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Assessment of project performance in Ethiopian Airlines cargo terminal e-commerce warehouse construction project

By

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Acknowledgment

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DECLARATION

I do hereby declare that the work which is being presented in this thesis entitled "Assessment of project performance in Ethiopian Airlines cargo terminal e-commerce warehouse construction project" with the guidance and support of the research supervisor is my own original work. It has not been submitted partially or in full by any other person for an award of a degree in any other university or higher education institution and all sources of material used for the thesis have been duly acknowledged.

Researcher's Name: Ghionawit Teshome Mekuria

Place: Addis Ababa

Date of submission: July,2023

Signature_____ Date_____

CERTIFICATION

This is to certify that Ghionawit Teshome Mekuria carried out his/her study on the topic entitled "Assessment of project performance in Ethiopian Airlines cargo terminal e-commerce warehouse construction project". I have supervised and directed the student in undertaking the research reported herein and I confirm that the student has affected all corrections suggested and suitable for submission for the award of the degree of Masters in Project Management.

_____	_____
Supervisor	**Date**

APPROVAL

_____	_____	_____
Name of Advisor	Signature	Date
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Name of Internal Examiner	Signature	Date
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Name of External Examiner	Signature	Date
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Abstract

The primary goal of this study was to assess the Ethiopian Airlines Cargo Terminal E-Commerce Warehouse Construction Project's project performance. The 5-point Likert-Scale closed-ended questionnaire was used to gather data from a sample population, and the sample size was obtained using Yemane's sample size calculation. 96 of the 120 questionnaires provided were properly completed and collected for the study. The 96 employees were from the client Ethiopian Airlines as well as the consultant's Dar Consultant, contractor's AVIC International Beijing Co. Ltd., and subcontractors working on the e-commerce warehouse building project for the Ethiopian Airlines cargo terminal. The researcher employed a descriptive and inferential statistics approach in order to achieve its goals. Tables were used to present the data after descriptive and inferential statistics were applied with the aid of SPSS version 27. Findings: The results suggest that the project performance with respect to schedule, quality, cost, stakeholder engagement, and performance of business case is exceptional throughout the Ethiopian Airlines Cargo Terminal E-Commerce Warehouse Construction Project and also schedule, quality, cost and performance of business case have positive and significant relationship with project performance. Finally, the study advised that the construction project needs to be completed within the stipulated schedule, the cost that was established in the budget, the quality of standard expected of the project, there needs to be an easy way of exchanging information with the stakeholder as well as the project need to be done within the specified business case.

Keywords: project management, project performance

CHAPTER ONE

INTRODUCTION

1.1. Background of the study

A project is successful when it is completed within the given time, cost, and quality when it fulfills the intended goal, and most importantly, when the project returns the invested money. It is understood, many factors influence project success, which is why competent and efficient project management and excellent leadership procedures are critical. Project management's "magic triangle" uses three criteria to assess a project's success. Performance time, cost, and scope. Conflicts in organizations can easily develop due to the divergent perspectives on what success in a project means. If these issues are not addressed right away, they will eventually result in disconnectedness. Not necessarily for all stakeholders, but at least for some. In the worst-case scenario, this results in additional effort or delays in the project. Additional possibilities include the level of unhappiness rising or even the termination of projects as a result of not receiving what was anticipated. For this reason, you should ensure that a project's expectations are made clear immediately (Anna Pauels and Markus Aeschimann, 2022).

E-commerce is the process of exchanging items online with the use of the Internet, according to Nawarathna Banda (2019). Ipleaders contended that some of the characteristics of e-commerce include internet marketing, electronic data interchange, supply chain management, mobile commerce, inventory management systems, electronic cash transfers, and automated data gathering systems. For the life cycle of its transactions, e-commerce commonly uses the internet. E-commerce transactions are frequently made while buying music and books online (via platforms like the iTunes Store or other online music distributors). Less frequently, online stock management services for alcohol retailers are tailored or customized. The history of e-commerce began on August 11, 1994, when an individual used his website NetMarket, an American online retailer, to sell an album by the band Sting to a friend. The first time a client has ever made a purchase from a business over the internet, or "e-commerce," as it is now more often known. Since then, online marketplaces and retailers have grown to make shopping and locating products easier. By enabling

entrepreneurs to offer their goods and services on a far wider scale than used to be feasible through conventional offline retail, e-commerce has supported freelancers, small companies, and huge corporations equally. According to Stephanie Chevalier (2022), the value of worldwide retail e-commerce reaches $5.2 trillion in 2021. This sum is anticipated to have grown by 56% by 2026, coming to a little over 8.1 trillion dollars.

According to Mariam Saleh (2022) in Statista, online shopping in Africa has experienced a fast development in the past few decades, and this trend is anticipated to continue. There are various reasons for this astonishing evolution. Africa is home to the second largest and most youthful population in the entire globe. A huge online audience is therefore feasible. Access to the internet has also expanded as a result of the growing use of smartphones and other portable technology in general. Online shopping is ruled by mobile e-commerce. Various online payment methods, an essential component of e-commerce, are gaining popularity in African countries. Yet, credit cards are still quite uncommon. Other means of payment used by online customers include mobile payments and cash-on-delivery. Among the most highly competitive markets on the African continent are Nigeria, South Africa, Kenya, Morocco, and Egypt call for special attention. They have the largest economy in Africa. Online shopping is growing in these regions, as seen by the enormous number of well-known companies operating in several other African countries, like Jumia, Konga, Takealot, and Kilimall. Two recognized internet stores in Africa, Jumia and Konga, respectively have their corporate headquarters in Nigeria. Takealot.com, the country's leading e-commerce site, is located in South Africa, whereas Kilimall was founded in Kenya. Given the importance of mobile online shopping, a quick check at some of the most popular shopping apps can provide more information on the key players in these industries. Naturally, Jumia Online Shopping ranks number one in Nigeria and Kenya and third in Egypt, after only Souq and Alibaba. The largest online retailer in countries that communicates in Arabic language is souq.com, a subsidiary of Amazon that will become Amazon.eg in September 2021. The clothing e-commerce website SHEIN is one of the most widely used shopping apps in South Africa. Mobile payments were significantly more common compared to those using local credit cards on Africa's M-Pesa digital payment network. Without a connection to the internet, users can acquire, save, and spend

money with mobile banking. Customers must pay for their purchases in cash upon delivery is another popular payment option for e-commerce.

According to Statista online sales in Africa produces about 37 billion US dollars in revenue in 2022, up from about 13 billion US dollars in 2017. Statista Digital Market Forecast predicted that between 2022 and 2027, e-commerce sales in Africa would continue to grow. The African e-commerce market may surpass 82 billion dollars in value in 2027 (Mariam Saleh, 2022).

Anteneh Tesfaye (2023), suggested for several reasons, Ethiopia's e-commerce "industry" is growing rapidly. While the COVID-19 epidemic altered the globe in a way that probably only WWI and WWII could have done, it also demonstrated to Ethiopian consumers and regulators the value of an effective and well-designed digital environment. Suddenly, utilizing your gadgets to settle payments and buy products and services online has been essential. Some of the e-commerce platforms in Ethiopia are Deliver Addis, Zmall, Asbeza, HellooMarker, Addis Mercato, Mercato Online, DHL Africa e-shop, Fetan Mart, Brundo, Deamat, Utopia, and Sheger Net.

Ethiopia will overtake Cuba as the 81st-largest online shopping market by 2023, having a projected revenue of US$1,284.6 million. The value of the market is expected to reach $2,544.6 million by 2027, indicating an 18.6% compound yearly rate of development (CAGR 2023-2027). Ethiopia's e-commerce sector is expected to increase by 26.5% by the end of 2023, adding to the worldwide expansion of 17.0%. Worldwide sales of e-commerce will likely increase in the future years, as they did in Ethiopia. e-commerce DB considers five segments in the Ethiopian e-commerce market. Food & Personal Care is the largest market, accounting for 32.9% of Ethiopian e-commerce revenue. It is followed by electronics & media at 29.3%, fashion at 18.9%, furniture & appliances at 12.5%, and Toys, Hobby & DIY with the remaining 6.3% (Statista, 2023).

