INFLUENCE OF INFORMATION COMMUNICATION TECHNOLOGY ON PROJECT COMPLETION IN SMALL AND MEDIUM ENTERPRISES, IN JUBA COUNTY, SOUTH SUDAN.

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF A MASTERS DEGREE IN PROJECT MANAGEMENT AND PLANNING

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DECLARATION AND APPROVAL

Submitted by the Student

This study project is my own unique work, and it has never been presented anywhere else for any kind of academic honor at any other university.

Signed by…… **Date**. August 27, 2023

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MSCPM/2019/54240

Approval by the Supervisor

This study proposal has been submitted for evaluation, and I, in my role as the University Supervisor, have offered my approval for its submission.

Signature: **Date:27/8/2023.**

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DEDICATION

I would want to thank my family, and especially my wife, Mrs. Crystal Samuels Enechuku, for all of their support and encouragement as I have worked for my master's degree. Thanks also go out to my parents, who were there for me every step of the way and provided invaluable assistance while I was in elementary and high school. I also which to dedicate this to work colleagues and friends since we face common life challenges (work and academic) daily, and always wish to attain higher education when it is possible to do so.

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ABSTRACT

The purpose of this paper is to examine how small and medium-sized firms in Juba County, South Sudan, have used information and communication technology (ICT) to successfully complete their ventures. Research in this study focused on information and communication technology as an independent variable. Automated document management systems, digital communication tools, and PMS were used to analyze this technology. Here, the project's fruitful completion was the dependent variable. In addition to finishing the project within the allotted time and budget, a successful completion of the project is defined as accomplishing all of the identified goals and objectives. Evaluating the efficiency with which SMEs in Juba County, South Sudan, make use of ICTs is the primary goal of this study. This study is primarily grounded on the theories of diffusion and technological acceptance. This research makes use of a descriptive methodology. It was intended that 3,348 SMEs in Juba County, South Sudan, would be the target group. Combining stratified sampling with more conventional random sampling yielded the final sample size. The sample size may be found using Cochran's formula. There were ninety-six small and medium-sized businesses in the sample. Averages from self-administered surveys were used to compile the data. A Statistical Package for the Social Sciences, SPSS Version 22, was used to analyze the data. Of those who were asked to participate, 52% really did, according to the data. The study's statistical methodology included both descriptive and inferential analysis. Descriptive statistics were used to portray and condense the data. They included examples such as frequencies, average ratings, standard deviations, and percentages. The data was further investigated and predictions were made using inferential statistical methods, such as regression and correlation analysis. Research in Juba County, South Sudan, found that most people think that ICT helps small and medium-sized enterprises (SMEs) finish projects more quickly. This is supported by descriptive statistics showing that a lot of people agree with this statement. It is evident that the majority of respondents strongly believe that the project management system substantially impacts the project's completion, as shown by the estimated average evaluation score of 4.404. From the findings of the correlation research, it was seen that there exists a strong positive association between the use of Digital Communication Tools and the completion of projects ($r = 0.983$, $p < 0.01$). It has been shown that there is no significant link between the use of an Automated Document Management System and the completion of a project ($r = -0.019$, $p > 0.05$). It has been shown that there is a significant positive association between the use of Project Management System and the completion of projects ($r = 0.986$, $p < 0.01$). According to the findings of a regression study, 98.2 percent of the variance in the completion of a project is due to variations in the three variables that are project management system, automated document management system, and digital communication tools. According to regression analysis, increasing the use of digital communication tools by one unit will increase project completion by 0.421 units, increasing the use of automated document management systems by one unit will increase project completion by 0.111 units, and increasing the use of PMS by one unit will increase project completion by 0.554 units. According to the results, the researcher came to the following conclusion that while automated document management systems have an insignificant influence on project completion in SMEs in Juba County, South Sudan, digital communication tools and PMS have a strong positive and significant relationship with project completion in SMEs in Juba County, South Sudan. The researcher gave recommendation that management and other stakeholders should foster a culture of technology adoption and innovation within SMEs because it has been observed to positively influence project completion. Further studies have been recommended of a similar study but covering a different geographical area.

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LIST OF ABBREVIATIONS AND ACRONYMS

DMS-Document Management System

ICT- Information Communication Technology

IFC- International Financial Corporation

PMS-Project Management System

SMES- Small and medium sized enterprises

SPSS-Statistical Program for Social Sciences**.**

IT- Information Technology

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Throughout history, a number of huge projects have been completed successfully. Today's project, however, are more challenging and complex in comparison to the earlier times because they involve huge cost, time limited, standard quality among other factors. Owing to this forthcoming, Information Communication Technology (ICT) has been found to perform a major factor in influencing project management practice. Recent technological advancements and management tools have contributed to numerous benefits of ICT adoption, such as increased efficiency, reduced costs, improved communication, and enhanced decision-making (Wang, Chen, & Liang, 2022; Zhang, Xiong, & Wang, 2021). Businesses nowadays must prepare for, respond to, and react to the expanding demands of the market so as to stay relevant in the face of the harsh reality of competition. Effective business strategy in the environment of intense competition depends on the aggressive and effective use of Information Communication Technology (ICT). Governments and businesses alike are making significant investments in and relying heavily on ICT to boost productivity through the streamlining of business procedures in order to increase effectiveness and efficiency.

SMEs form more than half of all business globally as well as more than half of all employment in Australia and United Kingdom; and in Europe is around 99 per cent for all the employment (Alam & Noor, 2009). South Sudan's SMEs sector remain at its beginnings, rising from the consequences of a long civil conflict that ruined the whole nations physical infrastructure, social-economic, socio-cultural, and financial institutions, and relocating and depriving almost the all population. (Arok, 2019). In SMEs, ICT is responsible for generating, transmitting and analysing information at all stages of the project.

Successful project completion is an area that has gained various reaction where some scholars such as Ajam (2013) argues that it is challenging to assess a project's success at project completion because the majority of its planned benefits will not be seen until several months. Nonetheless, he concluded that an organization must measure a project's success when it has reached a stage that allows them to average ratingingfully evaluate its results and determine whether they received the desired advantages. There are five aspects which can also be used to evaluate a successful project completion that include meeting the project schedule, budget, quality, performance of the goal and finally the stakeholder satisfaction (Ajam,2013).

Following the devastating effects of the protracted civil conflict, the SME sector in South Sudan is now undergoing growth and recovery. Many people were displaced and left impoverished as a consequence of this battle, which also destroyed the country's physical infrastructure, socioeconomic structures, and cultural systems. Several SMEs have formed since the finalization of the Comprehensive Peace Agreement in 2005, which led to the restoration of relative peace and stability in South Sudan. Service providers include non-profit organizations, SACCOs, businesses limited by guarantees, and companies limited by shares. SMEs are a major focus to a country and are essential focus since they are key to job creation and growth of the emerging nations which are further key to development for those countries Supporting of SMEs is quite significant since it contributes to the common goal of creating opportunities (International financial Corporation IFC, 2011).

A worldwide research on the use of ICT to successfully complete projects in Malaysia was carried out by Chan (2015). Understanding the function of ICT in supporting the construction industry was the primary goal of the study. One construction firm was selected as a case study, with eight personnel chosen from the firm’s top-level management. According to the research the factors influencing ICT implementation inclusive of individual,

organizational, and technological level factors. Furthermore, the findings indicate that the organization applied ICT for communicating electronically, storing documents, planning, tracking, quantity surveying and drawing and designing. The results also suggest that ICT can enable the attainment of time, cost, quality, scope, and customer satisfaction goals in building projects.

Regionally in Nigeria, Olalusi. O.C., and Jesulolowa, O. (2013), did research on the impact of ITin the Nigerian construction business. The study targeted the sites of 16 different constructions companies in 2011 and 16 sites 2012. Majority of the construction sites (65%) were for residential structures and the medium-sized construction firms in charge of them had between 21 to 50 employees on each site. Majority of the businesses in this study (56%) had not yet employed IT to aid or simplify site management process, despite their interest in IT use. However, these firms recognized the potential benefits of IT operations and were attempting to include IT into the building site management routine. The majority of them previously had IT gadgets, such as a computer with Internet connectivity, a digital camera, and construction-site hand-held computers.

Matambalya and Wolf (2010) performed a research in Kenya and Tanzania to assess the influence of ICT on the productivity of SMEs in East Africa. A total of 3000 SMEs were sampled from both Tanzania and Kenya. According to the poll, SMEs in Kenya and Tanzania have been increasingly using ICT as time goes by. Although fixed line phone use in Kenya had reached its highest point, it remained lower than in Tanzania. The prevalence of mobile phone use was increasing, with Kenya exhibiting a higher adoption rate compared to Tanzania. It was discovered that organizations that used ICT achieved higher performance compared to those who did not. According to the survey's findings, 88% of

users who made use of ICT saw an enhancement in management efficiency, while 76% reported a rise in business competitiveness. After the introduction of fixed phones and fax machines, several firms said that mobile phones played a substantial role in the expansion of the local market.

Omari (2020) conducted study in Kenya that looked at how SMEs in Nairobi County were affected by the impact of ICT on their performance. The study's overarching goal was to ascertain how SMEs in Nairobi County, Kenya fared after adopting ICT. The study's primary population consisted of four thousand people: business owners, managers, administrative staff, and others associated with SMEs in Nairobi County. For this study, researchers used a combination of random, intentional, and persuasive sampling techniques to compile results. Questionnaires were the main means of gathering information for this research. The data was analyzed using descriptive and inferential statistics. Results demonstrate that SMEs have expanded their operations with the use of ICT by penetrating new customer bases, boosting revenue, and streamlining the administration of supplementary tasks. Improvements in performance are significantly correlated with increases in growth and expansion (beta = 0.43, p = 0.0000). On top of that, 60% of the participants said that ICT had much improved their capacity to quickly and effectively communicate with customers, with an average rating score of 4.0185 and a S.D of 0.90621. In addition, the poll discovered that when companies employ ICT, the quality of their goods and services goes up, which average ratings happier customers and more room for innovation in the form of new offerings. The report recommends that SMEs management do an environmental scan to find new ICT technology. This will enable them to effectively promote service delivery, optimize product mix and selection, and match with consumer expectations.

SMEs represent crucial economic pillars in various nations, exemplified by their substantial contributions to GDP and employment. In Kenya, they contribute an estimated 25% to the GDP and employ over 80% of the workforce, serving as vital engines for job creation, income generation, and poverty reduction (MIED, 2015; Kiveu & Ofafa, 2013). Similarly, in South Sudan, SMEs form the backbone of the economy, constituting approximately 93% of registered businesses (Abbass Ali, 2022). However, since South Sudan's independence in 2011, these businesses have faced significant obstacles as a result of internal conflicts, impeding the creation of a secure and consistent economic climate. The consequences are severe, since more than two-thirds of the population are in need of humanitarian aid and are experiencing extreme food insecurity (Abraham & Schmukler, 2017). Despite these adversities, supporting SMEs emerges as a pivotal project imperative for fostering economic stability, employment, and poverty alleviation. Investing in these enterprises not only bolsters economic growth but also addresses critical humanitarian crises, making it a strategic initiative to enhance resilience and livelihoods in these regions.

