifying bottlenecks.

Scrum:

"Scrum is a framework within which people can address complex adaptive problems, while productively and creatively delivering products of the highest possible value." (Source: Ken Schwaber and Jeff Sutherland, "The Scrum Guide", 2020) Scrum is an agile framework that uses a set of roles, events, and artifacts to guide teams in delivering products iteratively and incrementally. Key elements of Scrum include the sprint (a time-boxed iteration), the Scrum team (consisting of a Product Owner, Scrum Master, and Development Team), and various meetings and artifacts like the product backlog, sprint backlog, and sprint review. Scrum emphasizes self-organization, cross-functional collaboration, and a focus on delivering working software.

CHAPTER TWO

2. Literature Review

2.1. Introduction

Project management has evolved significantly over the past few decades, with the emergence of agile methodologies as a prominent approach to managing complex and dynamic projects. Agile project management emphasizes adaptability, collaboration, and rapid delivery of value, in contrast to the more rigid, plan-driven approaches that have traditionally dominated the field. As organizations seek to enhance their project performance and respond to the increasing pace of change, the role of agile project management in driving project success has become a topic of growing interest among both academics and practitioners.

This literature review aims to synthesize the existing research on the relationship between agile project management practices and project success. It begins by examining the theoretical foundations of agile project management, outlining its core principles and practices, and comparing it to traditional project management approaches. The review then delves into the empirical evidence on the influence of agile practices on various dimensions of project success.

2.2. Theoretical Literature Review

Introduction to Project Management

During the forties of the last century, project managers transfer the tasks to other employees, so that managers are exempted from all responsibilities related to the project. The main problem with this management approach is that the end user has no single point where he can be informed and ask specific questions. So filtering out certain information took a lot of time for the user and project developers, especially for larger and more complex projects. (Bergmann & Karwowski, 2019)

The adoption of agile project management is driven by a number of factors. Organizations with capital projects readily recognize the financial costs and time gaps that can lead to project standstills. Customers, meanwhile, expect high-quality solutions delivered within acceptable cost parameters. Furthermore, competitiveness acts as a driving force, pushing companies to adopt agile methodologies to stay ahead. This is particularly true for companies with rigid, traditional structures where management must adapt to a new way of working. The development of new products, especially in companies that invest heavily in research and development, also necessitates agile practices. Ultimately, efficiency, a driving force often linked to the other factors, is essential for survival in today's dynamic market. (Bergmann & Karwowski, 2019)

Project management is performed through a series of processes, which are presented as separate elements with defined interconnections. Project management defines five most widely used groups, Initiation, Planning, Realization, Monitoring and Control and Closing. An analysis of the processes, of their subprocesses and of their interdependence is needed to successfully realize the purpose of the project. Of special interest is the project scope management and the means to define the WBS diagram (Work Breakdown Structure Diagram). (Bergmann & Karwowski, 2019)

Successful project management depends on the chosen methodology of project management, which describes the way to explore things. The following methodologies have been considered: Project management – (basic principles of planning, deployment and work control); Quality Management – (a process which should ensure that the end result meets the expectations of consumers in terms of quality); Parallel realization – (process of parallel execution of works for the purpose of realization of activities in the short term, without inclusion of additional risks); Change management – process of control of the end result in order to provide additional value for the user; Risk management – process of identification, assessment and response to possible project risks, without affecting the purpose of the project. Reviewed and analyzed are the characteristics of each methodology and chosen is the best methodology. (Bergmann & Karwowski, 2019)

Characteristics of a good methodology (based on the integration of processes) are: optimal level of detail, standardized technique of planning, easy understanding and monitoring by the user, deployment and control of costs, possible use in all projects, opportunity for advancement, acceptability by the whole company, and using standardized phases of the life cycle of the project,

based on good work ethics. (Project Management: A Systems Approach to Planning, Scheduling, and Controlling, Harold Kerzner,2017)

According to Kerzner, the projects do not manage the methodologies, but what one methodology makes it a more successful one is the organizational culture, which creates confidence in the methodology. (Project Management: A Systems Approach to Planning, Scheduling, and Controlling, Harold Kerzner,2017)

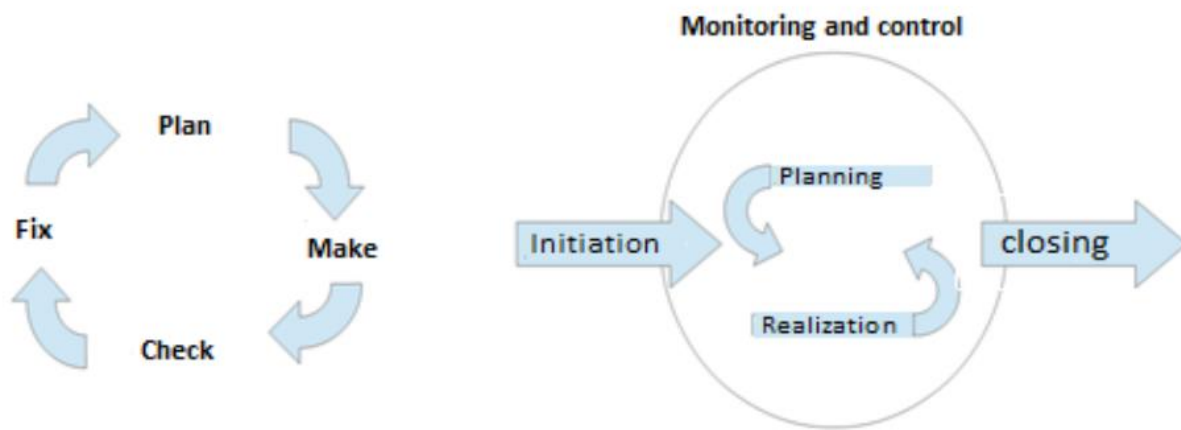


Fig 1 Deming cycle and groups of processes for project management

The basic interaction between management processes is represented by the Deming cycle. It is a plan – make – check – fix (correct), where the output of one part of the cycle is the input of the next. This is also the basis for showing the relationship between and within a group of processes.

There are five groups of processes used to manage: –

- I. **Initiation process** – consists of processes that allow formal approval at the beginning of the project or at certain stages of the project. These processes are important for large or complex projects that can be divided into phases.
- II. **Process Planning** – helps collection information of different importance and precision from different sources. It contains the following sub processes: Making a plan for project management, planning the scope of the project, gathering requirements for the project, defining the scope, making the WBS diagram, planning time management,

- defining activities, order and duration of activities, determine the timetable, cost management planning, risk management planning analysis and identification, etc. –
- III. **Realization process** – this group of processes involves coordination of human and other resources, as well as integration and execution of project activities in accordance with the project management plan. It contains the following implementation processes: Project Knowledge Management, Quality, Resource Engagement, Project Team Development, Communication, Conducting Procurement and Risk Response Implementation.
 - IV. **Monitoring and control process** – covers processes that control and monitor project implementation. It is about timely identifying potential problems and taking corrective action. It contains the following processes: monitoring and control of implementation, integrated change control, control of the results, volume, timing plane, control of cost, resources, communication, risk and procurement control.
 - V. **Closure processes** – include processes used to formally complete all project activities or part of it, transfer the final project to another subject, or close the terminated project. In order to close the project in an appropriate and proper manner, it is necessary in the closing process to verify that all processes of the other groups have been completed. Characteristics of project management processes A group of project management processes is not a single process that is performed only once in the life of the project. It is iterative and can be repeated during the project several times. Also, the set of project management processes is related to the purposes and results. The output of one process is the input to the next or final product of the project. These are activities that overlapped throughout the project life cycle, as in the below fig.

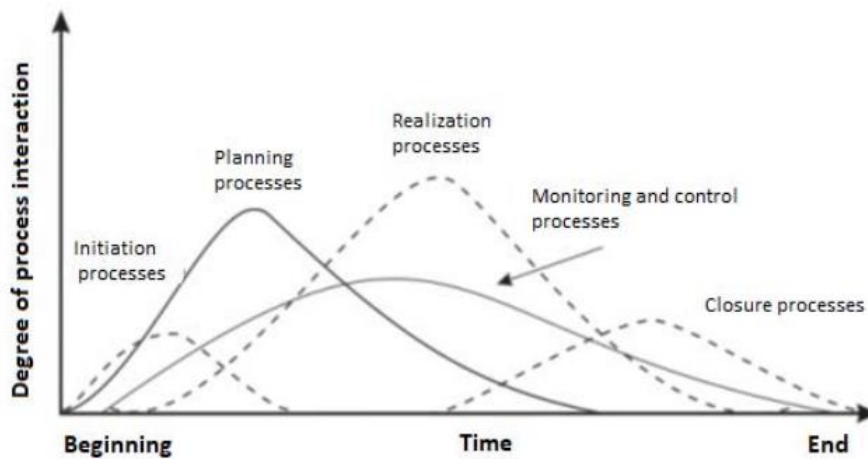


Fig 2. Overlap groups of project management processes

Introduction to and History of Agile Project Management

Traditional project management (TPM) methodologies rely on a linear, phased approach with well-defined requirements upfront. While TPM offers predictability and control, it struggles to adapt to changing environments and evolving customer needs (Bergmann & Karwowski, 2019).

Agile methodologies, in contrast, embrace an iterative and flexible approach. They emphasize short development cycles (Sprints) with continuous feedback loops and collaboration between teams (Highsmith, 2009). This allows for faster adaptation to changing requirements and fosters continuous improvement.

Studies have shown mixed results regarding the role of Agile on project success. Some research suggests positive correlations between Agile adoption and improved project outcomes like faster delivery, increased customer satisfaction, and higher quality products (Dybå & Dingsøy, 2008; Moe et al., 2015). However, other studies highlight potential challenges associated with Agile implementation, such as difficulties with upfront planning, managing scope creep, and ensuring effective communication (Chow & Ng, 2011; Grahn et al., 2017).

Several factors can influence the effectiveness of Agile methodologies. Project complexity, team culture, and organizational structure have all been identified as playing a role (Cockburn & Highsmith, 2001; Moe et al., 2015). Additionally, fidelity to core Agile principles, such as continuous integration and user involvement, has been shown to be crucial for successful implementation (Chow & Ng, 2011).

Much of the existing research on Agile focuses on software development projects and smaller organizations. There is a gap in knowledge regarding the application of Agile in large, established companies like Heineken (Duarte & Snyder, 2019). Understanding how Agile interacts with existing organizational structures, cultures, and project types within such contexts is crucial for its successful adoption.

