

Moderating Effect of Project Complexity on the Relationship between Stakeholder Management Practices and Success Factors of Digital Literacy Programme in Western Kenya

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Abstract

Project complexity continues to be extensively explored in project management studies because of its contribution towards the failure of significant projects in terms of cost and time overruns. This study was necessitated by the need to understand the moderating effect of project complexity on the relationship between stakeholder management and success factors of the Digital Literacy Programme in Kenya. Ultimately, the stakeholders involved in a project are the best judge of project success. This study analysed project complexity as a moderating variable due to its influential role in determining project success. This study investigated how project complexity moderates the relationship between stakeholder management practices and project success. This study analysed project complexity as a moderating variable due to its influential role in determining project success. The target population for this study was 4,337 public primary schools in Western Kenya, namely the counties of Kakamega, Bungoma, Busia, Kisii, Kisumu, Migori and Vihiga. A stratified random sampling design selected 354 respondents from the seven counties. Primary data was collected using self-administered questionnaires. A pilot study was conducted to test validity and reliability. After collecting data and subsequent cleaning, the data was processed using descriptive analysis and multiple regression analysis to determine the relationships between stakeholder management practices and success factors of the Digital Literacy Programme. Data analysis was done using the Statistical Package of Social Science. In the findings of Analysis of Variance, the coefficients indicated that stakeholder management practices had a statistically significant contribution in predicting the Digital Literacy Programme success factors and that stakeholder management was effective at 5% significance. From the findings, project complexity significantly moderated the relationship between the success factors of the Digital Literacy Programme and stakeholder management practices. The study recommends training on managing project complexity, adopting best stakeholder management practices and standardising these practices to enhance the success of school projects.

Keywords: Stakeholder Management, Project Complexity, Success Factors, Digital Literacy Programme

1.0 INTRODUCTION

The Government of Kenya is pursuing the development agenda aggressively through Vision 2030 (Ndung'u et al., 2015). Vision 2030 seeks to transform the country into a newly industrialised, middle-income country, providing a high quality of life to all its citizens in a clean and secure environment. Critical to the realisation of the Kenya Vision 2030 are fundamental flagship projects in various sectors that are already underway, like the Digital Literacy Programme, modernisation of Jomo Kenyatta

International Airport, Lamu Port-South Sudan-Ethiopia-Transport (LAPSSET) Corridor project, Secondary Education Quality Improvement Project (SEQIP), Standard Gauge Railway (SGR) among others. The Digital Literacy Programme prepares young people for today's and future realities. Different stakeholders were involved in implementing the program to offer their expertise and improve the programme's success rate. Phase one of the programme covering 21,638 public primary schools is 100% complete; 1,167,245 digital devices have digital content for grades 1-3 installed, over 331,000 teachers have been trained, and over 22,000 schools have also been connected to the grid (MOES, 2019). However, some stakeholders have deemed the success factors for the Programme and implementation practices to be unclear to determine whether the first phase was a failure or a success (Morara et al., 2020).

According to Standish Group (2018), 24% of the global projects were terminated prematurely, 32% were delivered on time, within budget and met quality requirements, while 44% were over budget with schedule overruns and did not fulfil their scope and quality specifications requirements. According to Dwivedi and Dwivedi (2021), research findings by KPMG indicate that approximately 70% of organisations had started at least one project failure within 2021-2022, leading to questions regarding causes of project failure and conversations around the theme of project success factors. Extant literature has it that the management of stakeholders is one of the most cited variables directly related to the success factors of many projects, an assertion this study explores.

Effective stakeholder management practices continue to receive much attention from researchers because of their influence in determining the success of projects. Dwivedi and Dwivedi (2021) opine that several studies conducted based on critical success factors of project management found that stakeholder management and stakeholder involvement are paramount to a project's success. Furthermore, the participation of stakeholders in the project life cycle cannot be ignored at any cost. A project is as successful as the stakeholders think it is in meeting and exceeding their expectations. Therefore, a disconnect among the stakeholders on the project's implementation practices and success factors is to be always managed (Yang et al., 2011). Many scholars have cited "ignorance or poor stakeholder management" as one of the key reasons responsible for project failure (Aaltonen, 2010, page number). Various studies have also claimed that the inability of project managers to consider the concerns, claims and influences of project stakeholders is a reason for project failure and highlights the importance of managing stakeholders (El-Sawalhi & Hammad, 2015; Wessinger, 2012). As a result, the management of project stakeholders is now widely acknowledged as an essential part of project management and a factor contributing to project success.