International finance stated Ethiopia is constructing a 150,000-ton-per-year e-commerce hub in Addis Ababa to expand its e-commerce logistics capabilities and service. The e-commerce facility is also going to be outfitted with an Automatic Sortation System and Electronic Transport Vehicles to facilitate the effective administration of cargo ranging from tiny parcels to containers, skids, and accumulated products. According to the reporter (Nov 2022), in keeping with the group's goal

to become a logistical hub for Africa's expanding e-commerce sector, Ethiopian Airlines has started building a state-of-the-art e-commerce cargo service center for the equivalent of $50 million dollars. Due to changes in the working system implemented by global e-commerce behemoths like Amazon and Alibaba, the standard cargo system is in the process of evolving into the E-cargo system. Ethiopian Airlines revealed that 44 percent of the e-commerce Hub's construction is already complete. According to reports, the 15,000 square meter platform will begin offering services in the middle of this year, 2023. Ethiopian Airlines Group (ET) and MailAmericas (MA), a privately owned postal service company and golden participant of the Universal Postal Union's consultative committee, collaborated on January 20, 2023, according to international finance, to establish affordable worldwide e-commerce platforms among Africa and the Middle East via Addis Ababa as a central location. MailAmericas will supply market knowledge and data gathered in Latin America and Africa, where it has networks in more than 40 countries, due to this cooperation, while Ethiopian Airlines will offer aerial freight services for moving products across its large network.

1.2. Background of the company

Ethiopian Airlines was founded on December 21, 1945, and services started on April 8, 1946, eventually growing to worldwide flights with complete government control in 1951. According to Wikipedia, Ethiopian Air Lines became a joint stock corporation in 1965 and switched its name to Ethiopian Airlines. According to the Ethiopian airline website, Ethiopian Airlines has experienced more than 75 years of profitable travel despite its modest beginnings, making it the top aviation group in Africa. Over the years, the airline has made a name for itself as the industry pioneer in every area of aviation, including network development, technological leadership, and aviation mentoring. In 1946, Ethiopia launched its operation with five C-47 aircraft, operating its first flight from Asmara to Cairo. Since then, it has quickly grown while also introducing new methods and technology to the aviation sector. And also, it has swiftly increased in size and has continued to import cutting-edge aviation technologies. With an average fleet age of five years, the airline currently has a fleet of around 144 contemporary aircraft. Moreover, 31 ultramodern aircraft are currently on order. Living up to its tagline of "Bringing Africa Together and Beyond," Ethiopian

has built networks of transcontinental and pan-African air connectivity connecting its primary hub Addis Ababa to the rest of the world. With daily and numerous flights and a minimum layover in Addis, the airline offers service to 131 worldwide passenger and cargo destinations, including 63 African countries.

1.3. Statement of the problem

According to the research done on defense construction enterprise by Gebremedhin Sebsibe (2019) the most significant procurement management-related problems that adversely affected project performance was the lack of successful and profitable procurement scheduling, procurement control methods, and contract management are in the company. The most important stakeholder management-related factors that adversely impact project performance include a lack of stakeholder attribute evaluation, a lack of stakeholder involvement in decision-making, a lack of stakeholder identification, and a lack of stakeholder communication and engagement. The two most important quality management elements that adversely affect project performance are a lack of a quality management system and a lack of management commitment and leadership toward quality. Lastly, poor cash flow, financial challenges, and market price increases for building materials have a detrimental impact on project performance (Gebremedhin Sebsibe, 2019).

According to Abera and Fekadu (2016), performance issues and problems are the major causes of project failure. Furthermore, there are a lot of causes and contributing elements to this issue. There are several building projects that perform poorly in the construction projects in the Oromia industry and urban development. From the results, it was found that 100% of the building construction projects suffered in both time and cost performance. The actual rate of cost performance ranges from a minimum of 12% to a maximum of 60% of the contract amount and the actual time performance ranges from a minimum of 7% to a maximum of 170% of the contract time

The study discovered that a number of factors, including inflation, a lack of foreign currency contributed to 75%, changes in scope and design 56%, and poor planning and schedule delays contributes to 80% to the project low performance, and according to the result less than 50% of the projects are completed on schedule and budget. In addition to the previously mentioned

concerns, inadequate planning, subpar monitoring, and delay in resource allocation are recognized as supplementary factors that contribute 36% to the construction's poor on-time performance of projects (Maranatha Assefa, 2019).

Therefore, elements determining project performance are essential for any construction project. On the effectiveness of Ethiopian Airlines programs, there haven't been many studies done, though. This is due to the fact that many contractors nowadays don't live up to their commitments and pledges, which has a detrimental effect on the aviation sector and puts a tremendous load on the maintenance divisions. With regard to time, cost, quality, stakeholder engagement, and performance of the business case, this research identifies and analyzes the performance of the construction of the Ethiopian Airlines cargo terminal e-commerce warehouse. As a result, the construction project's performance was assessed using the project performance measurement methodology. The model, which identified five performance factors based on a thorough literature review, demonstrates clearly how a construction project's performance is measured in distinct metrics. This study aims to assess the project performance of the Ethiopian Airlines cargo terminal e-commerce warehouse construction project.

1.4. Objective of the study

1.4.1. General objective

The aim of this study is to assess the project performance of the Ethiopian Airlines cargo terminal e-commerce warehouse Project.

1.4.2. Specific objective

- To assess if the project is done within the specified time, cost, and quality
- To assess if the stakeholders are engaged in the process of the project
- To determine whether the project is performed according to the business case
- To measure the performance of the Ethiopian Airlines cargo terminal e-commerce warehouse project
- To assess the relationship between project performance and schedule, cost, quality, stakeholder engagement and performance to business case

1.5. Research question

- How is the e-commerce warehouse construction project at the cargo terminal of Ethiopian Airlines performing?
- What is the relationship between project performance and schedule, cost, quality, stakeholder engagement and performance to business case?

1.6. Scope of the study

The study concentrated on assessing the project performance of the Ethiopian Airlines cargo terminal e-commerce warehouse construction project. Ethiopian Airlines cargo terminal e-commerce warehouse is currently located at Bole International Airport, Addis Ababa. The empirical investigation and the literature evaluation served as the foundation for the framework's development. All personnel and firm procedures should be evaluated, however, owing to time and resource limitations, this is not possible. Also, the data will be gathered from employees and managers who are doing work on the warehouse construction project using questionnaires with a five-point Likert-type scale as primary data and articles, books, and journals as secondary data. The period from January 2023 to June 2023G.C. was set out for the preparation of the study and delivery of the thesis.

1.7. Significance of the study

The research will be helpful to project managers, consultants, and other professionals who may be involved in such unique projects by identifying the project performance metrics that will lead to the project's success or failure while taking into account the available technology and resources in Ethiopia. Additionally, the research findings will be very helpful in assisting Ethiopian project managers or leaders in identifying which project performance parameters are lacking in construction projects. This will help them to structure or prioritize issues crucial for such projects' success and apply their knowledge and findings to their next assignment.

1.8. Organization of the study

This thesis will have a total of five chapters. The background of the study, the statement of the problem, the research objective, the research question, and scope of the study, and the significance of the study will all be covered in the first chapter. Existing literature will be examined in chapter two. It incorporated significant theoretical and empirical research from other authors that were relevant to give insight into project performance, project success, and project failure. The third chapter will discuss data-gathering techniques and procedures. The fourth chapter will discuss and interprets the findings, and the fifth chapter will provide a summary, a conclusion, recommendations, and implications for additional research on the research topic.

CHAPTER TWO

REVIEW OF THE RELATED LITERATURE

2.1. THEORETICAL LITERATURE REVIEW

2.1.1. Project Management

Faster, cheaper, and better has become the catchphrase for businesses looking to grow their market share and profits as well as nonprofits and governmental agencies looking to improve the value they provide to customers. Projects are being used by organizations more often to achieve these objectives. Projects are goal-directed and time-bound, and when they are properly managed, they provide results on schedule and on budget. Every project shares the same traits: it has a scope, budget, and timetable. Likewise, projects vary. The key to properly managing a project is by comprehending how projects differ from one another and what that difference entails for the management of the project. Compared to small, less difficult projects, large, complex projects require considerably different project management tools, methods, and processes (Russell W. Darnall and John M. Preston, 2012).

A project is a brief undertaking that entails a linked sequence of activities and a range of assets, is meant to generate a specific and distinctive outcome, operates under time, budget, and quality constraints, and is usually used to bring about change (Cathy Lake, 1997).

Venuste et. al. (2020), almost all managers now oversee one or more projects, and project management has emerged as a key ability. Additionally, projects' role in businesses is becoming increasingly important. In the US defense-aerospace sector, project management as a concept first emerged in 1953. Currently, project management is acknowledged as a professional subject with a unique set of abilities and understanding. Any kind of company may benefit from possessing expertise in project management. When focusing on the way projects assist businesses in achieving their strategic goals, a holistic, integrated approach of project management is most advantageous. The method of choosing projects that can offer the best support for a specific organization's strategy should also be considered from this perspective (Kirsi Aaltola, 2017).

Project management is defined as a method of applying expertise, abilities, instruments, and strategies to project-related activities in order to meet the requirements and demands of project stakeholders by the PMBOK, published in 2017. The methodical organization and direction of project operations from start to finish is known as project management. It's a method for creating plans. Project definitions are the first step, and goal attainment is the last. It is also the techniques and practices used to establish objectives, schedule and keep track of work-related activities and resources, recognize and address problems, and manage expenditures and spending for a particular project.

