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Project Design and its Contribution to the Attainment of Goals Case Study of One Laptop Per Child in Kirehe District

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Abstract:- The study's objective is to determine what role the project's design played in achieving its objectives. The research's main objectives were to ascertain the relationship between project planning and the achievement of project goals, investigate the factors that cause the majority of planned projects to fall short of their objectives in terms of time and money, and suggest the best practices that can make planned projects successful. A combination of quantitative and qualitative methods was used in the design of this study. 158 employees working in the education sector in the Kirehe region made up the study's population, from which a sample size of 133 was determined using Slovene's approach. The information was gathered by answering questions and an interview, and means and standard deviation were utilized to analyze it. Multiple regression analysis was used to test the research's hypotheses. A favorable association was identified using regression analysis (R = 953). The model's predictors are the project goals that define project strategy refinement, project risk identification, and contingency plan formulation, and they have a 95.3% correlation with the dependent variable which is achievement of One Laptop per Child goals. The study also revealed that a combination of Project goals defining refining project strategy, project risk identification, creation of contingency plan together contributed to 90.8% (R^2= 0.908) of the Achievement of One Laptop per Child goals. In this research it has been discovered that project design has contributed to the achievement of One Laptop per child goals in Kirehe district. The findings indicate that the goals of the project have been defined in advance, there is risk identification strategy of the project and creation of contingency plan. Even, though the research indicated that project design contributed to the achievement of One Laptop per Child goals, there have been short comings of the research, thus research recommends the government of Rwanda to strengthen the refining of project strategy and project risk identification since both have shown weak influence on the achievement of One Laptop per Child goals.

Keywords:- *Project design, goals attainment, one laptop per child, Rwanda.*

I. INTRODUCTION

The early, concise articulation of project goals, goals, outputs, and activities within the context of project execution is referred to as creating a project design. The importance of project planning as a collaborative process including all prospective stakeholders must be emphasized. (Government, local organizations, NGOs, companies around the world, etc.) This is necessary to ensure the feasibility and endurance of the project. The process of developing a project could take a lot of time and money. However, effective early planning and in-depth stakeholder analysis are more important than anything else for a project to be sustainable. In the United States, the role of the designer and the quality of the design are essential factors that have a substantial impact on the project estimate as well as the overall cost and schedule.

If the design quality is excellent and the project estimate is accurate, a contractor will give a price that is close to the estimate. The contract award's price and timeframe were fairly near to the project estimate. Fewer modification requests due to design flaws was made during project execution when a high-quality design is used. The timetable and budget was controlled by this.

According to a CIDB research from 2017, the Malaysian construction market would grow by 8.0% in 2017 and up to 10.3% in 2018. The construction industry was expected to have a sustainable demand of approximately RM170 billion for 2017 and RM180 billion for 2018. As a result of the significant expense involved, it was imperative to keep the successful delivery of projects. Additionally, designs became larger and more complex, leaving project managers very little room for error.

In developing countries, there is still a dearth of project design knowledge, which is the reason why projects are rarely completed on schedule, within budget, and in accordance with quality, cost, and material specifications, according to Patunola-Ajayi (2015); Nwachukwu and Emoh (2014). Therefore, improving the project design system's implementation is a way to stop the flaws that have spread throughout the industry.

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According to Nwachukwu and Nzotta (2020), the multivariate that affects projects—which is made up of the poor application of project management best practices, project performance measures, and critical success factors—is responsible for the majority of Nigeria's regressive project performance. By extension, this also has to do with a dearth of clarity in the project design regarding the stakeholder relationships. Many community-based initiatives in Kenya have failed, largely due to issues with project design, tools, and methods. Furthermore, there are a lot of explanations and circumstances that support these issues. Long et al. (2019) claim that a number of variables, such as incompetent designers/contractors, poor estimating and change management, social and technological issues, site-related issues, and ineffective procedures and tools, contribute to performance challenges in large construction projects in Tanzania.

Every endeavor that is created aims to accomplish a specific set of goals. How quickly a project's scope and activities are completed depends on a number of factors, including the quantity of resources available, the availability of skilled labor and staff, the assignment of roles throughout project execution, but most importantly, the project design. Several nations, including Uganda, have found it essential to use the project method to accomplish their developmental goals due to the rising unpredictability in service delivery. For instance, one of the measures the government has begun to make sure that energy is spread throughout the nation is the rural electrification program in Uganda. Every project strives for excellence and success, but because each one is an individual undertaking, it frequently faces stringent schedule and financial constraints (Andersen, 2016).