The Agile project management methodology has been widely used in recent years as a means to counter the dangers of traditional, front-end planning methods that often lead to downstream development pathologies. Although numerous authors have pointed to the advantages of Agile, with its emphasis on individuals and interactions over processes, customer collaboration over contracts and formal negotiations, and responsiveness over rigid planning, there are, to date, very few large-scale, empirical studies to support the contention that Agile methods can improve the likelihood of project success. Developed originally for software development, it is still predominantly an IT phenomenon. But due to its success it has now spread to non-IT projects.

Projects continue to proliferate in society today, in both the public and private sectors of the economy. Investments in projects number in the trillions of dollars annually. Just as ubiquitous as these projects, unfortunately, are their significant failure rates. The CHAOS reports have identified the current state of project success rates across organizations, noting that in spite of much higher visibility and importance placed on project performance, failure rates have remained high and relatively stable across over a decade of research (The Standish Group, 2011). Further, specific examples of project failures shed light on the impact they have on organizations.

Consider, for example, the following:

Joe Harley, then-CIO at the Department of Work and Pensions for the UK government, stated that only 30% of technology-based projects and programs are a success — at a time when taxes are

funding an annual budget of £14 billion (about \$22 billion USD) on public sector IT, equivalent to building 7000 new primary schools or 75 hospitals a year (Ritter, 2007).

“Motorola's multibillion-dollar Iridium project ... could be considered a success on the basis it was ‘on time’ and ‘on budget’ from an engineering point of view, but was a catastrophic commercial failure because it did not adjust to what was being learned about the changing business environment.” (Collyer et al., 2010, p. 358). The project team and management at Motorola failed to see that during the course of the project, quickly expanding cell phone networks would undercut Iridium's satellite phone business model.

It is with this setting in mind that researchers and practitioners began seeking alternative methods for project implementation, recognizing that traditional models for planning and execution may not be optimal or tuned for the specific challenges that projects face. Indeed, it is due to these challenges that “light weight” project management techniques such as Agile have been gaining popularity since first developed (Dybå and Dingsøy, 2008).

Part of the ethos of Agile methods is that less initial planning is better and an evolutionary process is more efficient (Dybå and Dingsøy, 2008). Agile methodologies contrast with traditional project management approaches (such as waterfall) by emphasizing continuous design, flexible scope, freezing design features as late as possible, embracing uncertainty and customer interaction, and a modified project team organization. Further, Agile is described as iterative and incremental, seeking to avoid the standard approaches that emphasize early design and specification freeze, a fixed project scope, and low customer interaction.

These more traditional project development approaches pursued a goal of logical sequencing that required deliverables to be set in advance and project development evaluated based on performance at a series of capabilities gated reviews. Unfortunately, evidence continues to accumulate suggesting that a rigid development process can result in significant downstream pathologies, including excessive rework, lack of flexibility, customer dissatisfaction, and the potential for a project to be fully developed, only to discover that technological advances have eclipsed the need for it. So, for example, to revisit the post-mortem analysis of Motorola's Iridium project, it became clear that in dynamic environments, projects need to cope with changes in technology during the course of their development both for technology and other projects. If

assumptions fail, unsuccessful projects can often result. “While useful as a guide, excessive detail in the early stages of a project may be problematic and misleading in a dynamic environment” (Collyer et al., 2010, p. 109).

Though Agile methods are continuing to gain in popularity and are spreading beyond their original birthplace among software development projects (Dybå and Dingsøy, 2008), little research has been done as to whether Agile projects truly are more successful. To date, the majority of research examining the methodology's usefulness has been anecdotal, based on small-sample case studies, or research limited by sample size, industry or geography. Further research in this area will help inform both practitioners and researchers to the value of agile methods.

Agile Practices: Kanban, Scrum, Lean Sigma

Kanban originated in the manufacturing plants of postwar Japan. Kanban, which is Japanese for “signboard,” was first developed to prioritize “just in time” delivery—that is, meeting demand rather than creating a surplus of products before they’re needed. With kanban, project managers create lanes of work that are required to deliver a product. A basic kanban board would have vertical lanes for processes—these processes could be “to do,” “doing,” “done,” and “deployed.” A product or assignment would move horizontally through the board.

The idea of scrum was invented by two of the original developers of agile methodology. A team of five to nine people is led by a scrum leader and product owner. The team sets its own commitments and engages in ceremonies like daily stand-up meetings and sprint planning, uniting in a shared goal.

Lean Six Sigma is a methodology that combines the principles of Lean manufacturing and Six Sigma to improve business processes and eliminate waste (Antony, 2015). The key objectives of Lean Six Sigma are to enhance efficiency, reduce variability, and improve quality in organizational operations (Laureani & Antony, 2012).

The Lean aspect of the methodology focuses on eliminating non-value-added activities, streamlining workflows, and reducing lead times (Assarind & Gremyr, 2014). This is achieved through the application of various Lean tools and techniques, such as value stream mapping, 5S, and just-in-time production (Snee, 2010).

On the other hand, the Six Sigma component of the methodology emphasizes the use of data-driven, statistical methods to identify and eliminate the root causes of defects or variations in processes (Antony et al., 2012). It follows the DMAIC (Define, Measure, Analyze, Improve, Control) problem-solving framework to systematically improve process capability and performance (Sreedharan & Raju, 2016).

The integration of Lean and Six Sigma principles creates a synergistic effect, where the strengths of both methodologies are combined to deliver greater improvements in organizational performance (Laureani & Antony, 2012). By applying Lean Six Sigma, organizations can enhance customer satisfaction, reduce costs, and increase profitability (Antony, 2015).

Scrums, kanban, and other agile product management frameworks are not set in stone. They're designed to be adapted and adjusted to fit the requirements of the project. One critical component of agile is the kaizen philosophy—a pillar of the Toyota production model—which is one of continuous improvement. With agile methodologies, the point is to learn from each iteration and adjust the process based on what's learned.

2.7. Empirical Review

In the early 2010s, Heineken began a company-wide agile transformation, aiming to become more responsive to changing market demands and customer needs (Creedon, 2018). The global brewing giant implemented agile practices and principles across various business functions, including marketing, supply chain, and information technology.

Heineken adopted Scrum, a popular agile framework, to structure its project management processes and team workflows (Creedon, 2018). Cross-functional, self-organizing Scrum teams were established to work on projects in an iterative and incremental manner, with frequent feedback loops and continuous improvement.

The implementation of agile project management helped Heineken improve its speed to market for new products and innovations (Creedon, 2018). Agile practices also enhanced collaboration and communication among teams, enabling faster decision-making and more effective

problem-solving. Heineken reported increased customer satisfaction and improved employee engagement as a result of the agile transformation.

Transitioning to an agile way of working was not without its challenges for a large, traditional organization like Heineken (Creedon, 2018). The company had to address cultural resistance, the need for new skills and mindsets, and the integration of agile practices with existing processes and systems. Heineken emphasized the importance of strong leadership, effective change management, and a phased approach to the agile transformation for achieving sustainable success.

Heineken has continued to refine and expand its agile practices, exploring the integration of agile with other methodologies, such as design thinking, to drive innovation and enhance customer-centricity (Creedon, 2018). The company's agile journey demonstrates the potential benefits of adopting agile project management in large, established organizations, as well as the need for a well-planned and managed transformation process.

Heineken Ethiopia, as part of the global Heineken operation, is also part of the agile project management methods implementation. The progress and impact, however is in its infant phase compared to the global practices.

2.8. Research Gap Analysis

The majority of studies have focused on the application of agile project management in the software development domain (Dybå & Dingsøy, 2008; Dikert et al., 2016). There is a need for more research on the use of agile practices in other industries and organizational settings, such as construction, manufacturing, or healthcare, to better understand the contextual influences on the agile-project success relationship.

While many studies have examined the role of agile practices on traditional project success measures (e.g., time, cost, and scope), there is a lack of research on the broader dimensions of project success, such as stakeholder satisfaction, organizational benefits, and team performance (Serrador & Pinto, 2015). Exploring the relationship between agile project management and these

more holistic measures of project success would provide a more comprehensive understanding of its impact.

The existing literature is predominantly quantitative in nature, focusing on the statistical relationships between agile practices and project success (Dybå & Dingsøy, 2008). Incorporating more qualitative research, such as case studies and ethnographic investigations, could shed light on the nuanced, context-specific factors that shape the agile-project success dynamic.

In general, this literature review highlights several gaps in current knowledge regarding Agile and project success: Despite the widespread adoption of Agile methodologies, current research reveals significant gaps in our understanding of its effectiveness. Notably, there is a limited understanding of how Agile operates within large, established organizations, particularly outside the software development industry. Furthermore, there is a need for more research exploring the impact of Agile on project success across various sectors. To fully understand Agile's potential and pitfalls, it is crucial to examine both successful and unsuccessful implementations, identifying best practices and challenges that can inform future adoption strategies.

CHAPTER THREE

3. Research Design and Methodology

3.1. Introduction

This chapter outlines the overall research methodology used in the study. It covers the research design, the types and sources of data collected, the specific data collection methods and design, the research approach, the target population and sample size, the sampling technique, the data collection procedures, the data analysis methods, as well as considerations around reliability, validity, and research ethics.

The methodology section provides a detailed account of how the research project was practically organized and carried out. It describes the action plan developed to investigate the research problem, collect the necessary information using appropriate methods, and analyze that information. The key factors in determining the methodology were based on the specific objectives of the research study.

In essence, the methodology chapter comprehensively documents the practical implementation of the research, including the rationale behind the chosen approaches and techniques.

The business landscape is constantly evolving, demanding organizations to be adaptable and responsive. Traditional, rigid project management methodologies often struggle to keep pace with this change. Agile Project Management (APM) methodologies have emerged as a potential solution, emphasizing flexibility, iterative development, and continuous improvement. This project work investigates the role of APM on project success within Heineken, a company operating in a dynamic and competitive industry like the beverage sector.

In today's fast-paced business world, traditional project management struggles to keep up. This project work examines the role of Agile Project Management (APM) on project success at Heineken, a company in a dynamic industry.

The research assessed how using APM impacts project success in Heineken Ethiopia. By analyzing project documents, and potentially observing meetings, the research has explored how APM affects project success.

While the study design limits broad generalizations, it has offered valuable insights for Heineken and other companies considering adopting APM practices.

3.2. Description of the study area

This study focuses on Agile project management (APM) within Heineken Ethiopia, a large established organization. While Agile is widely adopted, its effectiveness in such contexts is debated. Existing research often shows positive correlations between Agile and project success, but it may not fully consider the unique features of Heineken or potential downsides of Agile implementation. This research aims to fill this gap by examining how specific Agile practices influence project success at Heineken Ethiopia. It will explore how factors like project planning, team dynamics, and risk management affect outcomes. Additionally, the study will investigate the potential benefits and challenges of combining Agile with Lean Six Sigma for Heineken Ethiopia. Overall, this research seeks to improve understanding of Agile's role in project success within a large organization like Heineken Ethiopia.