The three distinguishing traits that make it different from other styles of management are the project manager, the project team, and the project management system. The project management system consists of the organizational structure, handling of data, making choices, and procedures that facilitate the coordination of horizontal and vertical organization of project components. The primary objectives of the project management system involve both design and oversight (SP Sone, 2008).

2.1.2. Project performance

Project performance is the general evaluation of a project's success in terms of scope, budget, and schedule requirements and also a routine check during the monitoring and controlling stages of a project to track progress and spot deviations from the project management plan for prompt correction (Denise Hill, 2015). According to Idrees and Shafiq, (2021), the three indicators of time, quality, and cost are what determine how well a project will turn out. Venuste et. al. (2020), states if the project performs well, it will be finished on schedule and within budget, with the client's requirements and specifications being met. It will also not take longer than expected to complete the project. Meanwhile, if the project doesn't perform well, it won't be completed by the scheduled date, its ultimate cost will be far more than anticipated, and it won't meet the client's criteria and specifications.

According to Takim & Akintoye (2002), the creation, execution, and management of projects that advance an organization's performance and strategy constitute project performance. Project

performance focuses on the overall picture rather than on finishing tasks. In order to sustain the firm's competitive edge, maintaining project performance is essential.

At various points during the project, you should evaluate each of the five variables that follow: schedule, quality, cost, stakeholder satisfaction, and performance to the business case. Formal project performance, according to Jason Westland (2015), is beneficial towards the end of a period or cycle because it may assist you understand how the endeavor is performing in relation to the initial estimates. The following table provides an explanation of project performance measurement.

Table 1: Dimension of Project Performance Measurement

	Measurements	Descriptions
1	Schedule	The amount of time required to finish the project is considered the most typical project supervision in creating projects. This is evident through missed deadlines and incomplete deliveries. Efficient schedule control requires the meticulous identification of activities to be accomplished, a precise assessment of their durations, the sequence in which they will be finished, and the proper distribution of workers and other resources.
2	Quality	The conditions that must be satisfied in order for the project's products to be judged effective. It also needs to meet other performance requirements including availability, reliability, and maintainability, as well as having the proper polish and finish.
3	Cost	The authorized project budget includes every expense necessary to complete the project. Project managers inside companies must find a compromise between not running out of money and not underspending since many projects receive funds or grants with "use it or lose it" contract restrictions.
4	Stakeholder Engagement	Because they are crucial to finishing the majority of the task, larger teams and stakeholders must be kept in the loop. Ask them what they think of the project now and what you could change. Even if there is nothing to restrict you from asking for a rating out of 10, it is difficult

		to statistically prove this assessment. Even if you are judging their level of satisfaction subjectively, it is still a useful task. If you find that stakeholders are not fully on board, you may decide to take steps to fully include them in an effort to influence their behavior.
5	Performance to Business Case	Review the business case to make sure you still agree with what you first said. How far along is your project? Check to see if the business issue this initiative was meant to address still exists and if the rewards are still fair. Project teams may work on initiatives with the best of intentions, but by the time they are finished, the business climate has changed and the projects are no longer relevant. No one cared to assess the business case at any point during the project, consequently nobody was aware of the fact the work was no longer necessary. Spend no effort on a project that no one will use! Review the business case frequently and evaluate it in light of the continuing company objectives.

Source: Amsale Tsige (2019)

2.1.3. Project Success

Project success, which is at the core of project management, and the variables that affect it are often debated topics in project management research, and as a result, project managers and other stakeholders place a high priority on them (Matthias Albert et. al., 2018). Over time, the concept of success evolved in the 1960s; technical performance was the only factor in project success. In the 1970s, time, cost, and quality took center stage. In the 1980s, customer acceptability was given priority. Finally, in the 1990s, organizational and cultural influence became the primary consideration (O'Brochta, M., 2002).

According to De Wit, A. (1988), as a project is often an instrument to a goal rather than a goal in and of itself, it is fair to be interested in knowing if the project succeeds, whatever the purpose might have intended. The success of a project can be judged based on the merits of the project itself or what it was originally envisioned or expected to accomplish, based on the desires of the stakeholder. A project's success may be determined at the closing phase if it is seen as a goal in and of itself. However, if it acts as a means to a goal, its outcomes cannot be assessed until the

main project has been completed. This gives additional situations and conditions that might not fairly represent the successes of the first undertaking the ability to influence how successful the project is seen to be. furthermore, the stakeholders might have various expectations regarding what the project was designed to achieve and judgments concerning if it accomplished in doing so, independent of techniques or aims. The expectations and impressions of several stakeholders, as well as the timing of the evaluation, have a significant role in determining a project's success. Many academic and professional reasons exist for highlighting how crucial it is to comprehend the real meaning that underpins project success. First off, lack of defined success criteria typically has a detrimental effect on project managers' careers. In other words, if companies and their management team have little understanding of what makes up (or should constitute) a project's success throughout a particular organization, or if various essential stakeholders providing contradictory signals regarding how and when they ought to evaluate the completion of a project, the project manager might be wrongfully compensated or punished due to vague evaluation requirements. providing premature or incorrect evaluations of a project's success can then send mixed messages to different project managers regarding what "it appears" the company expects of them, which can cause them to alter their strategies even if they will ultimately harm their project (Pinto et al., 2021).

After reviewing the relevant literature from the preceding 40 years, Khan et al. (2013) identified 32 project success criterion factors. Two more elements were added after speaking with other project managers, increasing the total amount of factors involved in his research to 34. The components analysis conducted by Khan et al. (2013) revealed five project success criterion dimensions with 25 variables, as shown in the table.

Table 2: Dimension of project success

Project Success Dimension		**Success Criteria**
1	Project efficiency	1. Finished on time 2. Finished within budget 3. Minimum number of scope changes 4. Activities carried out as scheduled

		5. Met planned quality standards 6. Compiled with environmental regulations 7. Met safety standards 8. Cost-effectiveness of work
2	Organizational benefits	1. Learned from the project 2. Compliance with procedures 3. End product used as planned 4. Users' needs are satisfied 5. New understanding/ knowledge gained
3	Project impact	1. Impacts on beneficiaries are visible 2. Purpose achieved 3. End user satisfaction 4. Project has a good reputation
4	Future potential	1. Enabling of other project work in future 2. Motivated for future projects 3. Improvement in organizational capability 4. Resources used as planned
5	Stakeholder satisfaction	1. Sponsor satisfaction 2. Steering group satisfaction 3. Met client's requirement 4. Met organizational objectives

Source: Khan et al (2013)

2.1.4. Projects Failure

Project failure does not have a standard definition. While we appear to have a decent grasp of project success, we have a poor grasp of project failure. Mark Ankucic suggest everyone involved in the project has a different idea of what constitutes a failed endeavor. If a project had a low return on investment and generate few or no results, it may be deemed failed. They periodically produced poor results, which disappointed the client. Even if the results were good, they might have been better. The initiative, in any event, fell short of goals. The primary causes of project failure, according to Phillips J., Brantley W., and Phillips P. (2012), include project stakeholders who don't participate, an absence of concentration on company outcomes, a failure to properly set up the project's environment, an absence of responsibility throughout the project, issues with gathering information, a failure to determine the project's impacts, and a lack of engagement with key managers. FDIC claims that the following success criteria on-time delivery, on or under budget, and customer acceptance based on the specified scope of work are typically the reasons why projects fail. Few initiatives succeed in all three areas. There are many more deliveries that fall short of one or more of these standards, and a sizeable portion of them do so miserably that they are abandoned.

2.2. Empirical Literature Review

This section of the literature review will go over journals and publications that are pertinent to the subject being studied. According to the research done by Prof. Shilpi Bhuinyan et al. (2020), they suggested in the construction sector, project performance is a critical concern. Performance measuring systems are essential for the building process. Project success is frequently measured by timely completion and client satisfaction. The success of the construction project depends in large part on the construction project manager's ability to carry out his duties with the desired efficacy. Because there are many different parties involved in the business, including contractors, clients, consultants, government agencies, stakeholders, etc., it has a complex character. According to Maryam Hussain et al.'s research from 2023, the knowledge of the project manager and the kind of endeavor being constructed are two aspects that impact the achievement of a construction project. Based on a study of the literature, 23 criteria were selected as significant in this study and

fall under the categories of upper management assistance, project supervisor skills, team member skills, and stakeholder management expertise. To examine how these elements contribute to project performance, a framework containing 23 hypotheses is built. The survey of 266 engineers involved in Qatari building projects produced the data that was utilized to examine the framework. The results show that critical success factors and project performance are strongly correlated.

According to a study done by Andrew F. Griffith (2005), projects whose core project teams conducted a formal review of the project schedule showed less cost rise than projects whose core project teams did not do so. A review of the project timeline has many advantages. First, the core project team conducts a thorough review to check for accuracy. The review gives the functional leaders the chance to make sure that the final authorization schedule accurately reflects their goals and expectations. The review also encourages team members, who are ultimately in charge of completing the project, to buy into the plan. The use of project scheduling tools early in the project is connected with improved project outcomes, according to data collected from projects.