The term project success continues to generate much debate, with no consensus regarding the criteria to evaluate success among project management practitioners and academicians (Gomes & Romão, 2016; Hussein et al., 2015). According to Hussein et al. (2015), there has been much research on project success criteria over the last two decades. The benchmark for measuring project success varies among stakeholders, which may be why stakeholders' differences remain challenging in project management (Hammond, 2018). Dwivedi and Dwivedi (2021) opine that in the 21st century, project success was defined more than just by the project managers but by the stakeholder expectations and that despite the criticism of the iron triangle (time, cost, and quality) often called the traditional criteria of success, it is considered by many as the crucial part of assessing project success. However, it is essential to note that studies on project complexity indicate that it is one of the factors that moderate project success, given that

it affects cost, time and quality objectives of a project (Bosch-Rekveltdt, 2011; Omony, 2018; Kimaru, 2019).

Dartey-Baah (2022) opines that it is now widely acknowledged that project complexity plays a crucial role in the success of projects for various reasons. Bjorvatn and Wald (2018) opine that different studies have observed that project complexity reduces project management performance and success. However, research has failed to establish this causal relationship to address this belief conclusively. Research has elucidated the adverse effects of project complexity on project success regarding unit-cost outcomes, project efficiency and effectiveness, and project budget and schedule. For this reason, project complexity has been cited as one of the most crucial areas relating to project success in the project management literature, given its influence on project outcomes (Dartey-Baah, 2022). Extant literature has it that project complexity is one of the factors that both directly and indirectly influence project success, given that it affects the cost, time and quality objectives of a project, inhibits clear identification of goals and objectives, and influences project planning and controlling practices by stakeholders (Bosch-Rekveltdt, 2011; Omony, 2018; Kimaru, 2019).

Stakeholder management, project success (success factors of a project) and project complexity are vastly researched themes in the field of project management; studies on stakeholder management and project complexity have received less attention, especially regarding how project complexity moderates the relationship between stakeholder management and project success (Lehtinen et al., 2023). This study explores the moderating effect of project complexity on the relationship between stakeholder management and success factors of the Digital Literacy Programme in Western Kenya. The study seeks to expand the understanding of the interrelationships between stakeholder management, project success and complexity.

2.0 LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Stakeholder Theory

This study was guided by stakeholder theory, which was postulated by Freeman (1984), and it states that every individual or group involved in a project will always safeguard their interests. The theory focuses on the stakeholders' management of the project and its outcome. It examines personalised preferences while attempting to satisfy as many of them as possible. Generally, stakeholder theory argues that every individual or group involved in a project does so to safeguard their interests. Stakeholders are individuals or groups interested in the project (Nasr et al., 2020; Macharia, 2013). The theory advocates for managers formulating and implementing project processes that satisfy all and only those groups with a stake in the project, interests and their relationship is well taken care of for the project's long-term success.

This theory is further supported by Joseph and Tranos (2018) and Friedman (2006), who agree that the organisation should be considered a grouping of stakeholders whose purpose is to manage their interests, needs and viewpoints. According to Dwivedi and Dwivedi (2021), stakeholder theory is applicable in project management as it guides the project managers on how to increase stakeholder involvement and participation in any project, which may lead to project success, a view in line with this study.

2.1.2 Stakeholder Management Process Model

The Stakeholder Management Process Model was developed by Preble (2005) and integrated with the issues-process model in 1979 (Freeman, 2010). A stakeholder approach to strategy was born in the mid-1980s from the stakeholder theory established

by Freeman in 1984 (Freeman, 2010). Stakeholder management aimed to develop methods to manage the relationships and several groups that resulted in a strategic manner (Aoyama *et al.*, 2019). It involved integrating these related stakeholder concepts from organisational theory, systems theory, corporate planning, and corporate social responsibility, which the stakeholder approach formalised as a framework for strategic management in the 1980s (Ola-awo *et al.*, 2021). This model involves a comprehensive three-step stakeholder management process: stakeholder identification and analysis, implementation and development of stakeholder management strategies, and evaluation (Park & Lee, 2016). This comprehensive stakeholder management process construct ensures stakeholder management practice within organisations (Freeman, 2010; Preble, 2005).