1.2 Statement of the Problem

SMEs in South Sudan play a crucial role in the economy, accounting for 93% of registered firms (Abbass Ali, 2022). They have a crucial role in generating job opportunities, fostering economic expansion, and alleviating poverty. Nevertheless, the management and performance of SMEs in South Sudan have been varied, as shown by the fact that around 45% of them fail to survive beyond their fifth year of operation (Omer, 2018). Gaining insight into the causes of their failure is crucial, especially in Juba City, South Sudan. Arok, Kirimi, and Munga's 2019 study looked at how SMEs in South Sudan used their resources and how innovative their management was. Despite a high probability of failure, they discovered that SMEs in South Sudan are thought to have low levels of managerial

innovation. The argument that management innovation increases a company's chances of survival and gives it a competitive advantage is still not convincing. According to the study's findings, the SMEs in Juba City are more likely to adopt innovative management techniques when funds are allocated to them. According to the suggestions, the SMEs in Juba City need to do better at distributing their resources. Investment in technical resources like IT infrastructure, performance evaluations based on subjective strategic factors like product innovation development, and fostering creative behavior all contribute to a higher rate of management innovation. According to Pereira, Varajão, and Takagi (2022), it is crucial to identify the key success elements in a project in a statistical and methodical manner in order to increase the likelihood of its success. Bauer (2010) has delineated the essential benchmarks for achieving success, which include meeting the expectations of stakeholders, fulfilling project goals, adhering to budgetary constraints, adhering to deadlines, providing value to the client institution, meeting quality requirements, and gaining satisfactory levels of satisfaction.

Studies on SME performance in Juba, South Sudan, have identified several causes contributing to high failure rates. Arok, Kirimi, and Munga (2019) highlight resource allocation and management innovation as potential causes of this failure. Concurrently, Bauer (2010) emphasizes critical success factors such as customer satisfaction, timely project delivery within budget constraints, and maintaining quality standards. Leveraging ICT, known for its cost reduction and efficiency improvement, holds promise for enhancing project success in SMEs in Juba County. Previous research substantiates the positive impact of ICT on project completion. Baljkas (2000) reported a notable success rate of 67.9% for projects managed via computer software, surpassing the 45% success rate of those lacking such systems. According to Mwangi (2015), the use of ICT improves the percentage of

projects completed by the banking sector in Kenya. No research in Juba County, South Sudan has particularly looked at how SMEs are affected by ICT's effect on project completion. Therefore, this study aims to examine how SMEs in Juba City, South Sudan, use ICT to finish projects.

1.3 Purpose of the Study

To determine the impact of Information Communication Technology on project completion in Small and Medium Enterprises, In Juba County, South Sudan.

1.4 Objective of the study

The research aimed to achieve the following objectives;

1. To determine the extent to which digital communication tools influence project completion in SMEs in Juba County, South Sudan.
2. To establish the extent to which automated document management systems influence project completion in SMEs in Juba County, South Sudan.
3. To determine the influence of project management System on project completion in SMEs in Juba County, South Sudan.

1.5 Research Questions

1. How does digital communication tools influence project completion in SMEs in Juba County, South Sudan?
2. What extent does automated document management system influence project completion in SMEs in Juba County, South Sudan?
3. How does project management System influence project completion in SMEs in Juba County, South Sudan?

1.6 Significance of the Study

Finding out how SMEs in Juba, South Sudan, used ICT to finish their projects was the main goal of the research. SME management may find the study's results useful since they shed light on how incorporating ICT into project management can improve processes including planning, monitoring, and assessment.

The study addition is beneficial to the scholars and researchers who seek to undertake to take a study in similar areas as they will have empirical evidence where they will be able to borrow from to guide their study. This study finding will more so contribute into the already existing literature on ICT and project completion.

The conclusions of this study concerning the influence of ICT on the success of business ventures will be useful for investors interested in SMEs since they will shed light on the topic and make sense of it.

1.7 Scope of the Study

The objective of this research was to find out how information and communication technologies affect the percentage of projects that are finished. In this research, ICT and the completion of projects were used as the independent and dependent variables, respectively. Project size and company culture acted as moderators. The independent Variable ICT was measured using project management System, automated document management systems and digital communication tools. The dependent variable project completion was defined as completing a project on schedule and within budget.

The study location scope of the study was SMEs which are situated in Juba city in South Sudan. Juba city is located in Juba County which is in the southern part of South Sudan. This location is of interest to the researcher and has not been much investigated.

The study period was limited to 5 years from 2018-2019. The study focussed on SMEs that have been in operations for this period as they were most relevant and captured the ICT that is being applied in project management.

The study also covered only two theories the diffusion theory and the Technological acceptance model as they are considered most relevant to the study.

1.8 Limitation of the Study

The study only covered medium-sized and small firms in Juba, South Sudan, that use information and communication technologies. The study did not include any other SMEs. Despite the sample being typical of the community under investigation, the research results may not be relevant to other places due to this constraint.

1.9 Delimitation of the Study

This inquiry focused on SME sin Juba County, South Sudan. Due to the fact that this research has a geographical constraint, it is possible that the findings may not be directly applicable to SMEs located in other locations or nations. It is possible that the results will be influenced by the local environment, infrastructure, and cultural elements that are specific to Juba County, which would restrict generalization.

The size and representativeness of your sample can affect the generalizability of your findings. Limited resources restricted the number of SMEs that were reached in this study. It's important to acknowledge that your findings may only reflect the characteristics and experiences of the selected SMEs in Juba County, which may not be representative of all SMEs in the region.

Obtaining comprehensive and reliable data on ICT adoption, project completion rates, and other relevant variables may pose challenges. Limited access to data, especially in the context of SMEs in Juba County, may restrict the depth of analysis or require reliance on self-reported information.

1.10 Assumptions of the Study

This study investigated on the influence of ICT on project completion in SMEs in Juba County, South Sudan. The managers of SMEs were the study's participants. One of the assumptions in the study was that the study's participants were well conversant with ICT and aspects of project Completion. Researchers in Juba City, South Sudan, were able to generalize their results to all SMEs because, secondly, respondents gave unbiased information.

1.11 Operational definition of key terms

Information Communication Technology- a broad range of technological resources and instruments that are employed for communication as well as information creation, dissemination, storage, and management (International Telecommunication Union, 2020).
Project Completion- The capacity to finish the project on schedule and within budget while also achieving its objectives is shown by this (Project Management Institute, 2017).
Small and medium Enterprises: are business which are run by a number of employees between 5 to not more than 150 employees. They are basically run to solving a number of problems of customers in sectors of operations. (The EU Commission, 2005).
Digital communication tools: Computer-based tools that allow people to communicate and interact with each other over the internet, such as email, instant messaging, online discussion forums, and social networking sites. (Kirschner & Karpinski, 2010)
Project Management System: a piece of software used for resource allocation, project planning, and change management. It can be used as an administration system and gives project managers, stakeholders, and users the ability to control costs, manage budgets, and monitor quality and documentation. (Wysocki, 2014).
Automated Document management system: a computer-based system that stores, manages, and tracks electronic documents, allowing users to search for and retrieve documents quickly and easily (McMahon & Thurston, 2019)

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Project completion and ICT were the foci of the empirical literature evaluation that this research used. This section detailed the investigation's results, which were in line with the study's aims and highlighted the existing research gaps. Furthermore, the principles pertinent to the study's variables were also explored in the research. The chapter ended with a literature review that summarized the prior studies, and it also included the development of a conceptual framework to show the expected link between the variables.

2.2. Digital Communication Tools and Project Completion

Digital communication tools are the tools used to relay information from one person to another such as email, social media messaging and text messages. Some of the common digital communications tools includes Video skype, Facebook messenger, hangouts, Gmail, WhatsApp Messenger. Communication is seen as a crucial aspect that has a notable effect on a project success. Delays, misunderstandings, blunders, confusion, and, ultimately, failures can result from poor team communication (Sudhakar, 2012).

Selection of the communication tools is the sole responsibility of the project team. Aakhus and Ziek (2009) notes that communication tools are equipment that allows various ways of communication. Suffficeint communication is said to determine the efficiency of project communication (Grudin & Poltrock, 1989). Traditional communication methods are no longer able to handle complexity, which leads to waste and reduced communication effectiveness (Berg, 2017, p. 4). Digital communication tools are a type of IT that is reasonably inexpensive and can give an acceptable level of efficiency. Effective and digital communication amongst project team members located in different places is critical.

An investigation on the impact that digital communications have on the effectiveness of projects was carried out by Afridi, Turi, Zaufishan, and Rosak-Szyrocka (2023). The researchers focused on the simplicity of use and the support of senior management. The objective of this paper was to examine the impact of the COVID-19 shutdown on project efficiency using digital communication techniques. Additionally, it looked at how much the digital communication that took place during the lockdown affected the project's performance. The study used a method called the cross-sectional quantitative methodology. In addition, convenience sampling was used as a sampling technique for data collection. Personnel from humanitarian groups based in Pakistan were specifically targeted as responders. Some examples of these groups include local NGOs, UN agencies, and INGOs. A mere 302 out of 400 employees really took the time to fill out the survey. The findings showed that digital communication tools did impact project performance, but their ease of use greatly mitigated the effect, rendering them less relevant than guidance from above. Users were also generally positive about the tools. All of these findings are based on what the inquiry found. Disaster preparedness plans and digital communication strategies may both benefit from this research, which also sheds light on the difficulties workers face when tasked with managing change. The first research was conducted in Pakistan, but the new study would be situated in Juba, South Sudan. This brings about a geographical divide between the two studies.

The impact of communication on project performance was the subject of research by Nyandongo and Davids (2017). This study set out to do just that—investigate and assess how well project management functions in respect to communication. Through this research, we learned more about what makes for effective communication management and how this aspect of project management affects final results. In order to learn about the methods of

communication employed in the project management industry right now, this study used a quantitative research approach. A questionnaire was sent to those who agreed to take part in the study in order to gather data. The percentage of people that participated in the research was 70.7%, and the data was analyzed with the use of an online program called e-survey builder, as well as statistical analysis using SPSS. There was a substantial beneficial association between the average ratings of communication and the results of the project, as shown by the data. A correlation was found between successful communication and increased success rates as well as overall project performance. The survey's empirical results unequivocally demonstrate the critical importance of communication. Furthermore, the study outlines the tools and procedures required for effective communication management, such as support tools within Information Communication Technology (ICT). This study study presents a geographical and methodological gap where this was undertaken in South sudan while the current study will be based in Juba South Sudan.

2.3. Automated Document Management Systems (DMS) and Project Completion

In order to ensure that all relevant parties have access to the most recent versions of commonly used strategic and operational documents, it is crucial to have a document management system in place (Irmler, 2009). The acronym "DMS" refers to a computer system that allows several people to access, edit, and share documents from a single location (Sulankivi, 2003). Streamlined digital information management helps with project management, information administration and distribution, and fostering collaboration throughout project delivery. Commercial computerized solutions for document management have proliferated across industries at a fast pace (Sulankivi, 2003). Problems with inefficient document management are common in the US and UK, and they cause companies to lose customers, productivity, and morale (Seiwald,2013). According to Heckman (2008), using a DMS in medium and large organisations with multitude of documents is a must. Based on the

facts presented in the examined literature, the researcher hypothesised that the usage of DMS contributes to the effective completion of the project.

Ogero (2014) set out to examine how construction firms in Nairobi County, Kenya, use PMIS to raise the bar on project performance. With a focus on Nairobi County in Kenya, this research set out to examine how PMIS affects the success of building projects. The researcher used a descriptive study approach. Out of a total of 98 construction businesses that were considered for the research, 80 were selected using the purposive selection approach. The devices utilized for data collection were questionnaires. We received 76% of the total responses. This data set was subjected to inferential and descriptive statistics. Results demonstrated a strong and positively correlated improvement in project performance as a result of the implementation of the PMIS. Users and project managers may do a better job of their jobs and project management in general with a system that helps them produce high-quality information, according to the research. The results showed that the PMIS really helped the project stay on track, save money, and meet quality standards while still meeting all of its deadlines and improving overall performance. This presents a geographical gap and a contextual gap since this study was done in Nairobi Kenya while the current one is done in South Sudan, Juba. The current study was done for construction firms while the current study was done SMEs in Juba County, South Sudan.