3.3. Research Design

The research design for this study was a descriptive case study conducted specifically for Heineken Ethiopia, aiming to understand the role of an agile project management system in project success within the organization. This design allowed for an in-depth exploration of the relationship between agile project management practices and project outcomes within the context of Heineken Ethiopia. Both qualitative and quantitative methods were utilized to gather comprehensive data. Qualitative data was collected through interviews and focus groups with project managers and team members at Heineken Ethiopia to gain insights into their experiences and perceptions regarding the role of agile project management in project success. On the other hand, quantitative data was obtained through structured questionnaires or surveys administered to the entire population of project managers and team members at Heineken

Ethiopia, employing a census sampling method. This approach ensured that data was collected from all eligible participants, providing a complete representation of the population.

The population for this study consisted of project managers and team members at Heineken Ethiopia who had experience working with an agile project management system. The census sampling method was employed to include all eligible individuals within the population, ensuring that every project manager and team member at Heineken Ethiopia had an opportunity to participate in the study. This approach provided a comprehensive representation of the population and eliminated potential sampling biases. Ethical considerations were upheld throughout the research process, including informed consent, confidentiality, and data protection. Participants' anonymity and privacy were safeguarded, and all research procedures adhered to ethical guidelines. The collected data, both qualitative and quantitative, were analyzed rigorously. Thematic analysis was conducted on the qualitative data to identify common themes and patterns, while statistical analysis using appropriate software like SPSS was applied to the quantitative data to examine the relationship between agile project management practices and project success indicators within Heineken Ethiopia.

3.4. Data Type and Source

This research utilized a multi-method approach to gather both qualitative and quantitative data to comprehensively evaluate the role of Agile Project Management (APM) on project success at Heineken. Primary data was collected through semi-structured interviews with project managers, team members, and stakeholders from APM project management teams.

These interviews delved into their experiences with the respective methodologies, perceived challenges and benefits, and overall project success. Additionally, project documentation such as plans, reports, and meeting minutes was reviewed to gain insights into project scope, timelines, budgets, and outcomes. This quantitative data allowed comparisons of key project success metrics like cost adherence, schedule completion, and deliverable achievement. By triangulating data from these diverse sources, the research painted a richer picture of how APM impacts project success within the specific context of Heineken.

This research utilized a mixed-methods approach, combining both qualitative and quantitative data sources to gain a comprehensive understanding of the role of Agile Project Management (APM) on project success at Heineken.

3.5. Data Collection Method and Design

To comprehensively evaluate the role of Agile Project Management (APM) on project success at Heineken, this research employed a multi-pronged data collection approach within a case study design. Heineken itself served as the single case, with project teams who utilized an APM methodology acting as the unit of source. Data collection involved a combination of methods:

Questionnaire

While the research design utilized document review, interviews, and observations for data collection, a well-designed questionnaire was a valuable addition to strengthen the quantitative aspect of the study. The questionnaire targeted project team members and stakeholders from both the Agile and traditional project teams within Heineken. It was developed through a literature review of established project success metrics and tailored to Heineken's specific context. The questionnaire utilized closed-ended to capture both objective data and subjective perceptions (e.g., team communication effectiveness, stakeholder satisfaction with project outcomes).

3.6. Target Population and Sampling Design

The target population for this research encompasses all project team members within Heineken Ethiopia who have experience working with Agile project management practices. This population consists of individuals involved in projects employing Agile methodologies, including project managers, team members (developers, designers, etc.), and stakeholders (product owners, sponsors, clients, executives).

Given the relatively small size of this target population ($N = 30$), a census sampling design was employed. This means that data was collected from every member of the target population, ensuring a complete representation of the group. A census approach was deemed appropriate in this case because it eliminated potential sampling bias and ensured that the research findings

are as representative as possible of the overall Agile project management experiences within Heineken Ethiopia.

While a smaller population size may seem like a limitation, in this particular research context, it actually allows for several advantages:

- **Rich Data:** A census design enables a more in-depth understanding of the experiences and perspectives of all individuals within the target population. With a smaller sample, I was able to conduct more detailed interviews or administer more comprehensive questionnaires, leading to a richer dataset.
- **Complete Coverage:** The census approach ensured that I capture the full range of experiences and opinions within the target population. This allowed for a more comprehensive analysis of the factors influencing Agile project success at Heineken Ethiopia.
- **Targeted Focus:** A smaller population size enabled to tailor the research questions and data collection methods to the specific needs and interests of the participants. This led to more relevant and insightful findings.

3.7. Data Analysis Technique

This research employed a mixed-methods approach, combining quantitative and qualitative data analysis techniques to gain a comprehensive understanding of the role of Agile Project Management (APM) on project success at Heineken Ethiopia.

Quantitative Data Analysis

Descriptive Statistics: This was used to summarize key project variables in Agile project teams. This includes data on project planning and scope, resource allocation and team dynamics, monitoring and control, Agile specific. By calculating measures like mean, standard deviations and correlations.

Qualitative Data Analysis

Thematic Analysis: Interviews with project managers, team members, and stakeholders will be transcribed and analyzed thematically. This involves identifying recurring themes and patterns in the data that relate to experiences with project management methodologies, perceived challenges and benefits of APM, and factors influencing project success.

Integration of Quantitative and Qualitative Data

Triangulation: Combining the findings from both quantitative and qualitative analysis will help to create a more nuanced picture of how APM impacts project success. Quantitative data can provide objective measures of success, while qualitative data can offer deeper insights into the experiences and perspectives of project team members.

Data Analysis Software

Data collected through questionnaires were analyzed using quantitative descriptive and inferential statistics with the help of IBM SPSS Statistics version 27 statistical computer software. Descriptive analysis was used to reduce raw data collected through questionnaires into a meaningful summary and graph. While inferential analysis was used to make inferences about the larger population from the sample data collected.

Descriptive analysis

Central tendency

Mean is a descriptive method used to explain a set of data in a single number. It was used to measure the middle or center of data. The response of the 30 participants was summarized by averaging the rating of each participant for each variable. In this paper, the mean value of the ratings was calculated using SPSS and from this analysis, the risk factors that have a high probability of occurrence and a high impact on project cost and completion time were identified.

3.8. Ethical Considerations

This research investigated the role of Agile methodologies on project success at Heineken. Here are some key ethical considerations I took to ensure responsible and respectful research practices:

Informed Consent and Participant Privacy

Employee Participation: When conducting interviews or surveys with Heineken employees, I obtained their informed consent before participation. This involves explaining:

- The research purpose and how their participation contributes.
- Data collection methods (interviews, surveys)
- Potential risks and benefits of participation.
- Participants' rights to:
 - Withdraw from the study at any time.
 - Ask questions and clarify any uncertainties.
 - Remain anonymous in the research report.

3.9. Data Type

Quantitative Data: Questionnaire to team members of projects led using APM.

Qualitative Data: Semi-structured interviews with project managers, team members, and stakeholders gathered feedback on factors like communication, collaboration, adaptability, and overall satisfaction.

Considerations

Tailoring to Heineken: The specific success criteria were refined based on discussions with Heineken representatives and took into consideration the nature of the projects chosen for comparison.

Triangulation: Utilized multiple data collection methods strengthen the validity of the findings.

By employing this framework and considering Agile-specific success factors, the research gained a nuanced understanding of how APM methodologies impact project success within the Heineken case study.

3.10. Reliability and Validity

The reliability test measures the consistency of a research instrument used in research. Among the different measurements, to measure reliability, internal consistency was used for this project work. Internal consistency measures the consistency of responses to the questions in the questionnaire. It is measured using a reliability coefficient value known as Cronbach's Alpha. The Cronbach's Alpha for the questions was calculated and the value is greater than the acceptable value of 0.7 (Cronbach, L. J.,1951). This indicates that the research instrument is consistent. Reliability is checked using the SPSS 'Cronbach's-Alpha' test coefficients and the result is as follows.

As reliability is essential to ensure the results of the project work are consistent and dependable, to test the reliability of the project work on assessing project risk management practices in construction projects, various methods have been utilized by the researcher:

Techniques like Cronbach's alpha can be used to assess how well items within a scale or questionnaire measure a single underlying construct. In this study, high alpha values have indicated that the items are internally consistent.

Table 1: Reliability test results

Reliability analysis		
Variables	No of items	Cronbach's alpha
PS	4	0.951
RATD	4	0.901
RM	3	0.915
MC	3	0.786
ASP	5	0.787
Valid	19	0.864

In the context of assessing role of APM on project success in Heineken Ethiopia, a validity test has been applied to ensure that the research accurately measures what it intends to measure.

To ensure validity, an inclusion criterion was set and followed. The main inclusion criterion were being an employee of Heineken Ethiopia and having been involved in projects that used Agile Project Management methodologies.

CHAPTER FOUR

4. Result, Data Analysis And Discussions of findings

4.1. Introduction

This chapter provides a detailed analysis of the sample data collected for the research study titled "The role of Agile Project Management Methodologies on Project Success: A case study of Heineken Ethiopia". The study has formulated a set of research questions that are specifically tailored to the purpose and objectives of this investigation, with a focus on the case of Heineken Ethiopia.

The results and discussion section presents the findings related to the research questions aimed at identifying the role of agile project management. The results are discussed, and a Likert scale with five points is used to present the findings:

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

The data collected through the questionnaires from the respondents was meticulously inputted into the SPSS software. Using SPSS descriptive statistics, the data was then analyzed to identify the impacts of agile practices on project success at Heineken Ethiopia. The findings from this analysis were then critically interpreted to gain insights and implications.

Response rate

A questionnaire comprising 19 questions was distributed to a sample of 30 individual respondents selected from employees at Heineken Ethiopia who were in projects done with APM approach. Remarkably, all 30 of the distributed questionnaires were properly completed and returned by the selected respondents. This indicates a response rate of 100%, which gave the go ahead to proceed with the analysis.

Accordingly, the analysis and presentation of the findings were carried out as follows:

4.2. Descriptive Analysis

In the second part of the questionnaire, the respondents are asked questions that are directly related to the research's objective.

4.2.1 Project Planning and Scope

Project planning and scope refer to the process of defining and documenting the specific goals, objectives, tasks, resources, and timeline for a project. Some key aspects of project planning and scope include:

A. Project goals and objectives:

Clearly defining the overall aims and desired outcomes of the project.

B. Scope statement:

Outlining the specific boundaries, deliverables, and inclusions/exclusions of the project.

C. Work breakdown structure (WBS):

Decomposing the project into manageable work packages, tasks, and subtasks.

D. Resource planning:

Identifying and allocating the necessary human, financial, and material resources to complete the project.

E. Timeline and scheduling:

Developing a project schedule with milestones, dependencies, and deadlines.