The idea of stakeholders, stakeholder approach and stakeholder management to strategic management suggests that managers must implement and formulate processes that satisfy those groups with a stake in the business (Oyeyipo *et al.*, 2019). Diba (2011) simplifies these steps in the model to cover stakeholder identification, stakeholder communication, stakeholder engagement and stakeholder empowerment as explaining the stakeholder management process and elaborating on the general stakeholder management. Other than these steps being taken as variables in the study, the specific indicators identified in the process have been incorporated in explaining the variables in the study. The cardinal task in this process is to integrate and manage the interests and relationships of suppliers, customers, shareholders, communities, employees and other groups to ensure the organisation's long-term success (Zwikael & Smyrk, 2019). Sinclair (2011) opines that a stakeholder approach insists on actively managing the business relationships and environment and promoting shared interests.

Managers and organisations use the process with the recognition that pursuing proactive stakeholder management techniques and adopting a stakeholder perspective will materially advance the functioning and health of their organisation as they develop an improved and ongoing fit to an external operating environment which is ever-changing (Oguzie *et al.*, 2021). Managers actively incorporate stakeholder management processes into an organisation's business processes and functions (Diba, 2011; Preble, 2005). From the model, the objectives and independent variables of the study are derived. Namely, Stakeholder identification and stakeholder engagement and empowerment are explained.

The stakeholder management process not only emphasises identifying and engaging stakeholders but also elaborates on understanding the complexities that arise due to the diverse interests, conflicting requirements, and varying degrees of influence that stakeholders may have in a project. Once stakeholders have been managed, project managers can gain valuable insights into the project's intricacies and potential challenges. This understanding allows them to make informed decisions considering different stakeholders' needs and expectations, which can ultimately lead to more successful project outcomes. In conclusion, stakeholder management is a crucial enabler for project success, as it helps project managers navigate the complexities inherent in projects and increases the likelihood of delivering projects on time, within budget, and to the satisfaction of all stakeholders involved.

2.1.3 Complexity Theory

According to Menon (2019), complexity theory originated from meteorologists' studies seeking to manage weather systems using mathematical tools and models. Complexity theory explains how a system constituting several elements continuously interacts with each other and spontaneously organises and reorganises itself into

increasingly elaborate structures over time (Dao et al., 2016). Complexity theory is based on research in natural sciences that examines insecurity and non-linearity, highlighting interactions and feedback loops whose systems constantly change (Mata et al., 2023). A project consists of interconnected elements or parts with related and unpredictable changes, representing the attributes of complex systems. Moreover, specific project deliverables are expected once projects are implemented and completed; complexity theory characterises outcomes as unpredictable and chaotic (Menon, 2019).

This theory suggests that delivering a project within budget, timeliness and agreed quality standards is unpredictable and that the success or failure of projects is pegged on effective stakeholder management practices. Complexity theory helps us to understand the stakeholder management practices involved in and around a project as a critical ingredient necessary for project success. In line with the views of Larsen-Freeman (2017) and Mata *et al.* (2023), complexity theory is the most suitable theory for evaluating the moderating effect of project complexity for the study conceptual framework.

2.2 Conceptual Framework

The conceptual framework for this study shows the relationship between project stakeholder management, project complexity and project success, as shown in Figure 1.0.