In his study findings, T. G. K. Vasista (2017) proposes that excellent deliverables can raise competition in the customer-oriented paradigm, improve revenue, and offer the framework for a long-term connection with owners. Though quality-based technical efficiency constitutes one of the most important success factors for determining the achievement of a construction project, there is often a shortage of quantitative information, making it difficult for supervisors to analyze the present state of such intangibles. An attempt is made to evaluate and analyze the level of quality of the research with the goal to evaluate the technical effectiveness of project management in construction projects.

Based on the descriptive statistics data analysis of the research, Elias Betru (2021) derived the following conclusions about managing project expenses and its influence on project success. The outcomes of the empirical investigation indicated that there is a usually favorable and statistically significant association between project performance of the chosen Addis Ababa real estate developments and the project cost management techniques. This demonstrates that improving project cost management procedures can boost project success. Additionally, the management of

expenses during the planning, estimation, and control phases of a project has a strong correlation with and influence on the project's overall performance.

The success of a project is dependent on controlling the desires and needs of everyone involved. Recognizing stakeholders at the start of projects, as well as comprehending and handling their demands and standards, may assist to establish an acceptable environment and function as a success accelerator. This is accomplished through providing appropriate and timely communication that meets the needs of stakeholders. This comprises providing the required information to decision-makers and soliciting their feedback to ensure that the project's objectives and the demands of stakeholders are aligned (Israa Fadhil Ibraheem, 2018). According to the analysis of gathered and analyzed data from Jackson Mugabo's Gisenyi Youth New Vision Project, Patrick Mulyungi (2017) found that there was a positive and significant relationship among stakeholder engagement in project performance given that the outcome of the Pearson correlation between stakeholder engagement in project performance stood at a value of 0.874, implying that stakeholders' involvement in project performance was at an amount of 87.4%. The study concluded that there is indeed a strong association between stakeholder participation and project success since their p-value (0.006) is highly significant at the 5% level of significance. The researchers eventually conclude that there is a substantial association between stakeholder participation in decision-making and project success since their p-value (0.0016) is statistically significant at a level of 5% significance.

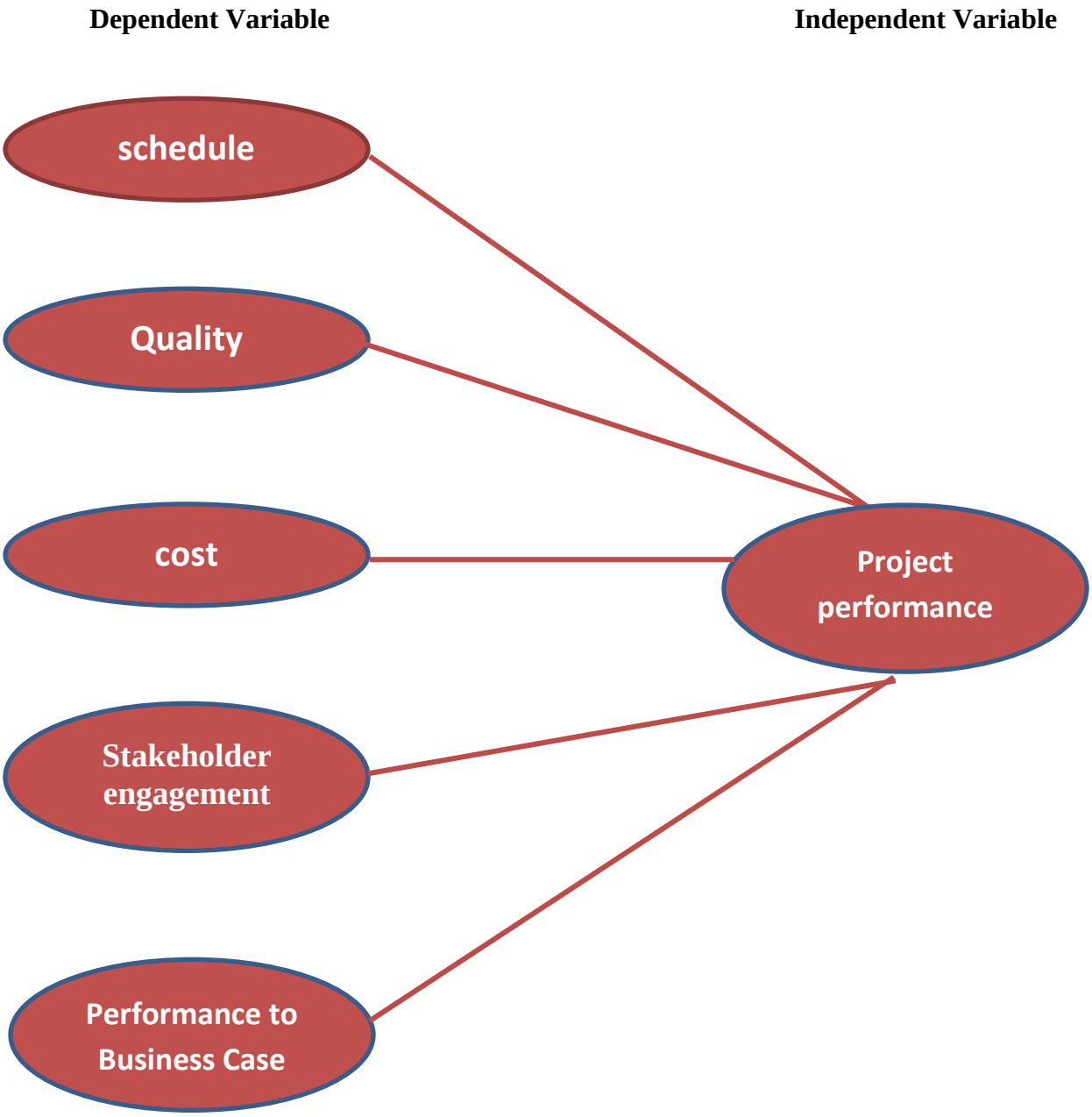
Because to a variety of recently discovered knowledge, Florenciano Johanes and A. Arviansyah (2021) were able to grasp how the business case influences project performance from start to finish. We observe how there's definitely space for advancement in the process of developing business cases for projects. As performance increases, the company is going to able carry out projects with greater success. A successful business case acts as a management tool to ensure that corporate values are maintained through the course of the endeavor, assisting the project's supervisor in handling and making decisions. The findings of this study include one business case that identifies important indicators that alert leaders to financially unsustainable and/or unsuccessful ventures; This demonstrates the necessity to investigate innovative methods of improving project

performance. Second, it allocates resources towards the evaluation of critical success elements for a project.

2.3. Conceptual framework

The conceptual framework explains the connections that should exist between your variables. It describes how the relevant aims of your research process work together to produce logical findings. A literature review of prior studies on your topic is frequently used to develop conceptual frameworks, which can be presented either textually or visually (Bas Swaen and Tegan George, 2022).

The conceptual framework emphasizes the assessment of the project performance of the Ethiopian Airlines cargo terminal e-commerce warehouse construction project based on the research questions, literature reviews, and the assumption that there is a relationship between project performance and the five variables. Based on the literature review and the empirical study the following framework has been designed;



Source: Researcher's own framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Research Approach

According to John W. Creswell (2014), research approaches are strategies and procedures for conducting studies that could vary from broad concepts to specific methodologies for gathering, analyzing, and interpreting information. This technique has several possibilities, and they do not necessarily need to be selected in the order that you think is sensible or that is mentioned here. The most important decision is how to learn a subject. Qualitative, quantitative, and mix approaches are the three most important research methodologies. Each of the three techniques are certainly not as diverse as they look at first glance. It's important to remember that qualitative and quantitative methodologies are not polar opposites, tightly classified, or segregated. Because it integrates both qualitative and quantitative methodologies, mixed methods research falls in the center of the spectrum. The study employed both qualitative and quantitative methodologies.

3.2. Research design

Research design is the process of establishing a framework or plan for your research undertaking. Keeping your project's objectives in mind will help you make informed decisions concerning research design. When we want to describe people, groups, activities, events, or circumstances, descriptive research is useful. Explanatory research is appropriate when we want to clarify linkages, causes and effects, or why something is the way it is (Patricia Leavy, 2017).

Descriptive analysis approaches, such as percentage and frequency calculation, were used to describe the information obtained in this research. The sample data were gathered, and descriptive statistics were used to analyze them for the descriptive survey study design using the SPSS computer software, the questionnaire was coded and analyzed at this step. Frequency, and percentage, were used to present a broad overview of the data, a summary of the study, and to make it easier to comprehend the results. And also, explanatory research method was employed to indicate the relationship between (schedule, quality, cost, stakeholder engagement and

performance of business case) and project performance. Regression analysis and correlation analysis were also done by using the SPSS computer software, the questionnaire was coded and analyzed at this step. Frequency and percentage were used to present a broad overview of the data, a summary of the study, and to make it easier to comprehend the results.