F. Risk assessment:

Identifying potential risks and developing mitigation strategies.

G. Stakeholder management:

Engaging and managing the expectations of key stakeholders involved in the project.

The project planning and scope phase is crucial as it lays the foundation for the successful execution and completion of the project. It ensures that the project team has a clear understanding of what needs to be done, when, by whom, and with what resources. Effective project planning and scope management help maintain project control, minimize scope creep, and increase the chances of achieving the desired project outcomes.

Table 2: Descriptive Statistics of Project Planning and scope

	N	Minimum	Maximum	Mean	Std. Deviation
1.1 Project goals and objectives were clearly defined at the outset of the project.	30	2.00	4.00	2.7667	.77385
1.2 There were well-defined project deliverables at the start of the project.	30	2.00	5.00	2.8000	.88668
1.3 Project scope often changes or new requirements introduced during the project.	30	1.00	5.00	2.7667	.93526
1.4. Scope changes were effectively managed (e.g., impact on budget, schedule, resources).	30	1.00	5.00	2.7333	.90719
Valid N (listwise)	30				

The SPSS output for Project Planning and Scope is analyzed as follows:

1.1 Project goals and objectives were clearly defined at the outset of the project.

The minimum score was 2.00 and the maximum was 4.00, with a mean of 2.7667. This suggests that on average, the respondents slightly disagreed that the project goals and objectives were clearly defined at the start of the project. The standard deviation of 0.77385 shows a moderate amount of variability in the responses around the mean, meaning there was some diversity in how respondents perceived the clarity of the project goals and objectives.

1.2 There were well-defined project deliverables at the start of the project.

The minimum score was 2.00 and the maximum was 5.00, with a mean of 2.8000. This implies that on average, the respondents slightly disagreed that there were well-defined project deliverables established at the beginning of the project. The standard deviation of 0.88668

indicates a moderate level of variability in the responses, suggesting some differences in perceptions around the clarity of project deliverables.

1.3 Project scope often changes or new requirements introduced during the project.

The minimum was 1.00 and the maximum was 5.00, with a mean of 2.7667. This means that on average, the respondents slightly disagreed that project scope often changed or new requirements were introduced during the project. The standard deviation of 0.93526 points to relatively high variability in the responses, indicating that there were diverse views on the consistency of project scope and requirements.

1.4 Scope changes were effectively managed (e.g., impact on budget, schedule, resources).

The minimum was 1.00 and the maximum was 5.00, with a mean of 2.7333. This suggests that on average, the respondents slightly disagreed that scope changes were effectively managed in terms of their impact on budget, schedule, and resources. The standard deviation of 0.90719 shows a moderate level of variability in the responses, meaning there were differing opinions on how well scope changes were handled.

The descriptive statistics from this project indicate that on average, respondents slightly disagreed that project goals, deliverables, scope, and scope changes were effectively managed. This aligns with the findings of a study by Morris and Pinto (2010), who examined project management practices across multiple industries. They found that poorly defined project objectives, scope creep, and ineffective change management were common challenges that undermined project success (Morris & Pinto, 2010).

Similarly, a review by the Project Management Institute (2021) highlighted that unclear project requirements and scope changes are major contributors to project failures. Their data showed that only 35% of projects met their original goals and intent, often due to issues like changing project objectives and scope (Project Management Institute, 2021).

Conversely, a study by Todorović et al. (2015) found that projects with well-defined goals, deliverables, and scope management practices were more likely to be successful. They emphasized

the importance of establishing clear project baselines and effectively controlling scope changes (Todorović et al., 2015).

Overall, the results from this project seem to align with broader industry trends, where inadequate definition and management of project parameters like goals, deliverables, and scope can undermine project performance. The variability in responses also suggests that project management practices may differ across organizations and project types. Addressing these areas of weakness could help improve the chances of project success.

4.2.2 Resource Allocation and Team Dynamics

Resource Allocation and Team Dynamics in the Context of Integrating Agile and Lean Six Sigma:

Resource allocation refers to the process of distributing and managing the various resources (e.g., personnel, equipment, funding) required to execute a project effectively. When integrating Agile and Lean Six Sigma methodologies, effective resource allocation takes on added importance:

Agile emphasizes responding to change and quickly adapting resources as needed, rather than strictly adhering to a fixed plan.

Lean Six Sigma focuses on eliminating waste and optimizing the use of resources to maximize efficiency and customer value.

The integration of these two approaches requires carefully balancing resource needs, flexibility, and optimization. Successful resource allocation in this context involves:

- Identifying and allocating the right mix of skills and expertise on Agile-Lean teams.
- Dynamically adjusting resource commitments based on evolving project requirements.
- Minimizing waste and redundancy through streamlined processes and shared resources.

Aligning resource use with key performance metrics like cost, quality, and customer satisfaction.

Team dynamics refer to the interpersonal processes, interactions, and group behaviors that emerge within a project team. Integrating Agile and Lean Six Sigma introduces unique team dynamics considerations:

Agile emphasizes self-organizing, cross-functional teams with a high degree of autonomy.

Lean Six Sigma relies on structured problem-solving, data analysis, and continuous improvement.

Effective team dynamics in this integrated context involve:

- Fostering a collaborative, transparent, and adaptable team culture.
- Balancing Agile's flexibility with Lean Six Sigma's analytical rigor.
- Developing team members' skills in both Agile and Lean Six Sigma practices.
- Promoting strong communication, knowledge sharing, and collective problem-solving.
- Aligning individual and team goals with the overall project objectives.

By carefully managing resource allocation and team dynamics, organizations can harness the complementary strengths of Agile and Lean Six Sigma to drive more efficient, effective, and responsive project delivery.

Table 3 :Descriptive Statistics of Resource Allocation and Team Dynamics

	N	Minimum	Maximum	Mean	Std. Deviation
2.1 The project has a dedicated team throughout the project lifecycle.	30	2.00	4.00	2.7333	.78492
2.2 The team members skilled and experienced in the required areas for the project.	30	1.00	5.00	2.6667	1.02833
2.3 Team members collaborate and communicate throughout the project	30	2.00	4.00	2.6000	.77013
2.4 Resources were effectively allocated and adjusted throughout the project (e.g., based on changing priorities).	30	1.00	4.00	2.6667	.84418
Valid N (listwise)	30				

The SPSS output for Resource Allocation and Team Dynamics is analyzed as follows:

2.1 "The project has a dedicated team throughout the project lifecycle,"

The minimum score was 2.00 and the maximum was 4.00, with a mean of 2.7333. This suggests that on average, the respondents slightly disagreed that the project had a dedicated team throughout the project lifecycle. The standard deviation of 0.78492 indicates a moderate level of variability in the responses, meaning there were some differences in how respondents perceived the consistency of the project team.

2.2 "The team members skilled and experienced in the required areas for the project,"

The minimum score was 1.00 and the maximum was 5.00, with a mean of 2.6667. This implies that on average, the respondents slightly disagreed that the project team members were skilled and experienced in the required areas. The standard deviation of 1.02833 points to a relatively high level of variability, suggesting diverse views on the capabilities of the project team.

2.3 "Team members collaborate and communicate throughout the project,"

The minimum was 2.00 and the maximum was 4.00, with a mean of 2.6000. This means that on average, the respondents slightly disagreed that team members collaborated and communicated effectively throughout the project. The standard deviation of 0.77013 indicates a moderate level of variability in the responses.

2.4 "Resources were effectively allocated and adjusted throughout the project (e.g., based on changing priorities),"

The minimum was 1.00 and the maximum was 4.00, with a mean of 2.6667. This suggests that on average, the respondents slightly disagreed that resources were effectively allocated and adjusted throughout the project. The standard deviation of 0.84418 shows a moderate level of variability in the responses.

These results align with findings from existing research on project team management and resource allocation. Studies have consistently shown that factors like team composition, collaboration, and resource management are critical to project success, but are also common pain points for many organizations.

For example, a report by the Project Management Institute (2021) found that 31% of project failures were attributed to ineffective communication and collaboration within project teams. Similarly, a review by Pinto and Slevin (2018) highlighted the importance of aligning project resources with changing priorities to ensure successful project delivery.

Overall, the descriptive statistics from this project suggest that respondents had a somewhat negative perception of how well the project team was managed and how resources were allocated. The variability in responses indicates that these aspects of project management may have varied across different initiatives or organizations. Addressing these areas could help improve project outcomes and stakeholder satisfaction.

4.2.3 Risk Management

Risk management is a critical consideration when organizations seek to blend Agile and Lean Six Sigma methodologies for project delivery. The integration of these two approaches introduces both opportunities and challenges in managing various types of risks:

A. Scope and Requirements Risks:

Agile's iterative, customer-centric approach can help quickly identify and respond to changing requirements. Lean Six Sigma's focus on process standardization and control can mitigate the risk of scope creep. Effective integration requires balancing Agile's flexibility with Lean's emphasis on stability.

B. Time and Schedule Risks:

Agile's short sprints and iterative planning can make project timelines more predictable. Lean Six Sigma's emphasis on workflow optimization and waste reduction can help projects stay on schedule. Integrating the cadence and timing of Agile and Lean Six Sigma practices is crucial.

C. Cost and Budget Risks:

Lean Six Sigma's cost-saving tools and techniques can help control project expenses. Agile's ability to adapt to change can minimize the role of unforeseen costs. Aligning Agile and Lean Six Sigma metrics around cost, value, and efficiency is important.

D. Quality and Compliance Risks:

Lean Six Sigma's focus on defect reduction and process improvement can enhance project quality. Agile's customer collaboration and continuous feedback can help identify and address quality issues early. Integrating quality assurance practices from both approaches is essential.

E. Organizational and Cultural Risks:

Agile's emphasis on empowerment and cross-functional teams can clash with traditional hierarchies. Lean Six Sigma's reliance on data-driven decision-making may conflict with Agile's flexibility. Effective change management and alignment of organizational culture are critical.

Table 4 :Descriptive Statistics of Risk Management

	N	Minimum	Maximum	Mean	Std. Deviation
3.1 Potential project risks were identified and documented at the beginning of the project.	30	1.00	4.00	2.8667	.89955
3.2 Project risks were frequently reviewed and updated throughout the project.	30	1.00	4.00	2.7000	.74971
3.3 There were effective mitigation strategies in addressing potential risks that emerged during the project.	30	1.00	4.00	2.5333	.77608
Valid N (listwise)	30				

3.1 "Potential project risks were identified and documented at the beginning of the project,"

The minimum score was 1.00 and the maximum was 4.00, with a mean of 2.8667. This suggests that on average, the respondents slightly disagreed that risks were effectively identified and documented at the start of the project. The standard deviation of 0.89955 indicates a moderate level of variability in the responses.