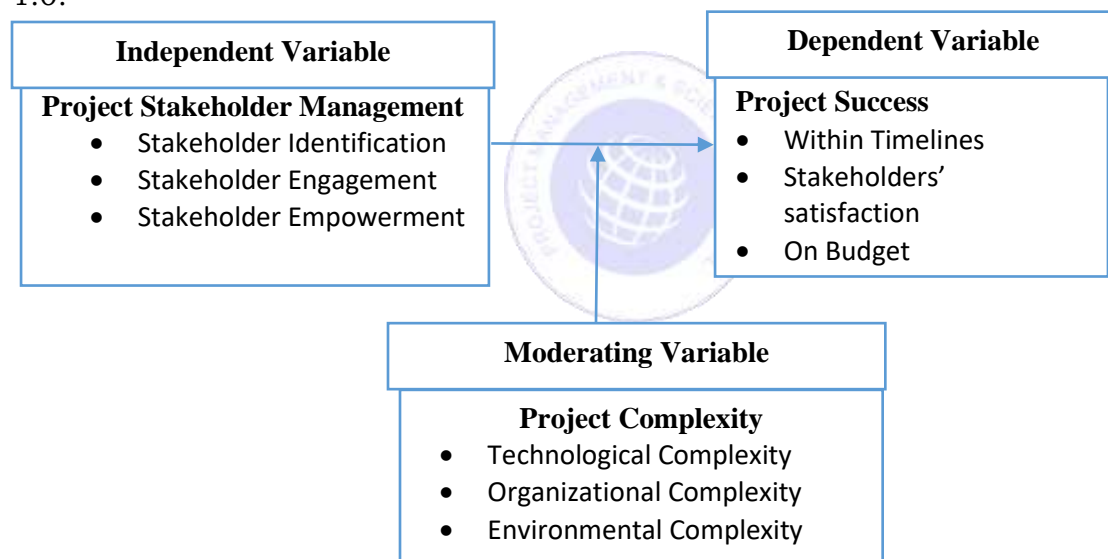


Figure 1: Conceptual Framework

Stakeholder management processes that informed the choice of practices that influence project success for the study are stakeholders' identification, engagement and empowerment in project review and outcome and stakeholders' involvement in project implementation (Tero, 2014).

According to Kimaru (2019), organisational complexity is described by project size (in terms of capital, budget, effort, duration, number of stakeholders or technical components needed for the project), project drive and the softer elements such as project team composition, resources availability, skills, experience, and trust while environmental complexity includes the factors such as organisational internal support, dependencies on other stakeholders, variety in stakeholders' perspective etc. Technological complexity indicators under consideration for this study experience with

technology, clarity of goals and the number of tasks also successfully adopted by (2019) in line with Bosch-revelated *al.* (2011) studies. This study conceptualises resources and skills availability as the key attributes of organisational complexity, while dependencies on the other stakeholders are the main environmental complexity attribute.

This study adopted the moderating variable, project complexity, from existing research work by Bosch-revelated *al.* (2011) and Kimaru (2019) in the Technical, Organizational, and Environmental (TOE) framework where project complexity dimensions (Technological, Organizational and Environmental) are conceptualised. This model has been successfully cited in several other studies (Kimaru, 2019; Gautam & Kiridena, 2019; Bosch-Rekveltdt et al., 2018; Abdou et al., 2016). Technological complexity is defined in terms of differentiation and interdependencies, where technical sophistication by differentiation refers to the variety and diversity of some aspects of a task, such as the number and diversity of inputs/outputs, the number and diversity of jobs to undertake, and several specialities and contractors, involved in the project (San et al., 2018). Technological complexity by interdependency encompasses interdependencies between tasks, within a network of functions, between teams, between different technologies, and between inputs (San Cristóbal *et al.*, 2018).

2.3 Empirical Studies

Several studies have reviewed the literature on project complexity, with many alluding to the fact that it has no widely accepted definition (Morcov et al., 2020; Qazi *et al.*, 2016; Bakhshi & Gorod, 2016; Herszon & Keraminiyage, 2014). Morcov *et al.* (2020) assert that the terminology is overloaded and over-used. However, the approach prevalent in project management research and community of practice is that complexity negatively affects project and project management performance. However, most studies have shown a strong correlation between project complexity dimensions and certain project management practices. Extant literature indicates there are mixed results when scholars examine the effects of project complexity dimensions on project performance (Nguyen & Mohamed, 2019;)

In a study conducted in China using 245 questionnaire surveys, Luo *et al.* (2016) investigated the relationship between project complexity and success in complex construction projects. The study identified six project complexity factors: technological complexity, organisational complexity, environmental complexity, informational complexity, task and goal complexity while also coming up with eight project success dimensions, which are health and safety, environmental performance, participant satisfaction, user satisfaction; and commercial value and traditional iron triangle(schedule, budget and scope). The study found that technological and organisational complexity had an insignificant effect on the success of projects.

In a study to identify strategies to manage complexity to increase the chances of project success, Kermanshah *et al.* (2016) applied the Delphi method to collect the opinions and judgments of a panel of experts on strategies to manage complexity. Experts were selected based on their area and level of expertise and asked to participate in two rounds of a structured survey. The study involved 101 variables (grouped into 11 categories), potentially affecting the project complexity level subjected to statistical testing. Responses were collected from 44 projects, of which 14 replies accounted for low-complexity projects and 30 answers for high-complexity projects. Thirty-seven indicators were statistically significant in differentiating between joint and high-complex tasks and, if not appropriately managed and effectively, could negatively impact project performance and outcomes. The study concluded that it is essential to identify and implement appropriate management strategies to keep the project within budget and

schedule constraints beyond assessing and measuring the indicators contributing to complexity at various project lifecycle stages.