2.4 Project Management System and Project Completion

PMS are computer programmes that are utilized to keep track of the resources, time, people and activities throughout the project phases (Horton, 2008). A project management system is a system that includes all of the stages of a project into a single system. These phases include communications, resource allocation, cost control, and scheduling of the project. (Pellerin,

Perrier, Guillot, & Leger, 2013) Collaboration systems, in addition to being able to track activities and time. According to Marti and O'Brien (2005), PMS is designed to simplify and expedite many duties that are performed by project managers, including planning, activity tracking, cost management, and schedule monitoring. PMS allows for the integration of data from several projects, communication with other business systems, and compatibility with new and developing technologies (Pellerin et al., 2013). Better decision-making, more efficient project management, and maintaining a competitive edge are just a few of the many potential benefits of a PMS, according to Horton (2008). Additionally, a PMS can help project teams maximize their productivity. As another point of view, Aadamsoo (2010) believes that PMS are a rapidly expanding technology in the field of information technology, with a rising number of users. Marti and O'Brien (2005) observes that the use of PMS as an instrument for organizing and managing work has emerged and is now increasing swiftly across every industry. Today, information technology and information systems are essential to effective project management, with the application of PMS being especially important (Pellerin et al., 2013). Though the use of PMS is not a guarantee of project success, most organization have made it a requirement to have it (Raymond & Bergeron, 2008). Project management System has been added to the factors that determines project success and from experiments it has been confirmed that use of PMS boost project professional performance and positively impact the project success (Ali, Anbari, & Money 2008).

According to the PMS literature, the usage of PMS has increased fast in recent years throughout every sector (Ali et al., 2008). According to these researches, PMS contribute to better project management and successful project completion. Based on the facts presented in the examined literature, the investigator hypothesized that the usage of PMS contributes to the effective completion of projects.

2.5 Project Completion

Project success has been noted by some scholars to constitute the project ability to meet the timeline, stakeholder's satisfaction and project type or size (Shenhar, Dvir, Levy, &. Maltz, 2001). Project success is an area in project management that has drawn quite a number of researches. Project management success differs from project success, according to Wit (1988). The anticipated project value when the outcome or product is operational is embodied by project success. Project management success, in contrast hand, is defined as the capacity to meet time, cost, and scope constraints.

The factors that most affect the outcome of commercial and industrial projects in Kenya were studied by Meroka (2011). A combination of main and secondary resources was used in the plan. Only 21 out of 38 projects that were scheduled for assessment actually had their reviews conducted. Market research and management, financial feasibility and management, and the level of project management all played significant roles in determining the project's success, according to the study. There is a contextual gap between the two studies since this one looks at the effects of ICTon projects and the other at the key success factors.

The researcher aimed on understanding the effect that senior management support, user involvement, better understanding of scope of the project and technical specifications, project staffing and planning had on the IT project performance. According to studies, five things must be present for an information technology project to be a success: buy-in from users, backing from upper management, careful planning, enough personnel, and a complete grasp of the project's parameters and technical requirements. In order to address a methodological deficiency, the present investigation will make use of a descriptive research design.

Pellerin et al. (2013) conducted research in Canada on the association between the adoption of a PMS, project performance, and project characteristics. The study's focus was on 21

projects chosen from an engineering firm. SPSS was used to run statistical tests from the engineering firm on project data. According to the study's findings, less performing projects use much less Project Management System than other projects. This study has a contextual gap since it was undertaken in Canada, and the present study will be undertaken in South Sudan.

2.6 Empirical Literature Review

In this section the works of the various scholars who have done researchers on the study variables will be briefly reviewed.

Olalusi and Jesulolowa (2013), undertook a study on the impact that information technology had on the Nigerian construction industry. It applied a descriptive research design. The period of study was the year 2011 and 2012. The study target population was medium sized. Data for the study were gathered through the Nigerian construction industry and questionnaires. The study's response rate was 82.5%. The data was analysed using SPSS. The study outcomes showed that project management is one field that is positively influenced by information technology. This study focussed on the construction industry in Nigeria while the current study focuses on SMEs in Juba city in South Sudan hence presenting a contextual gap.

Mwangi (2015) undertook a study to investigate how ICT influence on project completion in the context of Kenya's banking industry. The study applied a descriptive research design and relied with questionnaire to collect primary data. All of Kenya's banks were considered for the target demographic, but only the biggest bank was used for the sample. Descriptive and inferential statistics were used to examine the data. The researchers used both approaches. According to the results, the Kenyan banking industry saw an uptick in project

completion rates after using management and document recovery systems. The current study focuses on examining SMEs in Juba City, South Sudan, and aims to address both contextual and conceptual gaps.

Examining the Service Sector in Malaysia, Alam and Noor (2009) sought to understand how SMEs use information and communication technologies. The study's overarching goal was to identify the factors influencing SMEs in Malaysia to embrace and use ICT. Evidence suggests that perceived costs, benefits, expertise, external pressure, and government aid are the five determinants of ICT adoption and usage. Due to its location in Juba City, South Sudan, and its focus on the impact of ICT on project execution, this research fills a conceptual and contextual need.

The researchers in this study set out to determine how ICTs affected the productivity of SMEs in Tanzania and Kenya. The authors of the research polled 300 SMEs in Kenya and Tanzania. Using ICT has been an increasing trend for SMEs in both Tanzania and Kenya, according to the report. Tanzania had a lower rate than Kenya, but the number of people using fixed line phones had reached saturation. The number of people using mobile phones was increasing worldwide, although it was higher in Kenya than in Tanzania. Researchers found that companies that put ICT to use were more successful overall than those who didn't. Research showed that when users implemented the ICT system, 88% saw an improvement in management efficiency and 76% saw an improvement in competitiveness. The majority of businesses said that mobile phones were the most important contributor to the growth of the regional market, followed by fixed phones and faxes. The previous research was conducted in Kenya and Tanzania, but the current investigation will be carried out in South Sudan. This provides a geographical difference between the two studies.

In Nairobi County, Omari (2020) looked at how SMEs were affected by ICT and how productive they were. Questioning how SMEs in Nairobi County, Kenya's use of ICT affects their performance was the driving force for this research. in order to examine this specific inquiry. The study's primary population consisted of SMEs in Nairobi County; the sample size included 4,000 SME owners, managers, administrative personnel, and others. Researchers used a mix of random and purposeful sampling techniques to compile the study's sample. Primary data, collected via questionnaires, was used in the study. Information and communication technology has helped SMEs expand by opening up new markets, boosting sales, and giving companies a platform to take on more work, according to a study that used descriptive and inferential statistics to analyze the data. A beta value of (b=0.43) and a p-value of 0.0000 demonstrated that performance was significantly related to growth and expansion. Sixty percent of respondents also agreed with this statement; the average score was 4.0185 with a S.D of 0.90621; respondents also agreed that ICT has improved the speed and efficiency with which they can contact their customers. Also, studies have shown that when companies invest in ICT, the quality of their products and services goes up. This, in turn, makes customers happier and opens the door to more innovative products and services. The study concluded that SME management should do an environmental scan to locate new ICTs that may help with service delivery promotion, product mix efficiency, and customer demand matching. The previous research took place in Nairobi, Kenya, whereas the present one takes place in Juba, South Sudan, creating a geographical disparity.

An investigation on the impact that digital communications have on the effectiveness of projects was carried out by Afridi, Turi, Zaufishan, and Rosak-Szyrocka (2023). The researchers focused on the simplicity of use and the support of senior management. The objective of this paper was to examine the impact of the COVID-19 shutdown on project

efficiency using digital communication techniques. Additionally, it looked at how much the digital communication that took place during the lockdown affected the project's performance. The study used a method called the cross-sectional quantitative methodology. In addition, convenience sampling was used as a sampling technique for data collection. Personnel from humanitarian groups based in Pakistan were specifically targeted as responders. Some examples of these groups include local NGOs, UN agencies, and international INGOs. A mere 302 out of 400 employees really took the time to fill out the survey. Digital communication tools did have an effect on project performance, according to the results, and the simplicity of use significantly reduced the relationship between the two variables, making them less influential than help from higher-ups. Users were also generally positive about the tools. All of these findings are based on what the inquiry found. This study aids in the development of digital communication strategies and business continuity plans to cope with disasters, and it also helps us understand the challenges that employees have when confronted with change management. The first research was conducted in Pakistan, but the new study would be situated in Juba, South Sudan. This distinction highlights a geographical divide between the two studies.

The impact of communication on a project's final outcome was recently studied by Nyandongo and Davids (2017). Our goal in writing this article was just that: to examine and assess how well project managers are able to communicate with their teams. The impact of communication on project results and the elements that lead to good communication management were the subjects of further investigation. The research used a quantitative approach to better understand the methods of communication used by project management companies nowadays. A questionnaire was sent to participants and asked to be filled out in order to gather data. E-survey builder, an online program, and statistical statistical analysis

using SPSS were used to examine the data collected from the 77% of respondents who took part in the study. A substantial positive association was found to exist between the average ratings of communication and the results of the project, as shown by finding. Researchers found a correlation between successful communication and increased success rates as well as overall project performance. The survey's empirical results unequivocally demonstrate the critical importance of communication. Furthermore, the study outlines the tools and procedures required for effective communication management, such as support tools within Information Communication Technology (ICT). This study study presents a geographical and methodological gap where this was undertaken in South Sudan while the current study will be based in Juba South Sudan.

Mwenda (2018) conducted research on how SMEs in Isiolo county saw the use of ICTs in relation to their performance. This study set out to answer the question, "How does ICT impact the performance of SMEs?" regarding SMEs of all sizes. Isiolo county was home to 895 SMEs. The 269 SMEs included in the research were selected using the table developed by Krejcie and Morgan (1970). In order to get primary data, many questionnaires were sent out. Demographic and inferential statistics were used by statisticians to interpret the collected data. The results show that information and communication technology played a key role in the expansion and improvement of companies, and that among the SMEs listed in Isiolo county, there was a favorable relationship between HRM, marketing, and stocking. ICT has many benefits, including making it easier to connect with consumers, cutting costs, and providing market intelligence. As a result, SMEs in Isiolo county were able to reach more customers and perform better. This study presents a geographical gap and a theoretical gap since this was done in Isiolo county, Kenya and the current one is done is Juba county, South Sudan.

2.7 Theoretical Framework

Theories pertinent to the study are discussed in this part. Two theories are discussed; Diffusion theory and technology acceptance model

2.7.1 Diffusion Theory

This theory was pioneered by Rogers (1983). It views the dissemination of innovation as being governed by the way potential adopters behave when faced with uncertainty during the introduction of technical breakthroughs. Although innovations provide novel methods for resolving issues, the adoption process is hampered by ambiguity about whether the new approaches will be superior to those now in use. Potential adopters are compelled to seek out more information to allay this concern, especially from their co-workers (Niederman, Brancheau & Wetherbe, 1991). Many inventions take a while to spread from the time they are first made available until they are really adopted; this is a typical issue that both individuals and organizations face (Rogers, 1983).

Sahin (2006) identifies four characteristics that influence the adoption of new technologies: relative advantage, compatibility, complexity, and trialability. Furthermore, Moore and Benbasat (1991) assert that appearance and visibility are crucial factors in innovation.

Business decides to finance in Project Management System (PMS) for a variety of reasons. These reasons include making the project managers work more efficient and easier, giving chance to help in planning, controlling project budgets, tracking activities, and monitoring project schedules are some of the reasons (Marti & O'Brien, 2005). According to Davis (1989), the advantages of adopting IT may be damaged by consumers' unwillingness to adopt and employ novel technologies that they have been offered. A project management system can only be useful if its intended users make good use of it to finish projects efficiently,

which helps the business achieve its strategic and operational objectives. The study's first objective was satisfied by testing the innovation diffusion hypothesis, which looked at how much of an impact using PMS had on project completion rates.