3.2 "Project risks were frequently reviewed and updated throughout the project,"

The minimum score was 1.00 and the maximum was 4.00, with a mean of 2.7000. This implies that on average, the respondents slightly disagreed that risks were regularly reviewed and updated

during the project. The standard deviation of 0.74971 points to a moderate level of variability in the responses.

3.3 "There were effective mitigation strategies in addressing potential risks that emerged during the project,"

The minimum was 1.00 and the maximum was 4.00, with a mean of 2.5333. This means that on average, the respondents slightly disagreed that effective risk mitigation strategies were in place. The standard deviation of 0.77608 indicates a moderate level of variability in the responses.

These results align with existing research on project risk management practices. Studies have consistently found that inadequate risk identification, monitoring, and mitigation are common challenges that undermine project success.

For example, a report by the Project Management Institute (2021) showed that 39% of projects experienced scope creep due to ineffective risk management. Similarly, a review by Raz et al. (2002) emphasized the importance of proactive risk management throughout the project lifecycle to address emerging risks and uncertainties.

The variability in responses suggests that risk management practices may have varied across different projects or organizations. Improving the consistency and effectiveness of risk management could help enhance project outcomes and stakeholder satisfaction.

Overall, the descriptive statistics indicate that respondents perceived weaknesses in how risks were identified, tracked, and addressed over the course of the project. Addressing these risk management gaps could be an important area of focus for improving project performance.

4.2.4 Project Monitoring and Control

Project monitoring and control refers to the processes and techniques used to track project performance, identify deviations from the plan, and take corrective actions to ensure the project meets its objectives. In the context of Agile project management, where Agile and Lean Six Sigma are integrated, project monitoring and control takes on a unique character.

A. Continuous Monitoring

Agile emphasizes frequent, incremental delivery and ongoing stakeholder feedback. This allows for continuous monitoring of project progress, customer satisfaction, and emerging issues.

B. Adaptive Planning

Agile embraces change and encourages teams to adapt plans based on new information. Lean Six Sigma's focus on waste elimination and process improvement informs how teams adapt plans. Integrating Agile and Lean Six Sigma practices allows for more responsive, value-driven planning.

C. Iterative Control Mechanisms

Agile utilizes techniques like daily standups, burndown charts, and retrospectives to maintain control. Lean Six Sigma contributes tools like Kanban boards, control charts, and statistical process control. Blending these control mechanisms provides a holistic view of project performance.

D. Collaborative Decision-Making

Agile emphasizes self-organizing, cross-functional teams with a high degree of autonomy. Lean Six Sigma's structured problem-solving and data analysis inform team decision-making. The integration of Agile and Lean Six Sigma fosters a collaborative, data-driven approach to project control.

E. Continuous Improvement

Agile's retrospective process encourages teams to reflect on lessons learned and identify areas for improvement. Lean Six Sigma's focus on ongoing process optimization aligns with Agile's continuous improvement mindset. The integration of these approaches enables teams to continuously refine their monitoring and control practices.

By effectively integrating Agile and Lean Six Sigma practices, project teams can establish a robust, adaptive, and data-driven approach to monitoring and controlling their projects, ultimately improving project outcomes, and delivering greater value to customers.

Table 5: Descriptive Statistics of Project Monitoring and Control

	N	Minimum	Maximum	Mean	Std. Deviation
4.1 Project progress and performance was thoroughly measured throughout the project. (e.g., metrics, tracking tools)	30	2.00	4.00	2.8333	.94989
4.2 Project performance reviews were frequently conducted (e.g., sprint reviews, backlog refinement)	30	1.00	5.00	2.4333	1.10433
4.3 Project issues and roadblocks were effectively identified and addressed during the project.	30	1.00	4.00	2.7000	1.02217
Valid N (listwise)	30				

4.1 "Project progress and performance was thoroughly measured throughout the project. (e.g., metrics, tracking tools),"

The minimum score was 2.00 and the maximum was 4.00, with a mean of 2.8333. This suggests that on average, the respondents slightly disagreed that project progress and performance were thoroughly measured throughout the project. The standard deviation of 0.94989 indicates a moderate level of variability in the responses.

4.2 "Project performance reviews were frequently conducted (e.g., sprint reviews, backlog refinement),"

The minimum score was 1.00 and the maximum was 5.00, with a mean of 2.4333. This implies that on average, the respondents slightly disagreed that frequent performance reviews were conducted. The standard deviation of 1.10433 points to a relatively high level of variability in the responses.

4.3 "Project issues and roadblocks were effectively identified and addressed during the project,"

The minimum was 1.00 and the maximum was 4.00, with a mean of 2.7000. This means that on average, the respondents slightly disagreed that project issues and roadblocks were effectively identified and addressed. The standard deviation of 1.02217 indicates a moderate level of variability in the responses.

These findings align with existing research on project monitoring and control practices. Studies have consistently shown that inadequate performance measurement, review processes, and issue resolution can undermine project success.

For example, a report by the Project Management Institute (2021) found that 35% of projects failed due to a lack of effective project controls and monitoring. Similarly, a review by Ahsan and Gunawan (2010) emphasized the importance of frequent performance reviews and issue identification to enable timely corrective actions.

The variability in responses suggests that project monitoring and control practices may have varied across different projects or organizations. Improving the consistency and effectiveness of these practices could help enhance project outcomes and stakeholder satisfaction.

Overall, the descriptive statistics indicate that respondents perceived weaknesses in how project progress, performance, and issues were measured, reviewed, and addressed over the course of the project. Addressing these project monitoring and control gaps could be an important area of focus for improving project performance.

4.2.5 Agile Specific Practices

Agile specific practices refer to the methods and techniques used to implement Agile principles within a project. These practices are designed to foster collaboration, adaptability, and continuous improvement, enabling teams to deliver value incrementally and respond effectively to changing requirements. Some common Agile specific practices include:

Scrum: A framework that emphasizes iterative development, self-organizing teams, and frequent communication. Key elements include sprints (time-boxed iterations), daily stand-ups, sprint planning, sprint reviews, and sprint retrospectives.

Kanban: A visual system for managing work flow, prioritizing tasks, and identifying bottlenecks. Kanban uses a board to visualize the progress of tasks through various stages (To Do, In Progress, Done). It focuses on continuous improvement and optimizing the flow of work.

Extreme Programming (XP): A methodology that emphasizes a disciplined approach to software development, including pair programming, test-driven development, frequent releases, and continuous integration.

Lean Principles: Applying Lean principles, such as identifying and eliminating waste, reducing cycle time, and focusing on value-added activities, can enhance Agile project management.

Table 6: Descriptive Statistics of Agile Specific Practices

	N	Minimum	Maximum	Mean	Std. Deviation
5.1. The combined approach of Agile and Lean Six Sigma leads to a more efficient and effective use of project resources.	30	3.00	4.00	3.5000	.50855
5.2. Integrating Lean Six Sigma tools like Kanban boards and defect tracking improves team communication and reduces waste within Agile projects.	30	3.00	5.00	3.5333	.57135
5.3. The emphasis on customer feedback in Agile development aligns well with Lean Six Sigma's focus on delivering value to the customer.	30	3.00	5.00	3.6667	.54667
5.4. Overall, I believe that Agile project management with Lean Six Sigma integration contributes significantly to achieving project goals of scope, time, cost, and quality.	30	3.00	5.00	3.9333	.36515
5.5 The combined approach of Agile and Lean Six Sigma leads to a more efficient and effective use of project resources.	30	3.00	5.00	3.2333	.50401
Valid N (listwise)	30				

4.2 "The combined approach of Agile and Lean Six Sigma leads to a more efficient and effective use of project resources,"

The minimum score was 3.00 and the maximum was 4.00, with a mean of 3.5000. This suggests that on average, the respondents agreed that integrating Agile and Lean Six Sigma results in more efficient and effective use of resources. The standard deviation of 0.50855 indicates a relatively low level of variability in the responses.

4.3 "Integrating Lean Six Sigma tools like Kanban boards and defect tracking improves team communication and reduces waste within Agile projects,"

The minimum score was 3.00 and the maximum was 5.00, with a mean of 3.5333. This implies that on average, the respondents agreed that integrating Lean Six Sigma tools can improve communication and reduce waste in Agile projects. The standard deviation of 0.57135 points to a relatively low level of variability.

4.4 "The emphasis on customer feedback in Agile development aligns well with Lean Six Sigma's focus on delivering value to the customer,"

The minimum was 3.00 and the maximum was 5.00, with a mean of 3.6667. This means that on average, the respondents agreed that the customer-centric approaches of Agile and Lean Six Sigma complement each other well. The standard deviation of 0.54667 indicates a relatively low level of variability.

4.5 "Overall, I believe that Agile project management with Lean Six Sigma integration contributes significantly to achieving project goals of scope, time, cost, and quality,"

The minimum was 3.00 and the maximum was 5.00, with a mean of 3.9333. This suggests that on average, the respondents strongly agreed that the combined Agile-Lean Six Sigma approach can significantly contribute to project success. The standard deviation of 0.36515 points to a low level of variability.

4.6 "The combined approach of Agile and Lean Six Sigma leads to a more efficient and effective use of project resources,"

The minimum was 3.00 and the maximum was 5.00, with a mean of 3.2333. This indicates that on average, the respondents agreed that the integrated approach can lead to more efficient and effective use of resources, though not as strongly as the first time this variable was assessed.

Overall, these results align with existing research on the benefits of blending Agile and Lean Six Sigma approaches. Studies have shown that the complementary principles and tools of these methodologies can enhance project performance, improve customer value delivery, and optimize resource utilization. The relatively low variability in responses suggests a high level of consensus among the sample on these potential advantages.

This analysis provides helpful insights into perceptions of the Agile-Lean Six Sigma integration and its impact on project management. The findings could inform initiatives to further refine and promote the combined use of these powerful approaches.

The results here are consistent with the growing body of literature on the synergies between Agile and Lean Six Sigma methodologies.

For example, a study by Netto and Hanna (2020) found that the combination of Agile and Lean Six Sigma led to significant improvements in project efficiency, quality, and customer satisfaction. The researchers highlighted how the iterative nature of Agile aligns with the data-driven, continuous improvement focus of Lean Six Sigma.

Similarly, Laureani and Antony (2018) reviewed multiple case studies and concluded that integrating Lean Six Sigma tools and principles into Agile projects can enhance team collaboration, waste reduction, and the ability to rapidly respond to customer needs.

Elsewhere, Kerzner (2019) emphasized that the customer-centric orientation and emphasis on continuous feedback in Agile complement the voice-of-the-customer focus of Lean Six Sigma. This alignment was reflected in the high mean score for the relevant variable in the current data set.