3.3. population and sampling

Population is the phrase used in research for such a group. A finite population is a population in which there are a finite number of units and they can all be exactly counted. It is known as an endless population when there are an infinite number of units and it is impossible to count them. A "sample" is a subset of the entire population that correctly represents it. It indicates that the units chosen as a population sample must include all important attributes of distinct population unit types. Due to a number of variables, the majority of investigations gather data from sample sizes instead of the whole population, and the findings are subsequently extrapolated to the whole population. Only by making an attempt to select the sample and maintaining the attributes of a perfect sample at the forefront would this be feasible to accomplish properly (Satishprakash Shukla, 2020).

The population for this study was drawn from the consultant (Dar consultant), the contractors (AVIC International Beijing Co. Ltd), subcontractors working on the e-commerce warehouse building project for the cargo terminal of Ethiopian Airlines, and Ethiopian Airlines itself, the client. There is 172 population in total working on the project. The outcomes of the research were more reliable the more persons were sampled. Using Yamane's (1967) technique, which was based on a 95% intended confidence level and a 5% desired accuracy level, the study's sample size was estimated.

$$n = N/(1 + (N * e2))$$

$$n = 172/(1 + (172 * 0.05 * 0.05))$$

$$n = 120$$

Where:

N=Population size

e=Tolerance at desired level of confidence, take 0.05 at 95% confidence level.

n=sample size

Organization	**Target population**	**Sample size**
Dar Consultant	32	22
AVIC International Beijing Co. Ltd	74	54
Subcontractors	36	24
Ethiopian Airlines	30	20
Total	172	120

3.4. Data sources and types

Primary and secondary data are the two basic types of data. Primary data is gained immediately via personal observations or gathering, whereas secondary data is taken from publicly accessible sources, previously collected information or data received from other parties. The collection of both primary and secondary data laid the groundwork for the research's implementation. To acquire primary information, a well-structured questionnaire was employed and it contains pertinent inquiries about the project performance in question. The questionnaire was utilized to enable respondents to react in a uniform and guided manner, impartial strategy, and an objectively focused questionnaire served as the preferred data collection method for this study. The study's secondary data was collected from books, journal, case studies, articles, and news.

3.5. Data collection procedures

Since it is quicker and simpler to complete, allows for more accurate data gathering through answer choices, and enhances respondent response rates, which helps to screen out unnecessary responses, a closed-ended questionnaire will be employed for the study. A 5-point Likert-Scale approach was used to generate the questionnaire. A significant number of the questions were adapted from

previous studies, with some changes made expressly for the purpose of this research. Books, journals, case studies, articles, news, and the internet were used to collect secondary data.

3.6. Ethical consideration

To encourage participants' integrity, it is going to be necessary to explicitly state the study's aim in addition to the researcher's duties and responsibilities. Participants will be informed that the information they supply will remain secret and utilized exclusively for educational reasons.

3.7. Data analysis

After gathering the data, descriptive statistical approaches were employed to analyze it. A large amount of raw data must be transformed into tables, charts, and percentages through the descriptive analysis process in order to be understood. Using the SPSS software version 27, a descriptive statistical and inferential statistical analysis will be conducted. In this study, descriptive analysis will be used to determine whether the Ethiopian Airlines cargo terminal e-commerce warehouse construction project was completed within the required time, budget, and quality limits, whether stakeholders were involved, and whether the project was carried out in accordance with the business case. Multiple regressions will be used to examine the relationship between (schedule, quality, cost, stakeholder engagement and performance of business case) and project performance of Ethiopian Airlines cargo terminal e-commerce warehouse construction project after Pearson Correlation analysis will be performed on the respondents' data to examine the relationship between the independent and dependent variables. multiple regressions will be used to look at the combined effect of the independent and dependent variable.

3.8. Validity and Reliability of the Study

The triangulation strategy was used to increase the data's reliability and validity. The main purpose of this is to contrast the responses obtained from the questionnaire. In order to ensure the quality of the research and give it credibility, the researcher often gave serious thought to both the validity and reliability problems of the data.

Reliability analysis

The Cronbach's alpha test coefficient was utilized to evaluate the surveys' reliability using SPSS software. Reliability metrics give more assurance that the individual variables are consistently assessed. The term "Cronbach's" is used to describe an estimate of the reliability of a analysis test. Internal consistency, or how closely connected a group of things are to one another, is measured by Cronbach's alpha. It serves as a gauge of scale dependability. The minimal Cronbach's value that is considered acceptable is 0.7, while the highest anticipated value is 0.9; anything beyond this is viewed as redundant or damaging to one's image. According to the results of the SPSS analysis, the reliability test for this study is 0.815, as shown in the table below.

Reliability Statistics

Cronbach's Alpha	N of Items
.815	27

Validity test

Validity is the extent to which a study accurately summarizes or assesses the specific idea or construct that the researcher is attempting to test. The survey's content validity demonstrates how representative the survey items and the responses to these questions are of all conceivable queries about the project's performance and success. The questionnaire, which was modified from past research whose validity had been confirmed, was also examined by Ethiopian Airlines human resource employees. This makes it simpler to assess if the survey questions are well-designed, relevant to the topic being assessed, and viable means to gather the required data. The criticism from the thesis adviser was also taken into account to improve the tools' content validity.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, AND DISCUSSION

The material obtained was examined and provided in this section in accordance with the study's goals. The data was thought to be crucial for assessing the project performance in the Ethiopian Airlines cargo terminal e-commerce warehouse construction project. The study's findings were analyzed and explained using descriptive and inferential analysis. For measurements of project performance, the surveys were organized into five categories that range between one to five, where 1 represents strongly disagree, 2 represents disagree, and 3 represents neutral., 4 indicates to agree, and 5 indicates to strongly agree. Employees were given a total of 120 questionnaires, 96 (80%) of which were collected and used for analysis. The data received from participants was presented and analyzed using the statistical tool SPSS version 27. To determine the magnitude of the association among the variables under consideration, the researchers utilized descriptive analysis.

4.1. Demographic information of the respondents

The demographic information of the respondents is shown in the table below, including their educational background, employment status, and their experience. The results of this survey were processed using SPSS 27 software.

Table 4: Demographic summary of respondents

Demographic Profile	**Item**	**Frequency**	**Percent**	**Cumulative percent**
Educational Qualification	Certificate diploma	19	19.8	19.8
	Bachelor’s degree	49	51.0	70.8
	Postgraduate degree	20	20.8	91.7
	Doctorate degree	8	8.3	100.0
Employee level	Consultant	20	20.8	20.8
	Contractor	50	52.1	72.9

	Other	19	19.8	92.7
	Client	7	7.3	100.0
Experience	Under two years	24	25.0	25.0
	2-5 years	24	25.0	50.0
	6-10 years	28	29.2	79.2
	Above 10 years	20	20.8	100.0
Total Number of respondents = 96				

Source: Own computation using SPSS version 27 software.

4.1.1. Educational background of the respondents

The majority of respondents (96 in total) have education levels above the first degree, with bachelor's degrees accounting for 51.0%, postgraduate degrees for 20.8% and doctorate degree for 8% of the respondents, respectively. This demonstrates their ability to internalize and react aggressively to project performance. They additionally possess greater information and current management skills, making them more conscious of the corporate environment surrounding them.

4.1.2. Work Experience of respondents

Among the total 96 responders, 24 (25.0%) have 2 to 5 years of work experience, 24 (25%) have less than 2 years, 28 (29.2%) have 6 to 10, and the remaining 20 (20.8%) have experience of more than 10 years. This suggests that 75%, of the respondents had job experience of longer than two years. This suggests that virtually all of those who responded have the relevant information and expertise about their company to answer questions about project performance.

4.1.3. Employee Level of the respondents

According to the table, 20 respondents (20.8%) are consultants, 50 respondents (52.1%) are contractors, 19 (19.8%) respondents are under other category and 7 (7.3%) are clients. This suggests that responders may provide information from a variety of viewpoints.

4.2. Descriptive analysis of dependent variables

M Thongsri (2005) claims that standard deviations and average scores were calculated using descriptive statistics. The means were interpreted in the following manner to aid with data analysis.

From 1 to 1.80 represents (strongly disagree).

From 1.81 until 2.60 represents (do not agree).

From 2.61 until 3.40 represents (neutral).

From 3:41 until 4:20 represents (agree).

From 4:21 until 5:00 represents (strongly agree).

Standard deviation was employed in this study as a method of data evaluation. A considerable standard deviation (when compared to the mean) indicates that the information points are distant from the mean, whereas a small standard deviation (when compared to the mean) indicates that the information is in close proximity to the mean.