2.7.2 Technological Acceptance Model (TAM)

This theory was founded by Davis (1989). As indicated in this theory, consumers' acceptance of a technology is determined by their anticipated gain (perceived usefulness and perceived ease of work) from using the technology. Owing to the already founded association amongst technology acceptance and organization performance, the study of technology acceptance or ICT has been at the forefront of the research agenda from the inception of the TAM (Goodhue & Thompson, 1995; Davis, Bagozzi & Warshaw, 1992).

Despite TAM's widespread implementation verified the theory's robustness (on average it explained about 40% of the changes in technology acceptance), the model's developers still wished to increase the model's predictive power even more. The reason for expanding the model was a lack of understanding of the conditions behind consumers' perceptions of technology usage. The biggest predictor of aim to use was revealed to be perceived usefulness, with an average impact size of 0.6 (Venkatesh & Davis, 2000). Nevertheless, there was slight research on the factors that influence people's judgements of the value of technology. Additionally, to demonstrating how users' perceptions of utility and usability affect intention (e.g., Venkatesh & Davis, 1996), study into the factors that drive usefulness perception was necessary to offer guidance on system creation. Davis and Venkatesh (2000) research of important factors influencing perceived usefulness aimed to create a thorough framework for understanding and predicting organizational settings' adoption of new technologies.

Technology adoption by SMEsis influenced by the perceived utility and simplicity of use of a technology, or more specifically information and communication technology (ICT). A technology will be adopted by them if they believe it to be valuable to them. This notion is pertinent to this study as it explores the potential influence of ICT on project completion. If it is found that SMEs are inclined to use this technology, it further supports the relevance of this theory.

2.8 Conceptual Framework

A conceptual framework is a grouping of common concepts and principles in a specific study are that guide the subsequent presentations. Conceptual framework calls for developing ideas regarding the associations amongst study variables and illustrating these representations clearly or diagrammatically (Mugenda & Mugenda, 2003). This framework proposes that the usage of ICT can have a positive impact on project completion. The relationship may also be moderated by variables such as project size and organizational culture. By considering these factors, organizations can better understand how to leverage ICT to improve project completion rates.

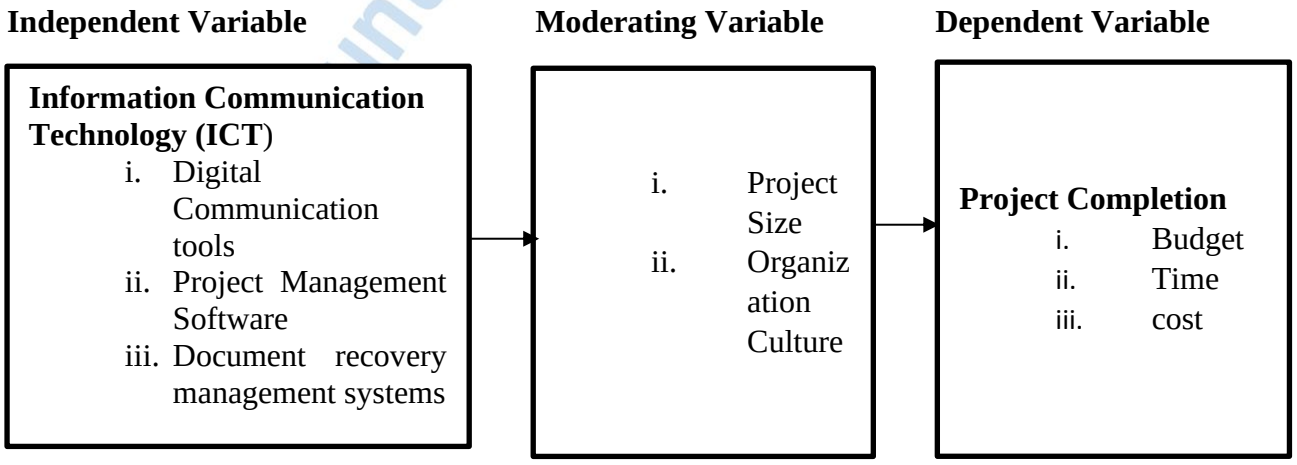


Figure 2.1 Conceptual Framework

2.9 Recap of literature review

The theoretical and empirical literatures have both been revised in this chapter. The Diffusion Theory pioneered by Rogers (1983) and the TAM established by Davis (1989) are the theories forming the basis for the study. The theory posits that adoption of the technology is reliant on an organization perceived benefits on the technology to be adopted. In the empirical literature reviewed, it has touched on both local, regional and international literatures. Researchers Mwangi (2015) looked at the Kenyan banking sector to see how information and communication technology affected project completion rates. The research found that in the Kenyan banking sector, project completion rates were higher when using project management and document management systems. Olalusi and Jesulolowa (2013) looked at the impact of IT on the Nigerian construction industry in their regional study. One domain that gains from IT is project management, according to the research. Researchers Alam and Noor (2009) looked examined how SMEs in Malaysia's service sector used information and communication technologies. Perceived costs, benefits, expertise, external pressure, and government help were identified as five factors that impact the adoption and use of ICT, according to the study. Additionally, we have the results of Meroka (2011), who investigated the critical success factors in business and industrial initiatives in the Kenyan context, which add to the evidence we have. Quality of project management, market analysis and management, and financial feasibility and management were the three most important criteria in determining a project's success, according to the study. In a separate research conducted in Canada, Pellerin et al. (2013) looked at the connection between project quality, performance, and the use of process management software. The table below lays out the

Table 2.1 Recap of Literature Review

Author and Year	Title	Findings	Methodology	Research Gap
Olalusi and	An analysis of	The research	Descriptive	Theoretical

Jesulolowa (2013),	how IT changed the Nigerian construction sector.	findings demonstrated a good impact of information technology in the area of project management.	Research Design	Gap Geographical Gap
Mwangi (2015)	How ICT impact the execution of projects within the Kenyan banking sector	The research found that project managers in Kenya's banking industry were more likely to see their initiatives through to a successful conclusion when they used management and document recovery tools.	Descriptive Inferential statistics	Contextual, conceptual and geographical gap
Alam and Noor (2009)	Malaysian service sector data on ICT use by SMEs	Perceived costs, benefits, expertise, external pressure, and government support were the five factors the study found to influence the adoption and usage of ICT.	Descriptive Inferential statistics	Contextual and Geographical gap
Omari (2020)	technology's effect on the efficiency and productivity of SMEs in Nairobi County.	Furthermore, the study's authors concluded that companies' use of ICT raises the bar for the products and services they provide, which in turn makes customers happier and opens doors for innovation.	Descriptive statistics and inferential statistics	Geographical Gap
Afridi, Turi, Zaufishan, and Rosak-Szyrocka (2023)	impact of digital communication on project productivity as a result of user-friendliness and backing from	Digital communication tools are well-received by users, according to the findings. How well a project turns out is	quantitative methodology	Geographical gap

	upper management	directly related to these tools. When comparing the correlation between digital communication tools and project success, usability is a strong moderator, even more so than the backing from upper management.		
Matambalya & Wolf (2010)	How ICT affect the efficiency and productivity of SMEs in East African countries	Research revealed that companies that used ICTachieved superior performance compared to those who did not employ ICT technologies. The study found that when people employed ICT, 88% of them were able to enhance management efficiency, and when people used the same technology, 76% were able to boost their competitiveness.	Descriptive statistics and inferential statistics	Geographical gap
Nyandongo and Davids (2017)	The effect of dialogue on the outcome of a project	The results demonstrated a noteworthy correlation between communication strategies and the success of projects. Higher success rates and overall project performance were shown to be associated with effective communication.	Descriptive statistics and inferential statistics	Geographical and methodological gap

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter encompasses of subsections such as research design, which explains the study's location, the demographic targeted, sampling size, and methodologies utilised. The chapter goes into greater detail about the research instrument's creation and how its validity and reliability were ensured. The data collection and analysis methods are also detailed in this section.

3.2 Research Methodology

Chapter three delves into the researcher's methodology selection process. The text gives a synopsis of the study's methodology, setting, and demographic focus, as well as information on the sample and the procedures used to select it. A description of the research tool and information on its validity and reliability are also included in the study's methodology. In the next subsections, the type of data applied is also described in detail, as is the data analysis process.

3.3 Research Design

As said by Gallagher and Updegraff (2022), research design is the process of systematically gathering and interpreting data to achieve the goals of a study. An exploratory research strategy was used in this study. Questions like "who," "when," "how," and "where" are the focus of descriptive research designs. It gives people the freedom to answer the research questions as they like. This study design was used by the researcher to investigate how SMEs in Juba city, South Sudan, were impacted by the usage of ICT on the completion of their projects. There was a relationship between the two variables in Juba County, South Sudan: ICT and the completion of projects. ICT was measured through variables PMS, digital

communication tools and document management systems which project completion was measured using completion of project in time, budget and attaining project objectives.

3.4 Location of the Study

The research was undertaken in Juba Town, Kator and Muniki Payams as shown in the figure 3.1 below. Juba County is situated in the southern side of South Sudan. Juba is located in South Sudan's southern region. Vast swaths of open space, including swamplands and agrarian landscapes surround Juba. The Kujur Mountain range, located west of Juba, provides a gorgeous background for the town with its powerful majestic peaks and large valleys. The Nile River produces a lush greenway that extends into Greater Juba and supports a broad range of native flora and wildlife, resulting in a rich ecological zone that, according to city officials, covers a 12-kilometer square area. (Planning, 2005).

3.5 Target Population

Pole and Lamp (2010) describe a target population as "all the items, groups, objects, or people of interest in a study.". For this current study, the 13,348 licensed SMEs within Juba city of South Sudan were the target population (World Bank,2019). It is assumed that the SMEs in Juba are homogeneous in the sense that they face the same challenges and experiences the same working environments.

3.6 Sampling procedures and techniques

To find the SMES that took part in the study, the researchers utilized a mix of stratified sampling and conventional random sampling methods. It is presumed that the SMEs in Juba are uniform, average ratinging that they face comparable challenges and function under comparable circumstances. As a consequence, the findings could be extrapolated to the whole population since the sample was considered representative. The sample size was

chosen using a procedure that has been supported by previous research, including that of Kumar (2015), Smith (2015), and Garg and Kothari (2015). As previously stated, 96 subject matter experts (SMEs) were selected using Cochran's technique.

$$n = \frac{Z^2 pq}{e^2}$$

N=Sample Size when the population is more than 10,000/-

P= the desired proportion of the characteristics

Q=missing qualities

Z=normal distribution score based on the SL

E=Error term

Substituting the values yields the following results:

$$n = \frac{1.96^2(0.5)\,(0.5)}{0.1^2}$$

$$= 96$$

3.7 Sample Population

The study sample size was 96 SMEs in the IT sector. The targeted sample population were the managers in charge of the SMEs.

3.8 Construction of research instrument

The research instrument used in the study was created with the research objectives in mind. A structured questionnaire served as the research tool for this project. Both the "Section A" and "Section B" portions of the survey are appropriately named. Collecting data on the participants' demographic characteristics, such as their gender, age, and employment history, was the responsibility of Section A. Section B, on the other hand, was comprised of structured questions that were used for the purpose of pursuing information on both the

independent and dependent variables. Participants were asked to score the statements that were supplied on a Likert scale ranging from 1 to 5 in the questions that were included in section B, where 1 denoted "Strongly Disagree," 2 "Disagree," and 3 "Neutral." (5 = Strongly Agree; 4 = Agree.)

3.9 Testing for validity and reliability/trustworthiness

Researchers must ensure the study instrument they will employ will collect accurate and trustworthy data by conducting validity and reliability tests. Comprehensive information on the reliability and validity of the instrument is included in the next section.