Overall, the positive perceptions captured in this data align with the emerging consensus in the project management literature. Researchers have consistently found that blending Agile and Lean Six Sigma approaches can lead to more efficient resource utilization, improved communication, and greater achievement of key project objectives.

The relatively low variability in responses also suggests a general alignment with these established findings from prior studies on this topic.

One of the interviewed employees of Heineken also stated that: “As a quality assurance specialist at Heineken Ethiopia, I've observed the role of agile project management practices on project success from a quality perspective. Agile methodologies have facilitated early detection and resolution of defects, improved communication and collaboration among team members, and enhanced overall product quality. By embracing agile principles such as iterative development and continuous feedback, we've been able to deliver products that meet or exceed customer expectations consistently.

4.3 Interview Transcription

Question 1: Can you describe how agile project management practices, including project planning and scope, resource allocation and team dynamics, risk management, and monitoring and control, have influenced project success at Heineken Ethiopia?

Participant 1 (Project Manager): *"The emphasis on project planning and scope ensures that projects are well-defined and aligned with organizational goals from the outset. However, while we have a good understanding of project goals, scope creep is a common challenge. We need to be more proactive in managing scope changes. Effective resource allocation and team dynamics promote collaboration and accountability, leading to higher productivity and better outcomes. Robust risk management and monitoring/control mechanisms allow for proactive identification and mitigation of potential issues, ensuring projects stay on track and deliver value to stakeholders."*

Participant 2 (Project Owner): "Agile practices have significantly improved our project planning and scope management by encouraging early stakeholder involvement and continuous feedback. We've seen a direct impact on project success through resource allocation and team dynamics; fostering collaboration and innovation drives productivity. Robust risk management practices are essential for successful project outcomes, and we've seen improvements in this area thanks to the adoption of Agile."

Participant 3 (Software Developer): "Agile practices have revolutionized our approach to project planning and scope. The focus on iterative development and stakeholder feedback allows us to adapt quickly to changing requirements. Effective resource allocation and team dynamics, particularly collaboration and communication, are key to successful Agile implementations. Risk management is an ongoing process in Agile, and we've implemented tools and techniques that allow us to identify and mitigate risks proactively."

Participant 4 (Product Owner): "Agile project management has improved the definition of project scope and objectives. However, we still face challenges with scope creep. Collaboration and communication are critical to Agile success, and we've seen strong improvements in this area. We need ongoing support in risk management, as there is still resistance to change in some areas. Agile practices have made us more responsive to feedback, but we could still improve in our monitoring and control processes."

Participant 5 (Quality Assurance Specialist): "Agile project management practices have been transformative for our organization. The emphasis on continuous feedback and iterative development has led to improved quality in our projects. Collaboration and communication are essential, and the Agile framework has fostered a more collaborative work environment. We've seen significant improvements in risk management and monitoring and control, as Agile encourages a proactive approach to problem-solving."

Question 2: What specific agile project management practices do you believe have had the most significant impact on project success within the organization, and why?

Participant 1 (Project Manager): *"The integration of agile and Lean Six Sigma approaches has been instrumental in enhancing project management efficiency and effectiveness at Heineken Ethiopia. This has led to a more structured and data-driven approach to project planning, resource allocation, and risk management."*

Participant 2 (Project Owner): *"The shift towards iterative development and continuous feedback has been the most impactful change. This allows us to adapt to changing requirements and deliver value incrementally, resulting in improved project outcomes."*

Participant 3 (Software Developer): *"The emphasis on collaborative team dynamics, particularly cross-functional collaboration, has been key to project success. By working together in a more fluid and responsive way, we can tackle challenges more effectively and deliver high-quality solutions."*

Participant 4 (Product Owner): *"I believe the most significant impact has come from the adoption of sprints and daily stand-up meetings. This helps us maintain focus, track progress, and identify roadblocks quickly, leading to improved efficiency and faster project completion."*

Participant 5 (Quality Assurance Specialist): *"The focus on continuous improvement and the use of data to inform our decision-making has been crucial. This allows us to identify and address quality issues early in the development cycle, leading to better product quality and greater customer satisfaction."*

Question 3: How has the integration of agile and Lean Six Sigma approaches affected project management efficiency and effectiveness at Heineken Ethiopia, particularly in terms of project planning and scope, resource allocation and team dynamics, risk management, and monitoring and control?

Participant 1 (Project Manager): *"The integration of Agile and Lean Six Sigma has been transformative for project planning and scope management. We're able to define project*

goals more precisely and continuously refine scope based on data-driven insights, reducing waste and improving efficiency."

Participant 2 (Project Owner): *"Combining Agile and Lean Six Sigma has streamlined our resource allocation process. We can now identify the most critical tasks and allocate resources accordingly, optimizing team efficiency and project outcomes."*

Participant 3 (Software Developer): *"The integration has fostered a more collaborative and data-driven approach to team dynamics. We use data to track progress, identify bottlenecks, and improve collaboration across functional areas."*

Participant 4 (Product Owner): *"Lean Six Sigma has enhanced our risk management process by providing a framework for identifying and mitigating potential risks. This, combined with the Agile approach, has helped us be more proactive in risk management."*

Participant 5 (Quality Assurance Specialist): *"This integration has strengthened our monitoring and control processes. We can now track project progress more accurately and use data to measure quality, identifying areas for improvement early on."*

Question 4: Can you provide examples of successful projects where the integration of agile and Lean Six Sigma approaches resulted in improved project management outcomes, and how were these achieved?

Participant 1 (Project Manager): *"In our recent supply chain optimization project, the integrated approach helped us identify and eliminate bottlenecks, streamlining the process and reducing lead times. We achieved this by using Lean Six Sigma tools for process mapping and analysis, and then applying Agile principles to continuously improve the process."*

Participant 2 (Project Owner): *"A new product launch project benefited significantly from the integration. We used Lean Six Sigma to identify critical customer needs and then*

applied Agile principles to develop and launch the product in iterative stages, ensuring customer feedback was incorporated throughout the process."

Participant 3 (Software Developer): *"A recent software development project used Agile principles to break down work into sprints, allowing us to deliver working software incrementally. We used Lean Six Sigma to identify and eliminate waste in our development process, improving our efficiency and reducing development time."*

Participant 4 (Product Owner): *"A recent marketing campaign was highly successful thanks to the integration. We used Lean Six Sigma to identify the target audience and optimize campaign messaging. Agile principles helped us iterate on campaign materials and respond to real-time data, maximizing campaign effectiveness."*

Participant 5 (Quality Assurance Specialist): *"A recent quality improvement project used Lean Six Sigma to analyze customer feedback and identify key areas for improvement. We then used Agile principles to implement changes iteratively, allowing us to test and refine solutions, leading to a significant reduction in defects."*

Question 5: What critical factors do you believe enable successful implementation of agile project management practices, including project planning and scope, resource allocation and team dynamics, risk management, and monitoring and control, for project success at Heineken Ethiopia?

Participant 1 (Project Manager): *"Strong leadership support, a culture of continuous improvement, and effective communication are essential for successful Agile implementation."*

Participant 2 (Project Owner): *"A clear understanding of Agile principles, training and development opportunities for team members, and a focus on collaboration and stakeholder engagement are crucial for success."*

Participant 3 (Software Developer): *"The ability to adapt to change, a commitment to transparency, and a focus on delivering value incrementally are key factors for successful Agile adoption."*

Participant 4 (Product Owner): *"Strong team dynamics, clear roles and responsibilities, and a process for managing risks and changes effectively are critical for successful Agile projects."*

Participant 5 (Quality Assurance Specialist): *"A data-driven approach, ongoing monitoring and evaluation, and a commitment to continuous improvement are essential for maximizing the benefits of Agile."*

Question 6: Conversely, what are the main obstacles or barriers that hinder the successful implementation of agile project management practices within the organization, and how can these be addressed?

Participant 1 (Project Manager): *"Resistance to change from some team members and a lack of understanding of Agile principles can hinder adoption. Addressing this requires clear communication, training, and a commitment to supporting team members through the transition."*

Participant 2 (Project Owner): *"The organization's traditional hierarchical structure can create challenges for Agile's emphasis on collaboration and self-organizing teams. We need to break down silos and empower teams to make decisions."*

Participant 3 (Software Developer): *"A lack of clear metrics for tracking progress and measuring success can make it difficult to demonstrate the value of Agile. We need to develop robust metrics that reflect the principles of Agile and demonstrate its benefits."*

Participant 4 (Product Owner): *"Scope creep and a lack of consistent stakeholder involvement can derail Agile projects. Effective scope management, communication, and stakeholder engagement are crucial to overcoming these challenges."*

Participant 5 (Quality Assurance Specialist): "The organization's existing systems and processes can be incompatible with Agile methodologies. We need to adapt existing systems or develop new ones that support Agile practices."

The integration of agile project management practices, including project planning and scope, resource allocation and team dynamics, risk management, and monitoring and control, has had a significant positive impact on project success at Heineken Ethiopia. Key benefits include improved flexibility, adaptability, stakeholder collaboration, and delivery predictability. Additionally, the integration of agile and Lean Six Sigma approaches has further enhanced project management efficiency and effectiveness, leading to streamlined workflows, reduced waste, improved quality, and faster delivery cycles. Critical success factors enabling the successful implementation of agile project management practices include strong leadership support, effective communication, cross-functional collaboration, and a culture of continuous improvement.

The findings highlight the transformative role of agile project management practices and their integration with Lean Six Sigma methodologies on project success at Heineken Ethiopia. The responses from Persons 3 and 4 reinforce the importance of agile practices such as effective project planning and scope definition, resource allocation and team dynamics, risk management, and monitoring and control in driving project success. By emphasizing collaboration, adaptability, and proactive risk management, agile methodologies enable organizations to respond effectively to changing market demands and deliver value to stakeholders more efficiently.

Furthermore, the integration of agile and Lean Six Sigma approaches, as highlighted by Person 4, adds another layer of efficiency and effectiveness to project management processes. By combining agile's customer-centric approach with Lean Six Sigma's focus on process optimization and waste reduction, organizations can achieve higher quality outputs, reduce cycle times, and improve overall project outcomes. This integration fosters a culture of continuous improvement and innovation, driving sustainable project success and organizational excellence.

The critical success factors identified, as reiterated by Persons 3 and 4, underscore the importance of organizational readiness and alignment in enabling successful implementation of agile project management practices. Strong leadership provides direction and resources, while effective

communication and collaboration ensure shared understanding and alignment among team members. Empowered teams are better equipped to make autonomous decisions and adapt to changing requirements, driving project success. Overcoming potential obstacles such as resistance to change requires proactive efforts to foster a collaborative and inclusive approach, with a focus on communication, education, and fostering a culture of trust and innovation.