4.2.1. Descriptive analysis of Schedule

Table 5: Mean and standard deviation of responses on Schedule

Descriptive Statistics

Schedule	**Mean**	**Std. Deviation**
Does your organization carefully identify tasks to be performed	4.22	0.463
Does your organization identify the accurate estimation of their project task durations	4.50	0.543
Does your organization identify the sequence in which they are going to do the tasks	4.52	0.523

Does your business specify how it distributes personnel and other resources	4.46	0.664
Grand Total	**4.425**	**0.548**

Sources; SPSS survey 2023

The four items under schedule have a total mean score of 4.425 in the table above, which indicates that respondents generally strongly agree that schedule is strongly performed in their organization. This viewpoint is supported by chapter two literature. According to a study done by Andrew F. Griffith (2005), projects whose core project teams conducted a formal review of the project schedule showed less project success than projects whose core project teams did not do so.

4.2.2. Descriptive analysis of Quality

Table 6: Mean and standard deviation of Responses on Quality

Descriptive Statistics

Quality	**Mean**	**Std. Deviation**
Does your organization use standard quality materials and equipment in the project	4.40	0.467
Does your organization have quality assurance follow-up periodically	4.36	0.682
Does your organization reduce construction errors, defects, and wastes	4.18	0.615
Does your organization do the project with acceptable, reliable, and maintainable quality	4.43	0.628
Does your organization have a great relationship with suppliers to enhance projects quality performance	4.43	0.661
Grand Total	**4.36**	**0.6106**

Sources; SPSS survey 2023

The five questions included in the quality category had a total mean score of 4.36 in the table above, suggesting that respondents strongly agree that quality is well performed in their company. The findings are consistent with the literature review mentioned in the research's second chapter. According to T. G. K. Vasista (2017), among the critical success components when evaluating the performance of a construction project is quality-based technical excellence, and in order to evaluation the technical performance of project management in construction projects, an attempt is put forth to determine and evaluate the project's quality.

4.2.3. Descriptive analysis of Cost

Table 7: Mean and standard deviation of responses on Cost

Descriptive Statistics

Cost	**Mean**	**Std. Deviation**
Does your organization do the project within the estimated cost	4.16	0.638
Does your organization both track and control the budget periodically	4.24	0.611
Does your company strike a balance between preventing cash shortages and not spending too little	4.36	0.667
Does the project's performance suffer as a result of the market's rising prices for building materials	4.41	0.776
Grand Total	**4.293**	**0.673**

Sources; SPSS survey 2023

According to the table above, the four items that made up the cost category had a combined mean score of 4.293, indicating that respondents strongly agreed that cost is well-performed in their organization. The outcome is consistent with the literature review that was reported in the study's second chapter.

4.2.4. Descriptive analysis of Stakeholder Engagement

Table 8: Mean and standard deviation of responses on stakeholder engagement

Descriptive Statistics

Stakeholder Engagement	**Mean**	**Std. Deviation**
Does your organization involve stakeholders in the maintenance of the projects	4.38	0.568
Does your organization hold meetings for stakeholders frequently	4.52	0.598
Does your organization give awareness of the progress of the project to stakeholders	4.11	0.647
Does your organization identify stakeholders' needs and expectations before the project begins	4.35	0.632
Does your organization clearly communicate stakeholder requirement before the project began	4.40	0.672
Grand Total	**4.352**	**0.6234**

Sources; SPSS survey 2023

In accordance with the table above, all five of the questions pertaining to stakeholders received average scores above 4.352, suggesting that the respondents strongly agreed that stakeholder engagement is widely performed at their organization. The result is supported by the literature review that was provided in the study's second chapter. The participation, standards, and desires of a project's stakeholders are critical to project performance. Recognizing stakeholders at the beginning of projects, as well as comprehending and handling their needs and demands, may assist to establish an acceptable environment and function as an effective accelerator (Israa Fadhil Ibraheem, 2018).

4.2.5. Descriptive analysis of Performance to business case

Table 9: Mean and standard deviation of responses on performance to business case

Descriptive Statistics

Performance to Business Case	**Mean**	**Std. Deviation**
Does your organization continuously check upon how the project is going by referring to the original business case	4.18	0.580
Does your company frequently review the business case and assess it in light of the current business goals	4.15	0.649
Does your company make sure the advantages are still applicable and that the business issue this initiative was intended to address is still present	4.23	0.624
Is the project's business case realistic and achievable	4.36	0.698
Grand Total	**4.23**	**0.6377**

Sources; SPSS survey 2023

According to the aforementioned table, all four questions about performance to business case had average scores of 4.23, indicating that the respondents strongly agreed that performance to business case is frequently employed in their organization. The evaluation of literature contained in the second chapter of this research backs up this finding. Florenciano Johanes and A. Arviansyah (2021) suggested that it can be understood how the business case affects the performance of projects from the beginning to the conclusion thanks to a number of newly revealed insights. We can see that there is certainly room for improvement in the business case-building process for initiatives. The business will be able to deliver projects more effectively as performance improves. The creation of an effective business case serves as a management tool to guarantee that company values are still upheld all through the project, aiding the project manager in managing and making choices.

4.2.6. Summary of descriptive analysis

The table below summarizes the dependent variables and the inquiries considered under each variable. The Grand mean of mean, or the mean value of whole dependent variable, is determined and presented simply in this study.

Table 10: Summary of dependent variables.

Dependent variables	**No of items**	**Grand mean**	**Standard deviation**
Schedule	4	4.425	0.548
Quality	5	4.36	0.6106
Cost	4	4.293	0.673
Stakeholder engagement	5	4.352	0.6234
Performance to business case	4	4.23	0.6377
Grand Mean of Mean		4.332	0.61854

Source: Own computation using SPSS version 27 software.

4.2.7. Descriptive statistics of independent variables

Table 11: Summary of project performance

Project performance	**Mean**	**Std. Deviation**
Does employees know how their performance impact the project	4.40	0.640
Does performance standard are consistent across the project	4.37	0.811
Does performance problems are dealt with quickly and consistently	4.17	0.592
Does a high level of performance recognized and rewarded	4.42	0.295
Does your company use performance measurements that are dynamic	4.36	0.327
Grand Total	**4.344**	**0.532**

Sources; SPSS survey 2023

According to the aforementioned table, all five questions about project performance had average scores of 4.344, indicating that the respondents strongly agreed that project performance is excellent at their organization.

4.3. Inferential Statistics

This section covers correlation and regression analysis. The section was intended to achieve the objectives of creating the relationship that exists between the variables.

4.3.1. Correlation Analysis

To examine the relationship between schedule, quality, cost, stakeholder engagement, and performance to business case and the project performance of Ethiopian Airlines cargo terminal e-commerce warehouse construction project, were achieved through the use of correlation analysis. Bonett & Wright (2000) claim that the Pearson correlation gauges how strongly two variables are correlated linearly. Its range of values is from -1 to 1, with -1 denoting a total negative linear correlation, 0 being no correlation, and + 1 meaning a total positive correlation. If recommendation for the absolute value of "r = 0.00-0.19 - very weak, r= 0.20-0.39 - weak, r = 0.40-0.59 - moderate, r = 0.60-0.79 - strong and r = 0.80-1.0 - very strong" (Evans, 1996). Pearson correlation coefficients were determined with the objective to obtain information about the relationships between the dependent and independent variables as presented in table.

Table 12: Correlation analysis of dependent and independent variables

Correlations

		performance	schedule	quality1	cost1	stakeholder1	business1
performance	Pearson Correlation	1	.460**	.785**	.409**	.516**	.512**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001	<.001
	N	96	96	96	96	96	96
schedule	Pearson Correlation	.460**	1	.216*	.108	.227*	.439**
	Sig. (2-tailed)	<.001		.034	.295	.026	<.001
	N	96	96	96	96	96	96
quality1	Pearson Correlation	.785**	.216*	1	.166	.399**	.177
	Sig. (2-tailed)	<.001	.034		.107	<.001	.085
	N	96	96	96	96	96	96
cost1	Pearson Correlation	.409**	.108	.166	1	.353**	.563**
	Sig. (2-tailed)	<.001	.295	.107		<.001	<.001
	N	96	96	96	96	96	96
stakeholder1	Pearson Correlation	.516**	.227*	.399**	.353**	1	.418**
	Sig. (2-tailed)	<.001	.026	<.001	<.001		<.001
	N	96	96	96	96	96	96
business1	Pearson Correlation	.512**	.439**	.177	.563**	.418**	1
	Sig. (2-tailed)	<.001	<.001	.085	<.001	<.001	
	N	96	96	96	96	96	96

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source: SPSS output survey, 2023

As shown from the table, schedule r=0.460 has a positive and moderate relationship with the project performance of Ethiopian Airlines cargo terminal e-commerce warehouse construction project. According to Evans (1996) magnitude of correlation, the relationship between the two variables is moderate.