Similar studies conducted by the Standish Group (2001) reveal that over 30 per cent of projects involved in the study failed, following a survey of project managers by 1994. With the survey being repeated every two years, no significant changes were noted, with the failure rate having only improved to less than 25 per cent by 2000. Still, most projects (76 per cent) continued to be considered either failed or challenged (Standish Group, 2001). The findings show that the correlation between project success and the size of the project is inversely correlated, implying that as the project size increases, the more complex it becomes. The survey findings reveal that as the project size increased from small projects (less than 6 team members, cost less than \$750,000) to large projects (over 500 people and costs over \$10 million), the success rates of the projects also fell.

Hussein (2012) also conducted a study following an exploratory approach meant to examine the degree to which practitioners differentiate between singular elements of complexity and the complicated situations that arise from these particular elements. The data was collected using interviews and open questionnaires, with the piloting stage of the research including four exploratory interviews with senior project managers. The findings reveal that project practitioners perceive project complexity as combining singular elements and complicated situations. Unique features include several stakeholders, number of tasks, interdependencies between tasks, diversity of languages, lack of knowledge, diversity of objectives, diversity of working practices, etc. 27 singular elements were inferred from the informants' responses. The findings were similar to results produced by work done by (Bosch-Rekvelde et al., 2011).

Studies by Bosch-Rekvelde (2011) on project complexity influence project performance while adopting project complexity dimensions – technological complexity, organisational complexity, and environmental complexity- found that all three sizes significantly correlated with project performance. Environmental complexity had the most minor correlation with project performance, while technological sophistication had the strongest, followed by organisational complexity. The study entailed a quantitative survey with 67 responses.

In the study “Effects of Project Complexity on Project Success: The Case of Telecom Firms in Nairobi”, Kimaru (2019) adopts project complexity dimensions - technological complexity, organisational complexity, and environmental complexity conducted an across-sectional survey with 180 responses on how project complexity influenced project success. Technical sophistication was measured based on clarity of goals, uncertainties in scope, number of tasks, variety of functions, dependency between jobs, and experience with technology. The findings indicated that Technological complexity did not significantly influence project success. Organisational complexity was measured based on the following attributes: project duration, size of the project team, project drive, resources and skills availability, and trust in the project team. The findings indicated that organisational complexity positively and significantly influenced project success. Similarly, regression results on environmental complexity's effects corroborated those for organisational complexity, where environmental complexity was found to influence project success as measured by corporate benefits positively but does not influence project success as measured by project efficiency.

In this regard, this study aims to establish the moderating effect of project complexity on the relationship between project management practices and project success, which has not been sufficiently addressed as per reviewed literature, hence

advancing more knowledge to the theory of project management and complexity in projects.

3.0 METHODOLOGY

The study adopted a descriptive survey research design, allowing qualitative and quantitative research approaches. The design was considered appropriate to give descriptive statistics and inferential statistics. Descriptive design helps the researcher identify association patterns among the variables to confirm the overall interpretation of the relationships between the study variables (Sabana, 2014). The choice of descriptive survey design was informed by the need to gather quantitative data that describes the nature and characteristics of project management practices within public primary schools in Western Kenya.

The target population for this study was 4,337 public primary schools and 7 County Director of Education for the respective counties in Western Kenya region, namely Kakamega, Bungoma, Busia, Kisii, Kisumu, Migori and Vihiga. The headteachers overseeing school administration were targeted as the appropriate respondents for their schools for the following reasons. They are responsible for implementing the school's Digital Literacy Programme. They oversee project management practices used in school projects. They determine the level and scope of project management practices deployed in the schools in consultation with the County Directors of Education to facilitate role out of government projects in schools. For these reasons, head teachers and the County Directors of Education can provide reliable information for the study. The researcher used Krejcie and Morgan's Table (1970) to determine the sample size. Using the table developed by Krejcie and Morgan, the sample size for a population size of 4,337 is 354. The researcher used a stratified random sampling technique to identify the sample from each county.