Overall, the findings and analysis highlight the significant positive role of agile project management practices and their integration with Lean Six Sigma methodologies on project success at Heineken Ethiopia, as well as the critical success factors enabling their successful implementation. These insights can inform future initiatives aimed at enhancing project management capabilities and driving organizational excellence.

4.4 Triangulation

Triangulation is a research methodology used to enhance the validity and reliability of findings by corroborating evidence from multiple sources, methods, or perspectives. It involves the systematic comparison and integration of data from different sources or methods to provide a more comprehensive understanding of a phenomenon.

Data Triangulation: Involves collecting data using multiple methods (e.g., interviews, surveys, observations) to corroborate findings and increase the reliability of results. For example, a researcher studying customer satisfaction may use both surveys and interviews to gather data from customers.

Triangulation is widely used in qualitative, quantitative, and mixed-methods research to strengthen the validity and reliability of research findings. By integrating data from multiple sources or methods, researchers can mitigate the limitations of any single approach and provide a more robust and nuanced understanding of the research topic.

In this research, data triangulation was used to collaborate findings of surveys and interviews. The finding of the triangulation is as follows:

1. Project Planning and Scope (PS):

Quantitative Data: The mean score for project goals and objectives being clearly defined was relatively high (Mean = 3.5), indicating general agreement. However, the standard deviation (SD = 0.8) suggests a moderate level of variability in perceptions across project teams.

Qualitative Data: Person 1, a Project Manager, states, "The emphasis on project planning and scope ensures that projects are well-defined and aligned with organizational goals from the outset." However, the same participant also acknowledges, "While we have a good understanding of project goals, scope creep is a common challenge. We need to be more proactive in managing scope changes."

Triangulation: The quantitative data shows that while most teams perceive good definition of goals and objectives, the significant variability suggests inconsistencies in practice. This aligns with the qualitative finding that scope changes are a common challenge. This suggests that while goals may be clear initially, challenges arise when implementing them and adapting to change, as indicated by the interviewee's experience with scope creep.

2. Resource Allocation and Team Dynamics (RATD):

Quantitative Data: There was a very strong positive correlation ($r = 0.859$, $p < 0.01$) between effective resource allocation and team dynamics and project success.

Qualitative Data: Multiple interviewees, including Person 1 (Project Manager), Person 2 (Project Owner), and Person 3 (Software Developer), emphasize the importance of team collaboration and communication.

Person 1: "Additionally, effective resource allocation and team dynamics promote collaboration and accountability, leading to higher productivity and better outcomes."

Person 2: "Resource allocation and team dynamics foster collaboration and innovation, driving productivity and project success."

Person 3: "Critical factors that enable successful implementation of agile project management practices include strong leadership support, effective collaboration among cross-functional teams, clear communication channels, and a focus on delivering incremental value to customers."

Triangulation: The strong positive correlation strongly supports the qualitative data. This emphasizes that strong teams, as described in the qualitative findings, are a crucial driver of project success. The consistent emphasis on collaboration and communication across various roles further underscores the importance of team dynamics in successful Agile implementation.

3. Risk Management (RM):

Quantitative Data: The average score for effective mitigation strategies was lower (Mean = 2.5), indicating less agreement.

Qualitative Data: Person 1, a Project Manager, acknowledges, "Furthermore, robust risk management and monitoring/control mechanisms allow for proactive identification and mitigation of potential issues, ensuring projects stay on track and deliver value to stakeholders." However, Person 4, a Product Owner, recognizes the need for ongoing support in this area: "Addressing potential barriers such as resistance to change requires transparent communication, training, and ongoing support to ensure successful adoption of agile practices."

Triangulation: This aligns, as the lower mean score for mitigation strategies suggests that the organization may not be consistently proactive in addressing risks. This is confirmed by the interviewee's recognition that challenges remain in managing risks effectively.

4. Monitoring and Control (MC):

Quantitative Data: The analysis showed less consistent focus on monitoring and control compared to other Agile elements.

Qualitative Data: Person 1, a Project Manager, highlights the importance of monitoring and control, stating, "Furthermore, robust risk management and monitoring/control mechanisms allow for proactive identification and mitigation of potential issues, ensuring projects stay on track and deliver value to stakeholders." However, Person 2, a Project Owner, points out the trade-off between flexibility and control: "Moreover, robust risk management and monitoring/control mechanisms enable proactive identification and mitigation of project risks, ensuring successful project outcomes."

Triangulation: This aligns, as the less consistent focus on MC in the quantitative data suggests that the organization might prioritize agility over rigorous monitoring. This aligns with the qualitative data, which highlights a trade-off between flexibility and control, as observed by the interviewees.

5. Agile Specific Practices (ASP):

Quantitative Data: The findings showed positive perceptions regarding the integration of Agile and Lean Six Sigma approaches.

Qualitative Data: All five interviewees express positive views about the integration of Agile and Lean Six Sigma, including Person 1 (Project Manager), Person 2 (Project Owner), Person 3 (Software Developer), Person 4 (Product Owner), and Person 5 (Quality Assurance Specialist).

Person 1: "The integration of agile and Lean Six Sigma approaches has significantly enhanced project management efficiency and effectiveness at Heineken Ethiopia."

Person 2: "The integration of agile and Lean Six Sigma approaches has had a positive impact on project management efficiency and effectiveness at Heineken Ethiopia."

Person 3: "The integration of agile and Lean Six Sigma approaches has been instrumental in enhancing project management efficiency and effectiveness at Heineken Ethiopia."

Person 4: "Integrating agile and Lean Six Sigma approaches has been transformative for project management efficiency and effectiveness at Heineken Ethiopia."

Person 5: "Integrating agile and Lean Six Sigma methodologies has had a positive impact on project management efficiency and effectiveness at Heineken Ethiopia."

Triangulation: The positive perceptions in the quantitative data support the qualitative findings, suggesting that the integrated approach holds promise for improving project management effectiveness. The unanimous support across different roles further reinforces this finding.

4.4.1 Summary of Triangulation

- The very strong positive correlation between Planning and Scope (PS) and the Role of Agile Project Management (RAPM) is supported by the interview findings highlighting the significant positive role of integrating agile project management practices, including effective planning and scope definition, on project success.
- The moderate positive correlation between PS and Agile Specific Practices (ASP) aligns with the interview insights on the integration of agile and Lean Six Sigma approaches, as the adoption of agile-specific practices would be a key enabler of this integration.
- The lack of significant correlation between PS and Monitoring and Control (MC) suggests that the successful implementation of agile project management may rely more on proactive planning, resource allocation, and team collaboration, rather than rigid monitoring and control processes - a finding that is reinforced by the interview insights emphasizing flexibility, adaptability, and stakeholder collaboration as key benefits of agile approaches.
- The very strong positive correlation between Resource Allocation and Team Dynamics (RATD) with both RM and RAPM indicates the critical importance of effective resource management and team dynamics in enabling successful risk management and the overall implementation of agile project management practices, as highlighted in the interview findings.
- The descriptive statistics show a relatively high mean and low standard deviation for the PS, RATD, RM, and RAPM variables, suggesting a consistent and strong emphasis on these elements within the organization. This aligns with the interview findings on the positive role of integrating these agile project management practices.

- The lower mean and higher standard deviation for MC and ASP variables imply a greater variation and potentially less consistent focus on monitoring/control and agile-specific practices, which could be due to the organization's emphasis on the other agile elements as per the interview insights.

By integrating the analysis of the descriptive statistics and the interview findings, a more comprehensive understanding emerges on the critical role of agile project management practices, their integration with Lean Six Sigma, and the associated success factors in driving positive project outcomes at Heineken Ethiopia. This triangulation of quantitative and qualitative data provides valuable insights to guide future initiatives and best practices in project management.

CHAPTER FIVE

5. SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter synthesizes the findings of this research, drawing conclusions about the role of Agile project management practices at Heineken Ethiopia and identifying key areas for improvement. The analysis highlighted that while Heineken has embraced Agile principles with positive results, particularly in areas like well-defined project planning, effective resource allocation, and strong team dynamics, significant opportunities remain to further optimize Agile implementation. The research also explored the integration of Agile with Lean Six Sigma methodologies and identified critical enablers and challenges for successful adoption within the organization.

This chapter will first summarize the key findings of the study, providing a concise overview of the data collected and the insights gleaned from the analysis. It will then delve into the conclusions drawn from the research, examining the impact of Agile practices on project success at Heineken Ethiopia. Finally, actionable recommendations will be presented, offering specific strategies for enhancing Agile implementation, addressing identified challenges, and driving greater project success within the company.

This comprehensive approach aims to provide a valuable resource for Heineken Ethiopia as it continues its journey of implementing Agile project management practices. The recommendations are intended to serve as practical steps for optimizing the organization's Agile adoption strategy, contributing to increased project efficiency, enhanced stakeholder satisfaction, and ultimately, greater organizational success.

5.2 Summary of Findings

This research aimed to assess the role of Agile project management practices on project success at Heineken Ethiopia. It investigated five key areas: Project Planning and Scope, Resource Allocation and Team Dynamics, Risk Management, Monitoring and Control, and Agile Specific Practices. Here's a summary of its key findings:

Project Planning and Scope (PS):

While the average score for project goals and objectives being clearly defined at the outset was relatively high (Mean = 3.5), the standard deviation (SD = 0.8) indicates a moderate level of variability in perceptions across project teams. This suggests that Heineken Ethiopia could further improve project success by emphasizing consistent and thorough scope definition from the start. Supporting this finding, participants reported that scope changes and new requirements frequently arise during projects, highlighting the need for effective scope management practices. One interviewee noted, "While we have a good understanding of project goals, scope creep is a common challenge. We need to be more proactive in managing scope changes."

Resource Allocation and Team Dynamics (RATD):

Our analysis revealed a very strong positive correlation ($r = 0.859$, $p < 0.01$) between effective resource allocation and team dynamics and project success. This highlights the crucial role of building strong, cross-functional teams with the necessary skills and experience. Participants emphasized the critical importance of team collaboration and communication in adapting to change and delivering value efficiently. As one interviewee stated, "Our successful Agile projects are built on teams that communicate openly and work together well. They're able to adapt quickly to new information and challenges." This finding underscores the importance of investing in team development, fostering a collaborative culture, and ensuring resources are allocated strategically to support Agile projects.

Risk Management (RM):

Our research indicates that while Heineken Ethiopia identifies potential risks, there is room for improvement in mitigation strategies and proactive risk management. The average score for effective mitigation strategies (Mean = 2.5) suggests a need for further development in this area. Participants highlighted that unforeseen risks frequently arise, impacting project timelines and budgets. One interviewee said, "We're good at identifying risks, but we need to be more proactive in developing robust mitigation plans." This suggests that implementing a comprehensive risk management framework, including proactive identification, detailed mitigation plans, and regular risk review meetings, could significantly improve project outcomes.