3.9.1 Validity of the Instrument

The research instrument validity tells if it is capturing what it is supposed to capture or how correct the study findings are (Golafshani, 2003). According to Kimberlin and Winterstein (2008), validity denotes to the correctness or accuracy of inferences based on study findings. To guarantee the questionnaires validity to be applied in this study, the supervisor thoroughly reviewed the questions included in the questionnaire and appropriate adjustment were made that ensured the validity of the questionnaires.

3.9.2 Reliability of the Instrument

How consistent the estimate in the findings is every time the instrument is used is how an instrument's dependability is characterized (Cronbach, 1951). The research used the Cronbach alpha coefficient to guarantee that the instrument was reliable. Reliability is defined as the extent to which the results of an experiment or measurement method remain consistent over different runs (Morse, Barrett, Mayan, Olson, and Spiers, 2002). A reliable instrument will be able to provide an accurate depiction, and any measurement will be considered legitimate if it can measure the target (Stellmack et al., 2009). The research instrument is considered suitable when its Cronbach alpha value is larger than 0.7 (Mugenda,

2008). On average, judgments of internal consistency and dependability are good when Cronbach's alpha approaches 1. This research evaluated the reliability of the instrument and found that all variables had a Cronbach value of 0.783. Based on this average rating, we may confidently utilize the data for analysis.

3.9.3 Pilot Testing

A duplicate of the main study that is carried out before the main research itself is carried out is known as a pilot study. Before beginning the primary investigation, a pilot study was carried out in this particular instance. Pilot testing is used to fine-tune the study outline and instrument to ensure they were as precise and relevant as possible (Saunders, Lewis & Thornhill, 2012). The instrument was revised during the pilot project and this ensured that the participants accurately recorded their responses. Before the main research begun, the questionnaires were validated in a pilot study to confirm their validity and reliability. According to the rule of thumb, the pilot test should comprise 5% to 10% of the target population (Cooper & Schilder, 2014). Henceforth, the research employed 10% of the sample size for piloting, which average ratings that 10 respondents will be used for this purpose. The pilot study was done on SMEs in construction field.

3.10 Data collection methods and procedures

For the research, primary data were used. The questionnaires were the study tools that were used in the process of data collection. In addition to being less time consuming, the researcher chose the questionnaire because the data obtained is devoid of any bias that may have been introduced by the researcher. The owner's demographic information is included in Section A of the questionnaire, while Section B discusses the goal of the research. The questionnaire was divided into two pieces. The questions were structured in a way that

allowed respondents to rate their level of agreement or disagreement with each statement using a Likert scale from 1 to 5. According to the following scale: "1=Strongly Agree, 2-Agree, 3-Neutral, 4-Disagree, and 5=Strongly Disagree." The researcher issued one questionnaire to each of the respondents (manager in charge of the SME) from the 96 SMEs in IT sector. The questionnaire was self-administrated by the researcher. In case of any clarification regarding the questions contained in the questionnaire, the researcher gave clarification.

3.11 Proposed data analysis and presentation

The information was then coded by the researcher, and it was put into Microsoft Excel when the data gathering process was complete. After that, the data was entered into SPSS, where it was analyzed for analytical purposes, including descriptive and inferential statistics. Specific examples of descriptive statistics include the average rating, the S.D, the frequencies, the variances, and the percentages. In order to ascertain the relationship between ICTand the successful completion of projects in SMEs in Juba County, South Sudan, inferential statistics were used. The correlation between ICTand the completion of projects in SMEs in Juba County, South Sudan, was determined via the use of regression analysis. The below Regression model was applied;

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where;

Y = Project Completion

X_1= PMS

X_2= Digital Communication Tools

X_3= Automated Document Management Systems

α = Constant; y intercept that is, the value of y when x is equal to zero

β = Coefficients of the model

ε = Error term

3.12 Ethical Considerations

The data collection was done in an environment that was safe and familiar to the SMEs users and owners. Consent was sought from the respondents and they were guarantee that their answers will not be disclosed to anyone and it will be used only for the purpose of completing the project. All given information was treated with a highest confidentiality and was not be disclosed to their potential competitors. The information gathered met the internationally accepted data privacy. The names and organization of the respondents were not indicated in the questionnaires to maintain anonymity of the respondents.

CHAPTER FOUR

RESEARCH FINDINGS, ANALYSIS AND PRESENTATION

4.1 Introduction

The researcher reviewed the surveys in this section keeping in mind the aims of the study. The data was used to create descriptive and inferential statistics. Following the investigation, the data was presented visually using tables and figures to facilitate understanding and drawing conclusions. The chapter contain various sections including response rate, descriptive statistics, and inferential statistics and to wind up the findings are discussed.

4.2 Response Rate

Questionnaire were used the primary data collection instrument. The respondents were given a total of 96 questionnaires. 50 SMES answered to the administered questionnaires, representing a 52% response rate. According to Kumar (2015), who feels that a response rate of more than fifty percent is adequate to continue with academic study, this response rate is in agreement with his opinion.

Table 4.1 Response Rate

Research instruments	Sample size	Percentage (%)
Returned	50	52
Not Returned	46	48
Total	**96**	**100**

Source: Research Findings (2023)

4.3 Demographic Characteristics

In this section, the researcher presented the analyses on the demographic characteristics with regards to their gender, age, education level and work experience. The outcomes are indicated in the tables following

4.3.1 Gender of the respondents

Results are included in Table 4.2 to demonstrate the findings, and respondents were strongly urged to indicate their gender in their remarks.

Table 4.2 Gender of the Respondents

Gender	Frequency	Percent
Male	34	68
Female	16	32
Total	50	100.0

Source: Research Findings (2023)

According to the data, the majority of the respondents were men, which accounted for 68% of the total respondents. On the other hand, females made up a minority of the respondents, who accounted for 32% of the total. This implied that most of the SMEs in Juba County are operated or owned by men. However, it is worth to note that the females were 32% of the respondents showing that the females are well representative having more than a third of the respondents in the SMES in Juba County.

4.3.2 Age of the Respondents

It was asked of the responders that they provide their age in their replies. The responses are listed in table 4.3 below.

Table 4.3 Age of the respondents

Age Brackets	Frequency	Percent
18 to 25	3	6
26 to 35	7	14
36 to 45	23	46
Above 45	17	34
Total	50	100.0

Source: Research Findings (2023)

From the analysis of the age of the respondents, it is shown that most of the SMEs owners were aged 36 to 45 (46%) followed by those above 45 (34%), those aged 26 to 35 year were 14% while the least was between 18 to 25 years. This implied that most of the SMEs in Juba county South Sudan were owned matures people in terms of age also the respondents were mature enough to give valuable results for the study.

4.3.3 Education Level of the respondents

Respondents were implored to specify their responses based on their degree of education. Table 4.4 summarises the responses.

Table 4.4 Education Level of the respondents

Educational Level	Frequency	Percent
Secondary Certificate	21	42
Diploma	12	24
Bachelor Degree	8	16
Masters	5	10
Others	4	8
Total	50	100.0

Source: Research Findings (2023)

From the findings, most of the respondents were those with secondary school education recording 42% followed with those in diploma 24%. Those with bachelor degree, masters and other recorded 16%, 10%, and 8% respectively. This implied that those SMES operating in South Sudan juba is mainly owned or operated by those with secondary education while there was a minimal number of those with more than a bachelor degree and above. In addition, this also implied that most SMES had basic education and could therefore provide valuable information to be used in this study

4.3.4 Work Experience of the Respondents

The researcher inquired about the respondents' employment experience, and the responses are as follows.

Table 4.5 Work Experience of the respondents

Work Experience	Frequency	Percent
1-3 Years	18	36
4-6 Years	12	24
7-9 Years	13	26
Above 10 Years	7	14
Total	50	100.0

Source: Research Findings (2023)

The analysis showed that most of the people running the SMEs possessed between 1-3 years (36%) of experience seconded by those with 4-6 years 24% of experience. This average

ratings that the most of respondents had below 6 years of experience running SMEs which average ratingt they were new in the business. This could be as a result of the high failure rate of most businesses.

4.4 Descriptive Statistics

The researcher analysed the replies using average rating and S.D descriptive statistics on a 5-point Likert scale starting from strongly disagree to strongly agree where 5 was strongly agree and 21 was strongly disagree.

4.4.1 Digital Communication tools and project completion

It was requested of the respondents that they assess the degree of agreement with the impact that digital communication tools have on the completion of projects in SMEs in Juba. Below, in Table 4.6, you can see the findings that were obtained.

Table 4.6 Descriptive Statistics on Digital communication tools

Statement	N	Average rating	Std. Deviation
Digital communication tools facilitated effective collaboration among team members throughout the project completion process	50	3.82	1.101
digital communication tools were used to streamline project communication and decision-making	50	3.60	1.178
The quality of project outcomes was improved as a result of using digital communication tools.	50	3.80	1.229
Digital communication tools allowed for timely and efficient communication throughout the project completion process.	50	3.92	1.175
Overall, the success of the project completion process was positively impacted by the use of digital communication tools.	50	3.94	1.219
Composite Average rating and Std. Deviation		**3.82**	**1.180**

Source: Research Findings (2023)

The findings reveal that on average the respondents indicated that digital communication tools have a positive influence on project collaboration, communication and ultimately on the project success as indicated by the composite average rating of 3.82. More precisely, the

respondents on the statement that digital communication tool enabled timely and efficient collaboration amongst team members throughout the project completion process, this statement recorded an average rating of 3.92 which is above the composite average rating of 3.82. This displays that most of respondents were in agreement that the tools facilitate effective and timely communication amongst the project team member during project implementation. Conversely, the statement that the use of digital communication tools helped streamline project communication and decision-making received an average rating rating of 3.60, indicating a slightly lower level of agreement compared to other statements. However, it is essential to note that the variation in responses was relatively small, as exhibited by the composite S.D of 1.180. Furthermore, the S.D for each statement ranged from 1.101 to 1.229, suggesting moderate variability in respondents' perceptions for each item. The statement with the lowest S.D, Digital communication tools facilitated effective collaboration among team members throughout the project completion process (Std. Deviation = 1.101), indicates a higher level of agreement among respondents regarding its positive impact on collaboration. In contrast, the statement The quality of project outcomes was improved as a result of using digital communication tools displayed the highest S.D (1.229), implying more diverse opinions among respondents on the extent to which these tools influence project outcomes. Overall, the data suggests that digital communication tools have a positive effect on project completion. This is evident from the composite average rating of 3.82, indicating that most respondents agreed with the statement assessing the impact of digital communication tools. The results are consistent with the research conducted by Nyandongo and Davids (2017), which demonstrated a notable and favorable correlation between communication approaches and project success. Additionally, there was a correlation between effective communication and increased success rates as well as improved overall project performance. Furthermore, the results align with Sudhakar's (2012) findings, which assert that Communication is seen as

a pivotal factor that significantly impacts the success of a project. Inadequate team communication may lead to delays, misunderstandings, errors, perplexity, and eventually, failures.

4.4.2 Automated document management software and project completion

It was requested of the respondents that they assess the degree of agreement with the impact that automated document management systems and project completion have on SMEs in Juba. The findings are shown in the table that can be seen below.