According to the table, quality r =0.785 has a positive and strong relationship with project performance of Ethiopian Airlines cargo terminal e-commerce warehouse construction project. According to Evans (1996) magnitude of correlation, the relationship between the two variables is strong.

As shown from the table, cost r = 0.409 has a positive and moderate relationship with project performance of Ethiopian Airlines cargo terminal e-commerce warehouse construction project.

According to Evans (1996) magnitude of correlation, the relationship between the two variables is moderate.

As shown from the table, stakeholder engagement r = 0.516 has a positive and, moderate relationship with the project performance of Ethiopian Airlines cargo terminal e-commerce warehouse construction project. According to Evans (1996) magnitude of correlation, the relationship between the two variables is moderate.

As shown from the table, performance to business case r = 0.512 has a positive and moderate relationship with project performance of Ethiopian Airlines cargo terminal e-commerce warehouse construction project. According to Evans (1996) magnitude of correlation, the relationship between the two variables is moderate.

4.3.2. Regression Analysis

Regression analysis may be used to accurately identify the factors that influence a certain topic of interest. When you do a regression, you may safely determine the components that are most crucial, those that can be disregarded, and how these factors interact. Regression analysis requires a thorough understanding of the terminology listed below. The primary component that you are seeking to grasp or predict is the dependent variable. Independent factors presuppose that they all have an impact on the dependent variable.

ANOVA was used to determine whether independent variables statistically significantly predicted the dependent variable, and regression coefficients were used to determine the statistical significance of each independent variable. Multiple regression analysis was also used to assess how well the regression model fit the data (model summary). This was done after the data had been checked to see whether it had satisfied each of the multiple regression requirements listed above.

4.4. Model Summary

Table 13: Model test

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.896[a]	.802	.791	.14310

a. Predictors: (Constant), business1, quality1, schedule, stakeholder1, cost1

A strong correlation of 0.896a between (schedule, quality, cost, stakeholder engagement and performance of business case) and project performance is indicated by the coefficients R in the model summary table above. The relative significance of (schedule, quality, cost, stakeholder engagement and performance of business case) in determining project performance is indicated by the R2 (also known as the coefficient of determination), value of 0.802 (80.2%). This indicates other variables are responsible for the remaining 19.8 percent of project performance variations. The adjusted R2 is .791, which indicates that (schedule, quality, cost, stakeholder engagement and performance of business case) can account for 79.1% of the variation in project performance. Although there are several aspects that could influence (schedule, quality, cost, stakeholder engagement and performance of business case) but project performance account for roughly 79.1 percent of the variance.

4.4.1 ANOVA Model Fit

Table 14: ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.484	5	1.497	73.097	<.001[b]
	Residual	1.843	90	.020		
	Total	9.327	95			

a. Dependent Variable: performance

b. Predictors: (Constant), business1, quality1, schedule, stakeholder1, cost1

Sources: SPSS Survey 2023

The overall fit of the regression model can be evaluated using ANOVA. The total regression model's suitability as a fit for the data is assessed using the F-ratio in the ANOVA table. Since the table shows that the R and R2 values from the model summary are statistically significant at (F=73.097), (P<0.001), it can be concluded that there is a connection between (schedule, quality, cost, stakeholder engagement, and performance of business case) and project performance.

Table 15: regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.122	.290		-.420	.675
	schedule	.171	.046	.200	3.698	<.001
	quality1	.488	.039	.652	12.598	<.001
	cost1	.146	.060	.142	2.416	.018
	stakeholder1	.077	.055	.079	1.405	.163
	business1	.145	.049	.196	2.986	.004

a. Dependent Variable: performance

4.4.2. Unstandardized beta coefficient (β)

Unstandardized coefficients are those that the linear regression model generates after being trained using independent variables that are measured according to their original scales, i.e., in the same

units in which we obtained the dataset from the source to train the model. An unstandardized coefficient should not be used to rank or eliminate predictors (also known as independent variables), as it does not get rid of the unit of measurement. Consequently, by incorporating the error term (ε), the model for project success can be written as ;

$y = \beta0 + \beta1x1 + \beta2x2 + \beta3x3 + \beta4x4 + \beta5x5 + \varepsilon,$

Where; Y = project performance

X1 = schedule

X2 =quality

X3 = cost

X4 = stakeholder engagement

X5 = performance to business case

ε= Error term

β0 = Constant factor

β1 = Coefficient of schedule

β2= Coefficient of quality

β3 = Coefficient of cost

β4 = Coefficient of stakeholder engagement

β5= Coefficient of performance to business case

$Y = -0.122 + (0.171)X1 + (0.488)X2 + (0.146)X3 + (0.077)X4 + (0.145)X5 + 0.5\ E,$

The constant value (0 = -0.122) indicates that if all other variables in the model were zero, project performance would decrease by 0.122. According to the regression coefficient values, four factors are found to be statistically significant in the project performance. The statistically significant

variables are schedule, quality, cost, and performance of business case as evidenced by their P-values where ($P<0.05$). This implies that an increase in these factors leads to an improvement in the performance of a project.

4.4.3. Standardized Coefficients

In data science, the process of transforming independent variables or predictor variables for a particular model when they are provided in various units is referred to as "standardization" or "standard coefficients". The standardized coefficients of regression can be obtained by applying a linear regression model to the standardized form of the variables. To create the standardized variables, the standard deviation of each observation is divided by the mean. As indicated in regression coefficients table level of quality had the highest standardized coefficient of (.652) followed by level of schedule (.200). This revealed that level of cost had higher relative effect on the project performance. performance of business case (beta=.196), cost (beta=.142) and stakeholder engagement (beta= .079) are ranked from three to five respectively in their relative importance on project performance. As indicated from regression coefficient table, the predictor variables of schedule, quality, cost, and performance of business case are statistically significant in predicting project performance because all their p-values (schedule p-value=.001, quality p-value=.001, cost p-value=.018, and performance to business case p-value= 0.004) are less than alpha level of 0.05.

Conclusively the schedule, quality, cost, and performance to business case are found to have positively and significantly effect on the project performance.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter of the research study includes a summary of the key discoveries that were obtained from secondary data and the results of the questionnaire. The conclusion is then reached in light of the study's goal. In addition, the researcher offered potential study recommendations based on the findings of the data analysis.

5.1. Summary of major findings

Assessing the project performance in the Ethiopian Airlines cargo terminal e-commerce warehouse construction project was the main goal of this research study. The study also assesses the influence of project schedule, cost, quality, stakeholder engagement, project performance in regard to the business case of Ethiopian Airlines cargo terminal e-commerce warehouse construction project. In order to achieve this, the researcher examined secondary data created and disseminated questionnaires and gathered from important players on the project work. Descriptive statistics, was utilized for examining the data.

- A statistical examination of the data revealed that the majority of respondents 52.1% were from the contractor side, while the remaining respondents 47.9% were from the consultant, client and others. The respondents have a higher level of education, which helps them conceive and reply authoritatively on the issues and practices, as evidenced by the fact that all respondents had diploma, degrees or higher in education. 75% of respondents had worked in construction for longer than two years, demonstrating that they are well-versed in their organizations.
- The first objective was to assess if the project of Ethiopian Airlines cargo terminal e-commerce warehouse construction is done within the expected schedule, cost, and quality. According to the results of the descriptive statistics, the project performance generally has great levels of implementation in respect to schedule, cost and quality. The respondents

strongly agree that the three-project performance indicator are strongly used in their organization and as analyzed in chapter four, their mean score exceeds 4.21.

- The second objective was to assess if stakeholders are engagement on the project performance of Ethiopian Airlines cargo terminal e-commerce warehouse construction project. The descriptive statistics results show respondents strongly agree that stakeholder engagement is performed at the project. Based on the descriptive statistics the mean value of the stakeholder engagement is 4.352 which implies it has a strong influence on the project performance.
- The third objective was to assess if the project of Ethiopian Airlines cargo terminal e-commerce warehouse construction performed according to the business case. The descriptive statistics results show respondents strongly agree that project is being performed according to the business case. Based on the descriptive statistics the mean value of the performance of business case is above 4.23 which implies it has a strong influence on project performance.
- The fourth objective was to measure the project performance of Ethiopian Airlines cargo terminal e-commerce warehouse construction. The descriptive statistics results show respondents are positive about the project performance. Based on the descriptive statistics the Grand Mean of Mean value of the dependent variable measures is 4.344 which implies an excellent performance of schedule, cost, quality, stakeholder engagement, and performance to business case.
- The last objective is evaluating the relationship between project performance and schedule, cost, quality, stakeholder engagement, and performance to business case. The analysis's adjusted R of 0.791 indicates a strong and favorable link between schedule, cost, quality, stakeholder engagement, and performance to business case and project performance of Ethiopian Airlines cargo terminal e-commerce warehouse construction project.