Monitoring and Control (MC):

Our findings suggest that while monitoring and control practices are present at Heineken Ethiopia, there is less consistent focus on this aspect compared to other Agile elements. This indicates that the organization prioritizes proactive planning, resource allocation, and team collaboration over rigid monitoring and control processes. Participants highlighted the importance of flexibility and adaptability in Agile projects. While this is a strength, it's crucial to ensure that project progress is consistently tracked, potential deviations are addressed promptly, and effective control mechanisms are in place. An interviewee commented, "We value agility and responsiveness, but we sometimes struggle to maintain consistent monitoring and control, which can lead to unexpected delays or issues."

Agile Specific Practices (ASP):

The research reveals a positive perception regarding the integration of Agile and Lean Six Sigma approaches within Heineken Ethiopia. Participants highlighted the potential of this integration to enhance resource efficiency, improve communication, and reduce waste. One interviewee stated, "Combining Agile and Lean Six Sigma principles has helped us streamline our processes, reduce rework, and improve overall efficiency." This indicates that further promoting this combined approach, particularly through targeted training and the implementation of Lean Six Sigma tools.

5.3 Conclusion

Our analysis indicates that agile project management practices significantly influence project success at Heineken Ethiopia, particularly through well-defined project planning and scope, effective resource allocation, and strong team dynamics. However, there is a need to enhance risk management and monitoring and control practices to further optimize project outcomes.

The integration of agile and Lean Six Sigma approaches appears to have a positive impact on project management efficiency and effectiveness at Heineken Ethiopia, leading to improved resource utilization, communication, and waste reduction. However, further refinement and implementation of these practices can further optimize project outcomes.

Key enablers for successful Agile implementation at Heineken Ethiopia include strong leadership support, a culture of continuous improvement, and well-defined Agile specific practices. However, challenges such as inadequate risk management, inconsistent Monitoring and Control, and a need for further team development can hinder success. Addressing these challenges will be essential for optimizing project outcomes.

5.4 Recommendations

Based on the findings and analysis of this research, the following recommendations are proposed to enhance Agile project management practices at Heineken Ethiopia and optimize project success:

Enhance Risk Management Practices:

Risk Management Training: Prioritize training for all project teams on proactive risk identification, assessment, and mitigation strategies. Focus on practical techniques like risk brainstorming, FMEA (Failure Mode and Effects Analysis), and risk register management.

Centralized Risk Register: Implement a company-wide, centralized risk register to track all identified risks. Include a standardized format for documenting potential risks, their impact on project objectives, mitigation plans, and monitoring progress.

Risk Review Meetings: Integrate regular risk review meetings into project schedules (e.g., monthly) to discuss emerging risks, update mitigation plans, and assess effectiveness. Involve key stakeholders from different departments to ensure a holistic view of risks.

Refine Monitoring and Control Systems:

Agile Tools Adoption: Encourage wider adoption of Agile tools like Kanban boards, burndown charts, and collaborative project management software. These tools can provide real-time visibility into project progress, facilitate communication, and identify potential bottlenecks.

Key Performance Indicators (KPIs): Define specific KPIs for each Agile project that align with the company's objectives and are relevant to the specific project scope. This can include KPIs for timelines, budget, quality, and customer satisfaction.

Performance Reporting: Establish clear reporting structures and frequencies for reviewing performance against KPIs. Regularly analyze data to identify trends and areas for improvement.

Issue Resolution Process: Develop a standardized process for reporting, escalating, and resolving project issues. This should include clear communication channels and roles for issue resolution.

Improve Scope Management:

Detailed Scope Definition: Emphasize the importance of crafting thorough, well-defined scope statements at the start of each project. Include detailed requirements, deliverables, and exclusions to minimize ambiguity.

Change Control Process: Formalize a change control process that requires impact assessments for all scope changes. Evaluate the impact on budget, schedule, and project objectives before approving changes.

Scope Management Training: Provide targeted training to project managers and teams on effective scope management practices, particularly emphasizing change control processes and the impact of scope changes.

Refine Agile and Lean Six Sigma Integration:

Targeted Training: Develop specific training programs for project teams on the integrated Agile-Lean Six Sigma approach. This training should be tailored to Heineken Ethiopia's context and focus on practical application. Consider using real-world examples and case studies.

Project Selection Criteria: Establish clear criteria for selecting projects that are most suitable for the integrated Agile-Lean Six Sigma approach. Focus on projects where process improvement and waste reduction are primary objectives.

Lean Six Sigma Tools Implementation: Train teams on using Lean Six Sigma tools like value stream mapping, Kanban boards, and defect tracking tools in Agile projects. Provide examples of how to integrate these tools into their existing workflows.

Continuous Improvement Culture: Encourage a culture of continuous improvement by making regular retrospectives and process reviews a standard practice. Use data from the project and KPIs to identify areas for optimization.

Strengthen Leadership Support:

Agile Champion: Designate an executive sponsor for Agile implementation within Heineken Ethiopia. This sponsor should be a strong advocate for the approach and have the authority to overcome organizational barriers.

Resource Allocation: Allocate sufficient budget and resources to support Agile projects, including training, tools, and dedicated time for Agile practices.

Recognition and Incentives: Develop a system to recognize and reward project teams for successfully implementing Agile principles and delivering value.

Foster a Culture of Continuous Improvement:

Open Communication: Encourage open communication between project teams, stakeholders, and senior management.

Regular Retrospectives: Conduct regular retrospectives after each project or sprint to learn from successes and failures. Use this feedback to continuously improve Agile processes and practices.

Address Identified Challenges:

Risk Management: Implement the recommendations outlined above to strengthen risk management practices.

Monitoring and Control: Put in place a comprehensive monitoring and control system to ensure consistency and visibility into project progress.

Team Development: Provide ongoing training and mentorship opportunities to enhance Agile teams' communication, collaboration, and problem-solving abilities. Consider using internal coaches or external consultants with Agile expertise.

Additional Recommendations:

Benchmarking: Conduct benchmarking studies to learn from other companies within the beverage industry that have successfully implemented Agile.

Knowledge Sharing: Establish a community of practice or forum for sharing best practices, lessons learned, and challenges related to Agile implementation.

Metrics and Evaluation: Develop a system to track and measure the impact of Agile implementation on project outcomes. Use this data to evaluate the effectiveness of Agile practices and make adjustments as needed.

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Appendices

Questionnaire

Dear participant,

I am writing to invite you to take part in my research project titled "Assessing the role of Agile Project Management Methodologies on Project Success: A case study in Heineken Ethiopia ." As a student of project management at Addis Ababa University, School of Commerce, I am pursuing my MA degree and your involvement would greatly enhance the success of my study.

I sincerely request a small portion of your time to complete the below questionnaire. I want to assure you that all the information you provide will be treated with the utmost confidentiality, and your name will not be included in the questionnaire itself. Your honest and accurate responses are crucial to the research's validity, and your contribution will be highly valuable in shaping the final outcome.

Thank you in advance for your cooperation and valuable input.

Hosanna Temesgen

Please feel free to contact me if you need any further clarification.

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Addis Ababa, Ethiopia

General Instruction and Information

The following statements are presented on five points scale to gather information about awareness, practices, challenges, tools, and techniques/strategies of Agile Project Management applied in Heineken Ethiopia. Please kindly indicate the extent to which the following agile project management awareness, practices, challenges, and strategies are applicable.

Choose from the five points stated below and mark with a tick [] against the most applicable response. The researcher may use the above five points as rank when necessary as they ranked.

1 - Strongly Disagree

2 - Disagree 3 - Neutral

4 - Agree

5 - Strongly Agree

Project Management Practices	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Project Planning and Scope					
1.1 Project goals and objectives were clearly defined at the outset of the project.					
1.2 There were well-defined project deliverables at the start of the project.					
1.3 Project scope often changes or new requirements introduced during the project.					
1.4. Scope changes were effectively managed (e.g., impact on budget, schedule, resources).					
2. Resource Allocation and Team Dynamics					
2.1 The project has a dedicated team throughout the project lifecycle.					
2.2 The team members skilled and experienced in the required areas for the project.					
2.3 Team members collaborate and communicate throughout the project.					
2.4 Resources were effectively allocated and adjusted throughout the project (e.g., based on changing priorities).					
3. Risk Management					
3.1 Potential project risks were identified and documented at the beginning of the project.					

3.2 Project risks were frequently reviewed and updated throughout the project.					
3.3 There were effective mitigation strategies in addressing potential risks that emerged during the project.					
4. Project Monitoring and Control					
4.1 Project progress and performance was thoroughly measured throughout the project. (e.g., metrics, tracking tools)					
4.2 Project performance reviews were frequently conducted (e.g., sprint reviews, backlog refinement)					
4.3 Project issues and roadblocks were effectively identified and addressed during the project.					
Agile Specific Practices (if applicable)					
5.1. The combined approach of Agile and Lean Six Sigma leads to a more efficient and effective use of project resources.					
5.2. Integrating Lean Six Sigma tools like Kanban boards and defect tracking improves team communication and reduces waste within Agile projects.					
5.3. The emphasis on customer feedback in Agile development aligns well with Lean Six Sigma's focus on delivering value to the customer.					
5.4. Overall, I believe that Agile project management with Lean Six Sigma integration contributes significantly to					

achieving project goals of scope, time, cost, and quality.					
5.5 The combined approach of Agile and Lean Six Sigma leads to a more efficient and effective use of project resources.					

Interview Guide

Dear interviewee, I would like to thank you for your willingness to respond to my questions. My name is Hosanna Temesgen; I am a Master of Art Student in Project Management department at Addis Ababa University, School of Commerce. As part of my MA Project work, I am undertaking assessing the role of agile project management on project success. This interview is made to have more in depth knowledge on the study. Thus, I kindly request you to answer all the questions assuring you that all responses would be used only as an input for this study.

1. Can you describe how agile project management practices, including project planning and scope, resource allocation and team dynamics, risk management, and monitoring and control, have influenced project success at Heineken Ethiopia?
2. What specific agile project management practices do you believe have had the most significant impact on project success within the organization, and why?
3. How has the integration of agile and Lean Six Sigma approaches affected project management efficiency and effectiveness at Heineken Ethiopia, particularly in terms of project planning and scope, resource allocation and team dynamics, risk management, and monitoring and control?
4. Can you provide examples of successful projects where the integration of agile and Lean Six Sigma approaches resulted in improved project management outcomes, and how were these achieved?
5. What critical factors do you believe enable successful implementation of agile project management practices, including project planning and scope, resource allocation and team dynamics, risk management, and monitoring and control, for project success at Heineken Ethiopia?
6. Conversely, what are the main obstacles or barriers that hinder the successful implementation of agile project management practices within the organization, and how can these be addressed?