Table 4.7 Descriptive Statistics on automated document management system

Statement	N	Average rating	Std. Deviation
The automated document management system facilitated efficient document sharing among team members throughout the project completion process.	50	3.86	1.050
The use of the automated document management system helped ensure that team members had access to the most up-to-date project documents.	50	3.82	1.207
The quality of project outcomes was improved as a result of using the automated document management system.	50	3.64	1.156
The automated document management system allowed for better organization and management of project documents throughout the completion process	50	3.96	1.177
Overall, the automated document management system's utilisation contributed to the project's successful conclusion.	50	4.04	1.106
Composite Average rating and Std. Deviation		**3.86**	**1.139**

Source: Research Findings (2023)

The findings suggest that, on average, respondents had an agreement that automated document management system's impact on various aspects of project completion as exhibited by an average rating of 3.86 and a S.D of 1.139. On the statement that document management system increase document sharing amongst team members, many of the respondents agreed as indicated by average rating of 3.86 and the variability in responses was low as indicated by the S.D of 1.05. Additionally, most of the respondents also agreed that automated document management system helped the team member keep up to date project document. The

respondents on the statement that quality of project outcomes was improve due to use of automated document management system received an agreement level from most of the respondents given the average rating of 3.64 and S.D of 1.156. Most of respondents agreed with the statement that automated document management systems allowed for better organization and management of project documents throughout the project completion process as indicated by an average rating of 3.96 above the composite average rating of 3.86. On overall there was agreement with the most respondents agreeing that use of automated document management systems positively impacted the success of the project completion processes as shown by the average rating of 4.404 above the composite average rating of 3.86 This finding henceforth implies that automated document management systems have a positive influence on the project completion in SMEs in Juba County, South Sudan. These findings concurs with those of Seiwald (2013) that stated that resulting in lost productivity, lost business, and decreased staff morale in organisations and hence opines that automated document management is essential for a project to be completed successfully in SMEs in Juba County South Sudan

4.4.2 Project Management Software and Project Completion

It was requested of the respondents that they assess the degree of agreement with the impact that project management software has on the completion of projects in SMEs in Juba. Below, in Table 4.8, you can see the findings that were obtained.

Table 4.8 Descriptive Statistics on project management system

Statement	N	Average rating	Std. Deviation
Throughout the whole of the completion process, the project management system made it possible to effectively plan and schedule the project.	50	4.00	1.107
By using the project management system, it was possible to guarantee that all of the project's duties were finished on time and without exceeding the budget.	50	4.06	1.058
The use of the project management system led to an improvement in the overall quality of the delivered results of the project.	50	3.96	1.087

Throughout the whole of the process of completing the project, the project management system made it possible for members of the team to collaborate and communicate more effectively with one another.	50	4.06	.978
For the most part, the use of the PMS had a favorable influence on the accomplishment of the process of completing the project.	50	4.12	1.023
Composite Average rating and Std. Deviation	**4.04**		**1.050**

Source: Research Findings (2023)

From the findings above, on average, there is a high agreement with the influence of PMS on project completion as indicated by the average rating of 4.404. On the statement that project management System facilitated effective project planning and scheduling through the completion process most of the respondents agreed as exhibited by an average rating of 4.00. The majority of the participants also agreed that the PMS has facilitated the timely completion of project tasks and adherence to budgetary constraints, as shown by an average rating of 4.06. The second statement indicates that the PMS led to an average rating of 3.96 in terms of improving the quality of project outputs. Although still positive, this statement received a slightly lower average rating compared to the previous ones, suggesting that respondents were somewhat less certain about the direct impact of the System on project outcomes. On the statement that project management System allowed for better collaboration and communication among team members throughout the project completion process recorded an average rating of 4.06 was recorded indicating that respondents agreed with the System's efficacy in promoting collaboration and communication among team members during the project. In accordance with the concluding statement, which said that the project management system's use positively affected the project's completion process, the maximum average rating of 4.12 was documented. That the System significantly impacted the performance of the project completion process is supported by the substantial agreement of the respondents, on average. The overall sentiment is very positive across all claims, as seen by the 4.04 average rating. Respondents in Juba County, South Sudan generally believe that PMS contribute to the success of SMEs projects. This suggests and agrees with the literature on project management that was written by Marti and O'Brien (2005). They express the opinion that a PMS is used to assist planning, activity tracking, cost management, and schedule monitoring. This, in turn, facilitates and enhances a project manager's job. According to Pellerin et al. (2013), PMS allows for the integration of project data, interface with other business systems, and compatibility with other state-of-the-art technologies. This,

in turn, ensures that the completion of the project is successful at the level that was intended by the stakeholder of the systems.

4.5 Inferential Statistics

A combination of correlation and regression analysis was used by the researcher to assess the significance and nature of the correlations between the variables.

4.5.1 Correlation Analysis

Pearson correlation analysis was undertaken for various variables to establish the nature and strength of their relationship. The correlation analysis varies from -1 and +1 where -1 one is strongly and negatively correlated while +1 is strong and positive correlation. The correlation analysis outcomes are as specified in the below table

Table 4.9 Correlation analysis

		Digital Communication Tools	Automated Document management system	Project management Software	Project Completion
Digital Communication tools	Pearson Correlation	1	-.082	.976**	.983**
	Sig. (2-tailed)		.574	.000	.000
	N	50	50	50	50
Automated Document management system	Pearson Correlation	-.082	1	-.033	-.019
	Sig. (2-tailed)	.574		.819	.894
	N	50	50	50	50
Project management Software	Pearson Correlation	.976**	-.033	1	.986**
	Sig. (2-tailed)	.000	.819		.000
	N	50	50	50	50
Project Completion	Pearson Correlation	.983**	-.019	.986**	1
	Sig. (2-tailed)	.000	.894	.000	
	N	50	50	50	50

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

Source: Research Findings (2023)

The data shown in table 4.9 demonstrates a significant and favorable relationship between the use of Digital Communication Tools and the completion of projects ($r = 0.983$, $p < 0.01$). This suggests that when the use of digital communication technologies rises, there is a proportional increase in the achievement of project completion. The findings align with those of Afridi, Turi, Zaufishan, and Rosak-Szyrocka (2023), who found that users have a positive attitude towards digital communication tools. Additionally, they discovered that the use of digital communication tools improves project effectiveness. Furthermore, they found that, in contrast to assistance from upper management, the ease of use of these tools moderates the association between digital communication tools and project performance. No statistically significant link between the utilization of Automated Document Management Software and the completion of projects was found in the study ($r = -0.019$, $p > 0.05$). This implies that the effectiveness of the automated document management software may not be strongly correlated with the successful completion of the project. According to Seiwald (2013), there is no clear agreement in the study that addresses the question of whether poor document management may cause companies to lose productivity, business, and morale. Heckman (2008) asserts that large and medium-sized businesses with millions or even hundreds of thousands of documents must use a document management system (DMS). This view holds that DMS contributes positively to the efficient conclusion of the project. The results show a strong and positive correlation between using Project Management Software and successfully completing projects ($r = 0.986$, $p < 0.01$) in the field of Project Management Software. It follows that the more individuals use software for project management, the higher the success rate of project completion. Research by Ogero (2014) sought to identify the impact of PMIS on project performance in Nairobi County construction enterprises. According to Ogero (2014), who also discovered a robust positive association between PMI and project success, our results corroborate that conclusion. Study participants also reported that users and project managers were able to provide high-quality information critical to their work while using a system. Their competence and professionalism are both enhanced as a result. Project completion is the dependent variable, while digital communication tools and project management software are the independent variables. The overall results indicate a strong positive association between the three. This implies that these technologies should be used in conjunction with digital communication tools.

4.5.2 Regression Analysis

The researcher undertook a multiple regression analysis with the aim of determining the causation and association amongst the independent variables, project management System, automated document management system and digital communication tools with the dependent variable project completion of SMES in Juba County, South Sudan. The outcomes of the regression are as exhibited in table 4.10 below.

Table 4.10 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.991[a]	.982	.981	.1454

a. Predictors: (Constant), Project management System, Automated Document management system, Digital Communication Tools

Source: Research Findings (2023)

Project management system, automated document management system, and digital communication tools are the three variables that account for 98.2% of the variance in project completion, according to the model summary findings shown above with a R squared value of 0.982. Even after controlling for the number of variables, the model seems to have a high level of explanatory power, as the adjusted R square is quite close to the R square. According to the results, the model's independent variables do an excellent job of describing the variance in the dependent variable, indicating a high goodness of fit. On overall this findings imply that information communication technology as measure by the three independent variable which are PMS, automated document management system and digital communication tools are good predictors of project completion in SMES in Juba county, South Sudan.

Table 4.11 ANOVA

Model		Sum of Squares	df	Average rating Square	F	Sig.
1	Regression	53.271	3	17.757	839.933	.000[b]
	Residual	.972	46	.021		
	Total	54.243	49			

a. Dependent Variable: Project Completion

b. Predictors: (Constant), Project management Software, Automated Document management software, Digital Communication Tools

Source: Research Findings (2023)

The ANOVA findings in Table 4.11 above displays that the regression model as a whole is highly significant (p-value < 0.001), implying that the predictors variables combined have a strong relationship with the dependent variable Project Completion. In addition, the ANOVA analysis indicates that project management System, automated document management system and digital communication tools collectively explain to a significant amount the changes in project completion. The F-statistic is quite large, further supporting the strong statistical significance of the model.

Table 4.12 Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.217	.253		.860	.000
	Digital Communication Tools	.421	.085	.461	4.921	.000
	Automated Document management system	.111	.062	.036	1.782	.001
	Project management System	.554	.096	.538	5.758	.000

a. Dependent Variable: Project Completion

Source: Research Findings (2023)

From the above results, the below multiple linear regression equation will be formulated

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Project Completion= $0.217 + 0.421X_1 + 0.111X_2 + 0.554X_3$

The coefficient 0.217 indicates the estimated change in project completion of SMEs in Juba County, South Sudan when the all the three variables digital communication tools, automated document management software and project management Software is zero.

The above formulated regression model implies that a unit increment in digital communication tool with a unit will lead to and increment in project completion with 0.421 unit holdings all other variables constant, whereas increment in automated document management software in a unit will lead to an increment in project completion with 0.111 unit holding all other variables constants and lastly an increment in project management software with unit will lead to an increase in project completion with 0.554 unit. The regression model suggests that Digital Communication Tools and Project management Software are significant predictors of Project Completion and have strong positive effects on the outcome. Automated Document management software is also a statistically significant predictor, but its effect appears to be relatively weaker compared to the other predictors. According to this model, SMEs in Juba County, South Sudan, are more likely to complete their projects when they have access to ICT. According to this study, investing in project management software, automated document management systems, and digital communication tools will have a positive and significant effect on project completion rates.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

The researcher summarises the results of the data analysis in this section, draws conclusions, makes recommendations to the authorities, beneficiaries, and other stakeholders in the SMEs in Juba County, South Sudan, and concludes by making recommendation for additional research.

5.2. Summary of the result findings

The descriptive study demonstrated that digital communication tools had a beneficial impact on the project completion of SMEs in Juba County, South Sudan. The results demonstrated that, on average, the participants expressed that digital communication tools have a favorable impact on project cooperation, communication, and ultimately, project success, as seen by the composite average rating of 3.82. The descriptive findings also found that SMEs in Juba County, South Sudan, had benefited from automated document management systems in terms of project completion rates. With an average rating score of 3.86 and an S.D of 1.139, it is clear that most respondents agreed that the automated document management system affected many aspects of the project's completion. By looking at the average score of 4.404, it is clear that most respondents fully believe that PMS significantly affect. Based on these results, it can be concluded that SMEs in Juba County, South Sudan benefit from the use of ICT as measured by the three independent variables: digital communication tools, project management system, and automated document recovery system.

According to the results of the correlation study ($r = 0.983$, $p = 0.01$), there was a strong positive association between the use of digital communication tools and the project's successful completion. In addition, the results demonstrated that the usage of an automated system for managing documents does not correlate with project completion ($r = -0.019$, $p > 0.05$). In conclusion, the results show that the project management system is significantly associated with the successful completion of the project ($r = 0.986$, $p > 0.01$). These findings henceforth imply that digital communication tools and project management have a favourable and substantial correlation with project completion in SMEs in Juba County, South Sudan.