The self-administered questionnaire was used to collect quantitative data from headteachers and County Directors of Education samples. The questionnaire was closed-ended to improve the response rate. A pilot study was carried out to pre-test the data collection instrument for validity and reliability. Thirty-five (35) respondents were involved in the pilot study in Uasin Gishu County, and the return rate for the pilot study was 100%. The data was analysed using statistical methods that were both descriptive and inferential to reach findings and inferences. Descriptive statistics included frequency distributions, percentage breakdowns, means, and variances. The inferential analysis consisted of a combination of regression and correlation. When processing the collected data, SPSS 24 was utilised. Tables of frequencies and percentages were provided to illustrate the data.

4.0 RESULTS & DISCUSSION

4.1 Descriptive Analysis

The respondents were asked to rate the level of project complexity on Digital Literacy Programme in public primary schools in Western Kenya. The statements were measured on a 5-point Likert Scale and the findings were as presented in 1.0. The results indicated that 54.7% of the respondents agreed with the following sentiments; that the bottlenecks during execution of the project held up key processes hence delaying project activities, 45.6% of the respondents agreed that the processes or methods to achieve the project goals were unclear, 47.2% agreed that the key risks were not identified early enough and when triggered, were not managed proactively. 54.1% agreed that the project team members numbers were sufficient for this kind of a project, 38.4% agreed

that the sub-activities and sub-tasks during execution of the project were diverse and highly unpredictable and 53.7% strongly agreed that the level of innovation within the project was unpredictable and required hiring external consultants as indicated by 54%, 46%, 49%, 57%, 42% and 54% of the respondents respectively in Table 4.21. Averagely, the level of project complexity was at 78.4% mean response (mean=3.9224, std. dev. =.68137) rated high as presented in Table 1.0. An implication that project complexity had a significant influence on the relationship between project management practices and success factors of Digital Literacy Programme in the Western Kenya schools.

Table 1.0: Project Complexity

1-Strongly Disagree, 2-Disagree, 3-Uncecided, 4-Agree, 5-Strongly Agree, Max-Maximum, Min-Minimum, Std. Dev.-Standard Deviation, Std. Error of mean-Standard Error of Mean

Statements	1	2	3	4	5
Bottlenecks during execution of the project held up key processes hence delaying project activities	4.2%	6.2%	3.6%	54.7%	31.3%
Processes or methods to achieve the project goals were unclear.	4.2%	7.8%	6.5%	45.6%	35.8%
Key risks were not identified early enough and when triggered, were not managed productively.	7.8%	5.9%	4.9%	47.2%	34.2%
The project team members' numbers were sufficient for this kind of a project.	8.8%	9.1%	4.9%	54.1%	23.1%
Sub-activities and sub-tasks during execution of the project were diverse and highly unpredictable.	7.8%	5.5%	31.3%	38.4%	16.9%
Level of innovation within the project was unpredictable and required hiring external consultants.	1.6%	4.6%	8.8%	31.3%	53.7%
Project Complexity Composite Mean	Mean(%Mean)	Std. Dev.	Std. Error of mean	Min	Max
	3.9224 (78.4%)	.68137	.03876	1.8333	4.83

To explore the relationship between stakeholder management practices and success factors of Digital Literacy Programme in Western Kenya, the researcher sought to find information regarding the success factors of Digital Literacy Programme in most public primary schools in Kenya which is the main response variable in this study. Most of the respondents agreed that they project completed within planned budget contributes to project success as indicated by 54.4% in Table 4.10. Similarly, 53.9% of the respondents agreed it is important to achieve the quality standards mentioned in the specifications for a successful project. Also, 49% and 46.8% respectively agreed that project is successful if completed within the proposed timelines and that it is critical to comply with technical specifications for project success.

The average level of project success was at 84.7% mean response (mean=4.2326, std. dev. =0.52553), rated high as shown in Table 2.0. The results showed that the responses had a mean greater than 3.0, implying that the level of project success of the majority of the public primary schools in Western Kenya seems insignificant, though

not all of them seem to perform well. The results also had a standard deviation of less than 0.6, showing that the responses received were almost similar. The findings are presented in Table 2.0.

Table 2.0: Descriptive Analysis for Project Success.