5.2. Conclusion

Based on the data presented in the previous section. The study has drawn the following conclusions.

- The objective of the study was to assess the project performance of Ethiopian Airlines cargo terminal e-commerce warehouse construction project. Therefore, the study measures project performance in respect to schedule, quality, cost, stakeholder engagement and performance of business case were utilized to gauge their influence on the effectiveness of the project performance of Ethiopian Airlines cargo terminal e-commerce warehouse construction project. The results showed all the measurement (schedule, quality, cost, stakeholder engagement and performance to business case) have a positive and significant influence on the project performance.
- The other objective was to assess if project performance and (schedule, quality, cost, stakeholder engagement and performance to business case) have a relationship. In order to do that the independent variable project performance was analyzed to interpret their influence on the dependent variable (schedule, quality, cost, stakeholder engagement, and performance to business case). The results showed schedule, quality, cost, and performance to business case have a significant and positive relationship with project performance of Ethiopian Airlines cargo terminal e-commerce warehouse construction project

Recommendation

- The project performance refers to the extent to which the Ethiopian Airlines cargo terminal e-commerce warehouse construction project is completed in relation to the stipulated schedule, the cost that was established in the budget, the quality of standard expected of the project, the stakeholder engagement as well as performance to business case. According to the study's findings, the project efficiently implements each project performance dimension. It is advised that they should plan cash flow, manage financial resources, stay devoted to their duties, and regularly evaluate project progress, particularly with regard to schedule, cost, and quality. Planning and scheduling are ongoing processes while construction is taking place. They help limit specification changes during construction so as not to delay the project, ensure that construction firms have the necessary resources and capabilities, keep stakeholders informed of the project's progress at every stage, and ensure that the project is proceeding in line with the business case.

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Questioner of the Survey

ADDIS ABABA UNIVERSITY SCHOOL OF

COMMERCE DEPARTMENT OF PROJECT MANAGEMENT

FOR PARTIAL FULFILLMENT OF THE

DEGREE OF MASTER IN

PROJECT MANAGEMENT

QUESTIONNAIRE

Dear Respondents, the goal of this questionnaire is to gather information to assess the project performance in the Ethiopian Airlines cargo terminal e-commerce warehouse construction project. You won't be impacted by the study in any way because it is just conducted for academic purposes. Your truthful, open, and prompt response is therefore essential to the study's success. As a result, I respectfully ask that you answer each part of the question attentively.

Please check (√) the box next to the relevant question number to indicate how much you agree or disagree with each statement. The researcher created the following questions to assess the project performance in the Ethiopian Airlines cargo terminal e-commerce warehouse construction project.

The item has five-point Likert-type scales, the scales have the following meaning

1. Strongly Disagree

2. Disagree,

3. Neutral,

4. Agree,

5. Strongly Agree

PART I: DEMOGRAPHIC INFORMATION

1, Educational Qualification:

Certificate diploma Bachelor's degree Post Graduate degree

Doctorate Degree

2, Employee Level

Consultant Contractor Other Client

3, Years of work experience:

Under two Years 2-5 Years 6-10 Years Above 10 years

Part II: Instruments of measuring project performance;

Strongly Disagree (1) Disagree (2) Neutral (3) Agree (4) Strongly Agree (5)

	1. Schedule	**1**	**2**	**3**	**4**	**5**
1	Does your organization carefully identify tasks to be performed					
2	Does your organization identify the accurate estimation of their project task durations					
3	Does your organization identify the sequence in which they are going to do the tasks					
4	Does your business specify how it distributes personnel and other resources					

	2. Quality	1	2	3	4	5
1	Does your organization use standard quality materials and equipment in the project					
2	Does your organization have quality assurance follow-up periodically					
3	Does your organization reduce construction errors, defects, and wastes					
4	Does your organization do the project with acceptable, reliable and maintainable quality					
5	Does your organization have a great relationship with suppliers to enhance projects quality performance.					

	3. Cost	1	2	3	4	5
1	Does your organization do the project within the estimated cost					
2	Does your organization both track and control the budget periodically					
3	Does your company strike a balance between preventing cash shortages and not spending too little					
4	Does the project's performance suffer as a result of the market's rising prices for building materials					

	4. Stakeholder Engagement	1	2	3	4	5
1	Does your organization involve stakeholders in the maintenance of the projects					
2	Does your organization hold meetings for stakeholders frequently					
3	Does your organization give awareness of the progress of the project to stakeholders					
4	Does your organization identify stakeholders' needs and expectations before the project begins					
5	Does your organization clearly Communicated stakeholder requirements before the project began					

	5. Performance to Business Case	1	2	3	4	5
1	Does your organization continuously check up on how the project is going by referring to the original business case					
2	Does your company frequently review the business case and assess it in light of the current business goals					
3	Does your company make sure the advantages are still applicable and that the business issue this initiative was intended to address is still present					

4	Is the project's business case realistic and achievable					

6. Project performance		**1**	**2**	**3**	**4**	**5**
1	Does employees know how their performance impact the project					
2	Does performance standard are consistent across the project					
3	Does performance problems are dealt with quickly and consistently					
4	Does a high level of performance recognized and rewarded					
5	Does your company use performance measurements that are dynamic					

APPENDIX

Descriptive analysis of schedule

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Does your organization carefully identify tasks to be performed	96	3	5	4.22	.463
Does your organization identify the accurate estimation of their project task durations	96	3	5	4.50	.543
Does your organization identify the sequence in which they are going to do the tasks	96	3	5	4.52	.523
Does your organization identify how people and other resources are allocated	96	2	5	4.46	.664
Valid N (listwise)	96				

Descriptive analysis of quality

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Does your organization use standard quality materials and equipment in the project	96	3	5	4.40	.467
Does your organization have quality assurance follow-up periodically	96	3	5	4.36	.682
Does your organization reduce construction errors, defects, and wastes	96	3	5	4.18	.615
Does your organization do the project with acceptable, reliable and maintainable quality	96	3	5	4.43	.628
Does your organization have a great relationship with suppliers to enhance projects quality performance.	96	3	5	4.43	.661
Valid N (listwise)	96				

Descriptive analysis of cost

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Does your organization do the project within the estimated cost	96	3	5	4.16	.638
Does your organization both track and control the budget periodically	96	3	5	4.24	.611
Does your organization balance between not running out of money and not underspending	96	3	5	4.36	.667
Does the price escalation of construction material in the market affects the performance of the project	96	2	5	4.41	.776
Valid N (listwise)	96				

Descriptive analysis of stakeholder engagement

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Does your organization involve stakeholders in the maintenance of the projects	96	3	5	4.38	.568
Does your organization hold meetings for stakeholders frequently	96	3	5	4.52	.598
Does your organization give awareness of the progress of the project to stakeholders	96	3	5	4.11	.647
Does your organization identify stakeholders' needs and expectations before the project begins	96	3	5	4.35	.632
Does your organization clearly communicated stakeholder requirement before the project began	96	3	5	4.40	.672
Valid N (listwise)	96				

Descriptive analysis of performance to business case

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Does your organization continuously check upon how the project is going by referring to the original business case	96	3	5	4.18	.580
Does your organization check the business case regularly and evaluate it in light of the current business	96	3	5	4.15	.649
Does your organization check that the benefits are still realistic and that the business problem this project was designed to solve does still exist.	96	3	5	4.23	.624
Is the project's business case realistic and achievable	96	3	5	4.36	.698
Valid N (listwise)	96				

Descriptive analysis of project performance

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Does employees know how their performance impact the project	96	3	5	4.40	.640
Does performance standard are consistent across the project	96	2	5	4.37	.811
Does performance problems are dealt with quickly and consistently	96	3	5	4.17	.592
Does a high level of performance recognized and rewarded	96	3	5	4.42	.295
Does your company use performance measurements that are dynamic	96	3	5	4.36	.327
Valid N (listwise)	96				

Frequency analysis of educational qualification

Educational Qualification Qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Certificate diploma	19	19.8	19.8	19.8
	Bachelor's degree	49	51.0	51.0	70.8
	Post Graduate degree	20	20.8	20.8	91.7
	Doctorate Degree	8	8.3	8.3	100.0
	Total	96	100.0	100.0	

Frequency analysis of employee level

Employee Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Consultant	20	20.8	20.8	20.8
	Contractor	50	52.1	52.1	72.9
	Other	19	19.8	19.8	92.7
	Client	7	7.3	7.3	100.0
	Total	96	100.0	100.0	

Frequency analysis of work experience

Years of work experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under two Years	24	25.0	25.0	25.0
	2-5 Years	24	25.0	25.0	50.0
	6-10 Years	28	29.2	29.2	79.2
	Above 10 years	20	20.8	20.8	100.0
	Total	96	100.0	100.0	