However automated document management systems have been revealed to have an insignificant correlation with project completion in SMEs in Juba County, South Sudan.

The regression analysis reveals that 98.2% of the variance in project completion is due to changes in the three variables project management system, automated document management system, and digital communication tools. This is the conclusion that can be drawn from the finding. Other factors that were not taken into account in the research explain 1.8% of the difference in the amount of time it takes to finish a project. The ANOVA analysis revealed that the regression model is highly significant as a whole, with a p-value of less than 0.001. This indicates that the predictor variables, including digital communication tools, automated document management systems, and PMS, together exhibit a robust correlation with the dependent variable, Project Completion. The regression findings also revealed that an increment in digital communication tool with a unit will lead to and increment in project completion with 0.421 unit, increment in automated document management systems in a unit will lead to an increment in project completion with 0.111 unit while an increment in project management system with unit will lead to an increase in project completion with 0.554 unit

5.3. Conclusions

Following the study and research findings, the researcher came to the following conclusions;

According to the results, digital communication tools were shown to have a beneficial influence on project cooperation and communication, which eventually contributed to the success of the project. This was indicated by the composite average rating score of 3.82. Due to the fact that the correlation coefficients were 0.983, further correlation analysis revealed that the use of digital communication tools was highly and positively connected with the successful completion of projects by SMEs in Juba County, South Sudan. Further evidence of this came from regression analysis, which found a favorable association between project completion and the usage of digital communication tools. In particular, 0.421 units more projects may be finished if the number of digital communication tools were to rise by one unit. Researchers in Juba County, South Sudan, found that SMEs who employ digital communication tools are more likely to complete their projects successfully. If this is the case, then it follows that digital communication tools are crucial to a project's success and that more people using them means more projects are finished on time.

The research findings further indicated that automated document management systems have a positive but insignificant influence on project completion as exhibited by an average rating of 3.86. Further the findings revealed that automated document management system, has no significant correlation between the use of with Project Completion ($r = -0.019$, $p > 0.05$). Additional regression analysis found that, increment in automated document management systems in a unit will lead to an increment in project completion with 0.111. The researcher therefore based on these findings concluded that automated document management systems has an insignificant influence on the project completion of SMEs in Juba County South Sudan. This therefore implies that use of automated document management system might not have a significant influence on the project completion of SMEs in Juba County, South Sudan.

Further findings on PMS revealed most of the respondents were in consensus that project management System has a positive influence on project completions as indicated by the average rating of 4.404. A strong positive and significant correlation was established between project management System with Project Completion ($r = 0.986$, $p < 0.01$). Regression analysis further revealed that an increment in project management system with unit will lead to an increase in project completion with 0.554 unit. A conclusion based on these findings was that project management System has a positive and significant relationship with project completion of SMEs in Juba County South Sudan. This implies that use of project management System is of great impact for the project completion to be a success.

5.4. Recommendations for practice

The following suggestions have been prepared by the researcher on the basis of the results and conclusions presented above in the investigation.

From the findings, digital communication tools were revealed to have a positive influence on project collaboration, communication and ultimately on the project success. This research therefore recommend that manager and owners of SMEs should encourage and promote the use of digital communication tools within SMEs. These tools have been shown to positively influence project collaboration and communication, leading to increased project success. The staff and owners of the SMEs ought to get the necessary training on the communication tools so that to effectively use them so as to attain project success.

The research findings further indicated that automated document management software have a positive but insignificant influence on project completion. This therefore recommends that SMEs management should consider investing in and adopting robust project management Software. This can streamline project workflows, enhance team coordination, and improve overall project efficiency. Automated document management system enables generation of quality information required by users, project managers in performing their tasks enabling them to performance in a more professional manner and increasing performance.

The third recommendation of this study is that management and other stakeholders should adopt using project management software as it has been found to have a positive influence on project completion. It offers tools for planning, scheduling, collaboration, and tracking progress—all of which contribute to increased efficiency. Plus, the ability to manage resources effectively often leads to cost reduction, which is a win-win for any project. Adopting such software can streamline workflows and enhance communication among team members and stakeholders, ultimately contributing to successful project completion.

5.5. Recommendations for further research in this field of study

The researcher makes recommendation that further studies should be conducted for an extended period of time to observe long-term effects of using digital communication tools, project management System, and automated document management systems on project completion. This would allow researchers to assess how the impact evolves over time and identify any potential challenges or benefits that may arise in the long run. Further studies could also be conducted to compare the study with SMEs in other sectors or industry to determine whether the impact of these tools varies based on organizational size, sector, or other relevant factors. Comparing the effectiveness of these tools in different contexts can provide valuable insights for tailored implementation strategies. The same study could be done but covering a different geographical location Such as SMES in Nairobi County, Kenya as opposed to the current one Covering Juba County, South Sudan.

REFERENCES

Aakhus, M. & Ziek, P. (2009, November). *The role of instruments for communicating corporate social responsibility*. Paper presented at the annual meeting of the National Communication Association, Chicago, IL

Abbass Ali, S. M. (2022). Post-secession Sudan and South Sudan: A Comparative Study of Economic Performance, Export Diversification, and Institutions. *Journal of Asian and African Studies*. Advance online publication

Abubakar, M. A., Amran, A., Ali, I. H., & Umar, I. N. (2021). The impact of ICTon project success: Evidence from SMEs in Nigeria. *International Journal of Information Management*, 57, 102287.

Afridi, K., Turi, J. A., Zaufishan, B., & Rosak-Szyrocka, J. (2023). Impact of digital communications on project efficiency through ease of use and top management support. *Heliyon*, 9(7), e17941.

Ajam, M. (2013). How to measure project success: *The four dimensions*, 12(2) 10

Alam, S. S., & Noor, M. K. M. (2009). ICT adoption in small and medium enterprises: an empirical evidence of service sectors in Malaysia. *International Journal of Business and Management*, 4(2), 112–125.

Arok, D. A., Kirimi, D., & Munga, J. (2019). Resource Allocation and Management Innovation among Entrepreneurs in South Sudan: A Case Study of SMEs in Juba City. *International Journal of Management Innovation Systems*, 3(2), 33

Baljkas, S. (2000). *Methods of project planning in Croatian environment*. Paper presented at 1st International Conference on Information Society and Information Technologies, ISIT 2009, Novo mesto, Slovenija. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2505743

Blurton, C. 2002. New Directions of ICT-Use in Education. Available online http://www.unesco.org/education/ educprog/lwf/dl/edict.pdf;

Chandran, E. (2004). Research Methods. Star Bright Services Limited, Nairobi

Davis, F. (1989) Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13, 319-340

Davis, F., Bagozzi, R. and Warshaw, P. (1992) Extrinsic and Intrinsic Motivation to Use Computers in the Workplace. *Journal of Applied Social Psychology*, 22, 1111-1132

Gallagher, K. M., & Updegraff, J. A. (2022). Research Design. In APA Handbook of Research Methods in Psychology, Vol. 2. Research Designs: Quantitative, Qualitative, Neuropsychological, and Biological (pp. 3-25). *American Psychological Association*.

Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The qualitative report*, *8*(4), 597-606.

Goodhue, D. L., & Thompson, R. L. (1995). Task-Technology Fit and Individual Performance. *MIS Quarterly*, *19*(2), 213–236. https://doi.org/10.2307/249689

Grudin, J. & Poltrock, E.S. (1989). User interface design in large corporations: Coordination and communication across disciplines. ACM Sigchi, 20(SI), 197–203. https:// doi.org/10.1145/67450.67489

Heathfield, S.M. (2008) Training and Development for Employee Motivation and Retention. *The Journal of the Laboratory Animal Management Association*, 20(2), 20

Horton, J.L. (2008). *Is Project Management Software Useful for PR*? Retrieved from http://www.informationweek.com/whitepaper/Business_Intelligence/wp902537?articleID=902537

International Telecommunication Union. (2020). Measuring digital development: Facts and figures 2020. *International Telecommunication Union*. https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2020.pdf

Irmler, C. (2009).*Document Management Systems*. Sydney: DECD Gener8 Publishers.

Jaime Pereira, João Varajão & Nilton Takagi (2022) Evaluation of Information Systems Project Success – Insights from Practitioners, *Information Systems Management, 39:2, 138-155*, DOI: 10.1080/10580530.2021.1887982

Kimberlin, C. L., & Winterstein, A. G. (2008). Validity and reliability of measurement instruments used in research. *American journal of health-system pharmacy*, *65*(23), 2276-2284

Kirschner, P. A., & Karpinski, A. C. (2010). Facebook® and academic performance. *Computers in Human Behavior*, 26(6), 1237-1245.

Kiveu, M. and Ofafa, G. (2013). Enhancing market access in Kenyan SMEs using ICT. *Global Business and Economics Research Journal*, 2(9): 29-46

Kothari, C. R., & Garg, G. (2014). *Research Methodology: Methods and Techniques*. New Delhi: New Age International Publishers.

Matambalya, F., & Wolf, S. (2010). *The role of ICT for the performance of SMEs in East Africa: empirical evidence from Kenya and Tanzania (No. 42)*. ZEF Discussion Papers on Development Policy.

McMahon, T. J., & Thurston, J. C. (2019). The business guide to digital document management: Strategies, guidelines, and best practices. CRC Press.

Meroka (2011). Critical success factors of industrial and commercial projects in Kenya. *Operations Research Society of Eastern Africa Journal. 2011; 1(1):93-108*

Moore, G. C. & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research. 2, 3.*

Mugenda, A.G. (2009) *Research Methods*, Quantitative and Qualitative Approaches: Nairobi: Acts Press.

Mugenda, M., and Mugenda, G. A. (2003). *Research Methods: Qualitative and Quantitative Approach*. Nairobi: Laba Graphics Services

Mwai, M.M. (2012). Factors influencing project performance of it projects in Kenya: A case study of selected firms in Nairobi.

Mwangi, E. (2015). Influence of ICT on successful project completion in the Kenyan banking industry: case of five largest, *the strategic journal of business and change management 2 81, 1011 – 1032*

Mwenda, J.M. (2018). The use of information communication technology and performance of micro and small enterprises in Kenya: A case study of selected SMES in Isiolo County. A Master project University of Nairobi.

Niederman, F., J.C. Brancheau, and J.C. Wetherbe (1991). Information Systems Management Issues in the 1990's, 0 *MIS Quarterly* (15:4), December 1991, pp.474-499

Nyandongo, K. M., & Davids, M. (2017). *The impact of communication on project performance: an empirical study*. The impact-of-communication-on-project/9913251307691#file-0

Ogero, D. K. (2014). Influence of project management information system on project performance in the construction industry: A case of Nairobi County, Kenya [Master's thesis, University of Nairobi].

Olalusi O.C, Jesuloluwa O. (2013). The impact of information technology on Nigerian Construction Industry. *International Journal of Engineering and Innovative Technology (IJEIT) 2, 9*

Pellerin, R., Perrier, N., Guillot, X., & Leger, P. M. (2013). Project Characteristics, Project Management Software and Project Performance: An Impact Analysis Based on Real Project Data. *International Journal of Information Systems and Project Management*,3,1, 5-28

Pellerin, Robert & Perrier, Nathalie & Guillot, Xavier & Léger, Pierre-Majorique. (2014). Project characteristics, project management software utilization and project performance: An impact analysis based on real project data. *International Journal of Information Systems and Project Management*. 1. 10.12821/ijispm010301.

Pinkerton, WJ 2003, Project management: *Achieving project bottom-line success*, McGraw-Hill, New York.

Project Management Institute. (2017). *A guide to the project management body of knowledge (PMBOK guide) (6th ed.)*. Project Management Institute.

Rogers, E.M. (1983) Diffusion of Innovations. Free Press, New York.