1-Strongly Disagree, 2-Disagree, 3-Undecided, 4-Agree, 5-Strongly Agree, Max-Maximum, Min-Minimum, Std. Dev.-Standard Deviation, Std. Error of mean-Standard Error of Mean

Statement	1	2	3	4	5
A project completed within the planned budget contributes to project success.	3.3%	3.3%	4.9%	54.4%	34.2%
Achieving the quality standards mentioned in the specifications for a successful project is essential.	1.6%	4.5%	2.9%	53.9%	37%
The project is successful if completed within the proposed timelines.	2.3%	3.9%	4.9%	39.7%	49.2%
It is critical to comply with technical specifications for project success.	1.6%	4.2%	3.6%	46.8%	43.8%
Composite Mean for Project Success	Mean(%Mean)	Std. Dev.	Std. Error of mean	Min	Max
	4.1471 (82.9%)	.53875	0.02809	1.40	5.00

4.2 Inferential Analysis

The study's null hypothesis sought to determine the moderating role of project complexity on the relationship between the project management practices and success factors of the Digital Literacy Programme in Western Kenya. This was achieved using Pearson Correlation and Regression analysis. The researcher sought to test the following hypothesis.

H₀: Project Complexity does not significantly mediate the relationship between Stakeholder Management Practices and the Digital Literacy Programme Success Factors in Western Kenya.

Table 3.0: Correlation Analysis

		Project Success	Stakeholder Management
Project Success	Pearson Correlation	1	
	P-value		
	N	308	
Stakeholder Management	Pearson Correlation	.613**	1
	P-value	.000	
	N	307	307
Project Complexity	Pearson Correlation	.437**	.790**
	P-value	.000	.000

N	307	306
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In the results above (Table 3.0), all the relationships were positive and significant (p-value=0.001). The most significant relationship was between Stakeholder management (r= 0.613, p-value = 0.000<0.05). The correlation analysis between project complexity and project success (r= 0.437, p-value = 0.000<0.05).

4.3 Hierarchical Regression Analysis

The study's objective was to determine the moderating role of project complexity on the relationship between the stakeholder management practices and success factors of the Digital Literacy Programme in Western Kenya. This was achieved by undertaking a hierarchical regression analysis of three stages, yielding three models. The change in R square, F and significance level was noted in each step. In Model 1, the independent variable was entered, in this case, stakeholder management, and it was to have a positive and significant relationship with the success of the Digital Literacy Programme (p=0.000). The R² of 0.616 was obtained in this model. This showed that model 3 could explain 61.6 per cent of the variance in the dependent variable (success of the Digital Literacy Programme).

Further, as presented in Table 4, Model 2, the findings also showed that when project complexity was added as a moderator, the results indicated that the independent and moderating variables were insignificantly and jointly related to the success of the Digital Literacy Programme (p>0.05). The R² was 0.617, p=0.414 representing insignificant increase of 0.01

Finally, to investigate how the project complexity moderates the relationship between stakeholder management practices and success factors of the Digital Literacy Programme, the interaction terms of the independent variable (stakeholder management practices) and the moderator (project complexity) were entered into the regression model to obtain Model 3. The resultant model indicated that the interaction between stakeholder management practices constructs. Project complexity accounted for significantly more variance than just project complexity and stakeholder management practices by themselves (R² = 0.654, p = .000), indicating that there is a potentially significant moderation effect of project complexity on the relationship between stakeholder management practices and success factors of Digital Literacy Programme in Western Kenya. This represents a 0.037 significant increase in R-Square.

Table 4: Hierarchical Regression Analysis

Variables	Model 1	Model 2	Model 3
	B (Std Error)	B (Std Error)	B (Std Error)
Predictors			
(Constant)	0.677 (2.941) **	0.710 (3.036) **	-1.871 (-2.054) *
Stakeholder management	0.439 (10.345) **	0.460 (9.232) **	0.520 (6.447) **
Project complexity		-0.040 (-.810)	0.937 (3.368) **
Interaction			
Stakeholder management*			-.063
Project complexity			(-2.976) **

Models Summary Statistics

R	0.785	0.785	0.809
R Square	0.616	0.617	0.654
Adjusted R Square	0.608	0.608	0.641
Std. The error of the Est	0.32811	0.32830	0.31401
R square change	-	0.001	0.037
F	115.178	68.106	50.246
F change	115.178	0.656	7.891
Sig.	.000 ^b	0.000	.000 ^d
Sig. F Change	-	0.419	0.000

Regarding regression coefficients, in the first model, the independent variable (stakeholder management) was significant as indicated $\beta=0.439$, $p<0.01$. This implies that an increase in stakeholder management would significantly increase the success of the Digital Literacy Programme in Western Kenya by 0.439 units. In the second model, as presented in Table 4, the moderator variable (Project Complexity) was added to the model. The moderator was found to be insignificant as an indicator by $p=0.419$ with a negative regression coefficient ($\beta=-0.040$). This implies that project complexity cannot significantly predict project success, but it hurts project success. The independent variable (stakeholder management) was significant, indicating $\beta=0.923$, $p<0.01$. This implies that an increase in stakeholder management would significantly increase the success of the Digital Literacy Programme in Western Kenya by 0.923 units.