Sahin, I. (2006). Detailed Review of Rogers' Diffusion of Innovations Theory and Educational Technology-Related Studies Based on Rogers' Theory. *The Turkish Online Journal of Educational Technology, 5, 14-23*

Seiwald, C. (2013). *The case for better document collaboration*. California: Perforce Inc

Shenhar, A. J, Dvir, D. Levy O., & Maltz A. C. (2001), Project Success: A *Multidimensional Strategic Concept, Long Range Planning, vol. 34, pp. 699-725, 2001*.

Smith, J.A. (2015) Qualitative Psychology: A Practical Guide to Research Methods. Sage, London.

Sudhakar, G.P. (2012). A model of critical success factors for software projects. *Journal of Enterprise Information Management 25(6), 537–558*. https://doi. org/10.1108/17410391211272829.

Sulankivi, K. (2003). Benefits of centralized digital information management in multi partner projects. *ITcon*, 9(1) 35-63

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46, 186-204.

Wang, Y., Chen, X., & Liang, C. (2022). Exploring the impact of digital transformation on organizational performance: *A case study of a Chinese state-owned enterprise. Technological Forecasting and Social Change, 174, 121530*.

Wit A. (1988). Measurement of project success, *International Journal of Project Management, 6, 164-170*.

Wysocki, R. K. (2014). Effective project management: *Traditional, agile, extreme* (7th ed.). John Wiley & Sons.

Zhang, W., Xiong, L., & Wang, Y. (2021). How does technology affect firm innovation performance? Evidence from Chinese listed firms. *Journal of Business Research, 132, 457-465*. https://doi.org/10.1016/j.jbusres.2021.04.069

APPENDICES

Appendix I: Research Questionnaire

This information provided in this questionnaire will be treated with utmost discretion. Kindly tick in the appropriate are

SECTION A: DEMOGRAPHIC INFORMATION

8. **Please indicate your Gender**
   i. Male { }
   ii. Female { }
9. **Please indicate your Age brackets**
   i. 18-25 Years { }
   ii. 26-35 Years { }
   iii. 36-45 Years { }
   iv. 45 and above Years { }
10. **What is your highest Academic Qualification**
    i. Secondary Certificate { }
    ii. Diploma { }
    iii. Bachelor Degree { }
    iv. Master Degree { }
    v. Others Specify { }
11. **What is your level of work experience**
    i. 1-3 years { }
    ii. 4-6 years { }
    iii. 7-9 years { }
    iv. 10 years and above { }

Section B: INFLUENCE OF ICT ON COMPLETION OF PROJECTS IN SMEs IN JUBA CITY, SOUTH SUDAN

Part A: Digital communication tools and project completion in SMEs in Juba County, South Sudan.

12. Please indicate your extent of agreement with the below statement?

(1= Strongly Disagree, 2= Disagree, 3 = Neutral 4= Agree, 5 = Strongly Agree.)

Statement	Strongly Agree.	Agree	Neutral	Disagree	Strongly Disagree
Throughout the whole project completion process, the use of digital communication technology					

facilitated more effective collaboration among the team members.					
The use of digital communication technology facilitated the optimization of project communication and decision-making processes.					
The use of digital communication technology resulted in an enhancement in the overall caliber of the project's outcomes.					
During the project, the use of digital communication tools facilitated prompt and effective communication.					
Overall, the use of digital communication technologies positively impacted the successful completion of the project.					

Part B. Automated document management software and project completion in SMEs in Juba County, South Sudan.

13. Please indicate your extent of agreement with the below statement?

(1= Strongly Disagree, 2= Disagree, 3 = Neutral 4= Agree, 5 = Strongly Agree.)

Statement	**Strongly Agree.**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Throughout the project, the use of the automated document management software facilitated effective					

document sharing among team members.					
The automated document management platform facilitated access to the latest project materials for all team members.					
The use of the automated document management software led to an enhancement in the overall caliber of the project's deliverables.					
During the whole completion period of the project, the use of automated document management software resulted in enhanced efficiency in organizing and managing project documents.					
The adoption of automated document management software has a positive impact on the overall performance of the project completion process.					

Part C: Project Management Software and Project Completion in SMEs in Juba County, South Sudan

14. Please indicate your extent of agreement with the below statement?

(1= Strongly Disagree, 2= Disagree, 3 = Neutral 4= Agree, 5 = Strongly Agree.)

Statement	**Strongly Agree.**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Throughout the whole of the completion process, the project management software made it easier to do efficient planning and scheduling of the project.					
By using the software for project management, it was possible to guarantee that all of the project's activities were finished on time and without exceeding the					

budget.					
The use of the project management software resulted in an improvement in the overall quality of the outputs created by the project.					
The software for managing projects made it possible for members of the team to coordinate their efforts and communicate more effectively throughout the whole of the project's completion phase.					
There was a beneficial influence on the overall success of the project completion process that was brought about by the use of the PMS.					

PART D: Project completion in SMEs in Juba County, South Sudan

15. Please indicate your extent of agreement with the below statement?

(1= Strongly Disagree, 2= Disagree, 3 = Neutral 4= Agree, 5 = Strongly Agree.)

Statement	**Strongly Agree.**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
During the period that was agreed upon, the job was successfully finished.					
The agreement's budgetary limits were satisfied by the project.					
The quality of the project outcomes met or exceeded expectations					
The project deliverables met all of					

the stated requirements.					
Overall, I consider the project to have been successfully completed					

THANK YOU FOR YOUR PARTICIPATION

Appendix II: Letter of introduction

Mount Kenya University

DIRECTORATE OF GRADUATE STUDIES

MSCPM/2019/54240

16th June, 2023

To WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: CHIDI G. ENECHUKU– REGISTRATION NO. MSCPM/2019/54240

The purpose of this letter is to introduce the above named student who is pursuing **Master of Project Management and Planning** in the department of **Management** in the school of **Business and Economics**

The title of the research is **"Influence of Information Communication Technology on Project Completion in Small and Medium Enterprises in Juba County, South Sudan."** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **June, 2023 and August, 2023.**

Any assistance accorded to the student will be highly appreciated.

Thank you.

Mount Kenya University
P. O. Box 342 - 01000, THIKA
Office of the Director
Graduate Studies

Dr. Samuel M. Kareenga, Ph.D
Director, Graduate Studies
Enc.

Appendix III: Consent Form

My name is Chidi Gbormie Enechuku and I am student of Mount Kenya University undertaking master's degree in project management and planning and currently undertaking a research projects on influence of information communication technology on project completion in SMEs in Juba County, South Sudan.

The study objective is to determine the influence of information communication technology on project completion in SMEs, in juba county, South Sudan

You are invited to take part in this research. You have the option to leave the study at any time; participation is completely optional. It will be accepted if you choose not to take part in the study. Additionally, you will have the option to ask for the study's findings once it is finished. All questionnaires will be private, and all responses will be kept in strict confidence. Contact me if you have any questions before, during, or after the study.

I have read the information you have provided. I am aware of and accept the following:

1. My participation in the study is completely optional.
2. I possess the opportunity to discontinue the studies at any given moment.
3. I will not experience differential treatment if I opt out of participating in the research.
4. I had the opportunity to inquire and I was content with the answers I obtained.
5. I thus give my permission to take share in this study.

Respondents Name: .....

Sign: ..... Date: .....

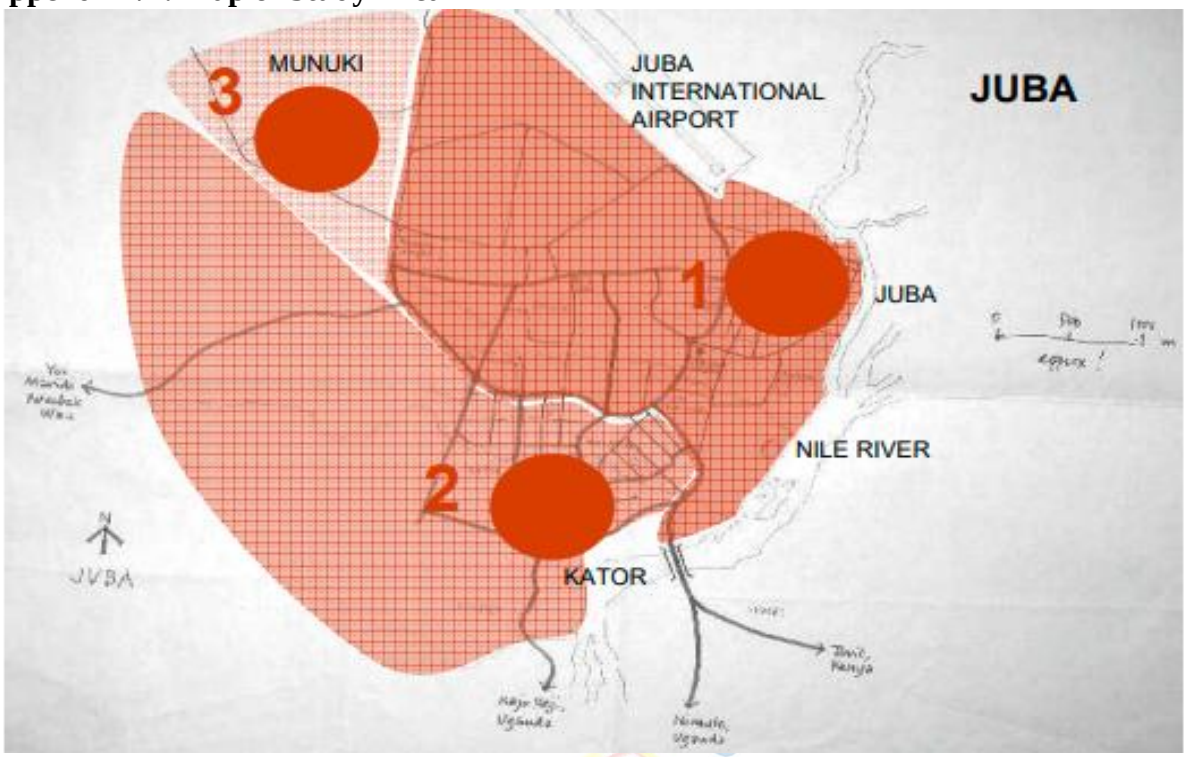
Appendix IV: Proposed research budget

S/No	Items	Quantity	Cost Per Item USD	USD
1.	Transportation – cover the cost of submitting the questionnaires	23	20.00	460.00
2.	Printing of questionnaires	104	2.5.00	255.00
3	SPSS Statistics – single-user license	1 month	99.00	99.00
4	Contingency cost	1	100	100.00
	Total			**914.00**

Appendix V: Projected work plan for carrying out research

Target	**Time-frame**											
	Feb	April	May	Aug	June	June	Aug	Aug	Sep	Oct	Nov	Dec
Proposal writing/Submission												
Field work												
Data Analysis												
Results compilation, thesis writing and Submission												
Publication												

Appendix VI: Map of Study Area



Appendix VII: ERC CERTIFICATE

Mount Kenya University

REF: **MKU/ISERC/2877**
TO: **CHIDI G. ENECHUKU**

Date: 16 June 2023

REG: **MSCPM/2019/54240**

Dear Sir/Madam,

RE: INFLUENCE OF INFORMATION COMMUNICATION TECHNOLOGY ON PROJECT COMPLETION IN SMALL AND MEDIUM ENTERPRISES, IN JUBA COUNTY, SOUTH SUDAN.

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **1921.** The approval period is **16/06/2023 - 15/06/2024.**

This approval is subject to compliance with the following requirements;

i. Only approved documents including informed consents, study instruments, MTA will be used
ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Prior to commencing your study, you will be expected to comply with any additional requirements from the relevant authorities in the country where this study will be conducted

Yours sincerely,

The Chairman
Mount Kenya University
Ethics Review Committee
P. O. Box 342 - 0100, Thika

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC

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