In model 3, as presented in Table 4, the interaction terms were added, and stakeholder management interaction project complexity was found to be significant. Increased project complexity would reduce stakeholder management's effect on the Success Factors of the Digital Literacy Programme in Western Kenya. Similarly, the significance level of stakeholder management and project complexity were significant.

5.0 DISCUSSION

The study's objective was to determine the moderating role of project complexity on the relationship between the stakeholder management practices and success factors of the Digital Literacy Programme in Western Kenya. Correlation analysis indicated that project complexity is linked to the success of the Digital Literacy Programme in Western Kenya. This implies that project complexity moderates project success, a finding consistent with Bosch-Rekvelde *et al.* (2011), who found that technical, organisational, and environmental factors of complexity negatively influenced performance in a large engineering project.

The findings also corroborate studies by Luo *et al.* (2017) investigating the connection between project complexity and success in construction projects. The study's results indicated that project complexity negatively correlates with project success. Project complexity was measured by focusing on goal, task, and organisational, technological, environmental, and informational complexities. In contrast, project success factors were under time, cost, quality, health and safety, environmental performance, participants' satisfaction, user satisfaction and commercial value. The study established that the interaction of project complexity and stakeholder management practices significantly predicted the project success of the Digital Literacy Programme. Therefore, the moderating effect of project complexity cannot be ignored during implementation of the Programme.

Examining the moderating effect of project complexity on the relationship between stakeholder management and success factors of the Digital Literacy Programme, the findings indicated that stakeholder management interaction project complexity was found to be significant; technical, organisational, and environmental factors of complexity negatively influenced the success of the Digital Literacy Programme. An increase in project complexity would significantly reduce the effect of stakeholder management on the success of the Digital Literacy Programme. At this juncture, it is essential to note that studies on the moderating effect of project complexity on the relationship between effective stakeholder management and project performance have yielded mixed results.

For instance, the positive effects focused on task complexity and organisation complexity, while the adverse effects on information and technological complexity on project success (Luo *et al.*, 2017). In contrast, Floricel *et al.* (2016) found a statistically significant positive effect of interactions (technical complexity and existing knowledge, technical complexity and new knowledge, organisation complexity and new knowledge, and market complexity and new knowledge) on project completion performance. Aladpoosh, Shaharoun, and Saman (2012) found out that as the number of stakeholders interested in the project increases, so does the project's complexity; therefore, complexity hurts project performance, which determines how the project is perceived.

6.0 CONCLUSION AND RECOMMENDATIONS

As per the study's findings, it can be concluded that stakeholder management was correlated to the the success factors of the Digital Literacy Programme in Western Kenya. The relationship was confirmed through correlation and regression analysis, which revealed a positive, significant linear relationship between stakeholder management and the success of the Digital Literacy Programme. Stakeholder management had a significant partial influence in predicting the success factors of the Digital Literacy Programme in Western Kenya. Regression and correlation analysis also confirmed that project complexity significantly affected the relationship between stakeholder management and success factors of the Digital Literacy Programme. Moderation analysis also confirmed that project complexity hurts the success factors of the Digital Literacy Programme.

The study recommends continuous application of stakeholder management practices already in place. A standardised uniform stakeholder engagement plan should be implemented to engage the stakeholders throughout the project's life. Stakeholder engagement also needs to be managed in all phases of the project life cycle. This entails timely communication and working hand in hand with all stakeholders to address issues that may make the project lag or make the project complex.

Therefore, the study recommends that public primary school boards of management should define measures that will ensure all stakeholders are identified prior to project initiation, engaged, and empowered to resolve challenges actively and to make decisions through training and effective communications. This will promote ownership and sustainability of school projects, minimising disagreements and influencing the success of school projects.

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