In Rwanda, more than 50% of the audited projects got unqualified opinions, and 50% of the projects received unfavorable opinions, according to the office of the auditor general's report from 2021. Audits were performed on a total of 109 projects; of these, 206 billion in contracts were behind schedule, 123 billion were abandoned, and 45 billion were still outstanding. The field causes of the project's abandonment were its design and a lack of data on its execution, which may have necessitated actions and revisions where necessary. In this respect, the research looked at the project's design and how it helped Rwanda attain one laptop per child goals.

II. PROBLEM STATEMENT

Project design is a critical factor in the effectiveness and success of a project. (Idoro, 2018). Numerous empirical studies of the variables that contribute to project management success have identified project design as one of the field determinants of project success. (Lechler, 2009). Each and every project manager must develop a solid project plan and see it through to conclusion. (Shenharc, 2019).

An important project called the One Laptop per Child (OLPC) aims to use technology to enhance instruction in Rwandan field schools. The OLPC initiative aids students in visualizing, simulating, and debating a variety of complex subjects, which improves their knowledge, memory, and inventiveness. Digital, interactive, animated graphics-rich material is used for this. When the program was first launched in 2008, the administration made sure that every district had at least 5 schools using OLPC. The government made sure that every administrative sector has at least one school engaging in the OLPC program as part of the nation's second phase of deployment, which started in 2011. (REB, 2020).

It has been noted, though, that REB has not yet discovered a remedy to the laptop problem that was brought up in the General's Auditor-reports. Twenty schools were inspected as part of the REB audit in March 2021, and it was found that some of them were still keeping laptops in boxes and cabinets. In particular, teachers frequently lack the knowledge required to teach pupils how to use laptops in certain parts of the Kirehe district, and many laptops lack programming. (AG, 2021).

In reality, the Auditor-General claims that the OLPC program's implementation has been severely hampered by the lack of, insufficient, or delayed teacher training. As a result, it's possible that the project won't accomplish its original objectives because they weren't sufficiently taken into account during the planning phase. This research study looked at Rwandan project design and its contribution to goal attainment in order to better comprehend how project design affects project goals.

III. OBJECTIVES OF THE STUDY

This study paper has a general objective and specific objectives.

A. General objective

The study is aimed at analyzing the project design and its effect to the attainment of goals in Rwanda: a case of One Laptop per Child.

B. Specific objectives

- To analyze the contribution of project goals defining on the achievement of One Laptop per Child goals,
- To determine the contribution of project strategy refining on the achievement of One Laptop per Child goals,
- To find out the contribution of project risk identification on the achievement of One Laptop per Child goals.
- To establish the contribution of creation contingency plan on the achievement of One Laptop per Child goals.

IV. HYPOTHESES

This study verified the following hypothesis:

- Ho1: There is no contribution of project goals defining on the achievement of One Laptop per Child goals,
- Ho2: There is no contribution of project strategy refining on the achievement of One Laptop per Child goals,
- Ho3: There is no contribution of project risk identification on the achievement of One Laptop per Child goals.
- Ho4: There is no contribution of creation contingency plan on the achievement of One Laptop per Child goals.

V. REVIEW OF LITERATURE

A. *Concept of project design*

A project is defined as an undertaking that takes in inputs and gives out outputs that are desired by a group of people or an individual within a given period of time. According to the World Bank (2003), projects have a definite life cycle that is only done away with when the project has achieved the desired objectives; marking its end. Project design stage is an important stage in projects where critical elements such as features and deliverables are planned. This phase requires support of technical experts to assist in making clear, the project objectives. The project design process is considered the most relevant for integrating sustainability elements as it is in this early phase that most influence can be taken (Gareis et al 2012). Ika (2012) points out that project relevance, efficiency, effectiveness, impact and sustainability are key criteria in designing development projects. Project planners may adopt different project designs but of critical concern is how design factors have been incorporated. Barasa and Jelagat (2013) consider community participation too in project design and management as very important. Furthermore, Kosgey and Okeyo (2007) observes that authentic community participation encourages fairness, makes critical decision making process acceptable, builds synergy among beneficiaries, and promotes a democratic culture within the community. According to United Nations Development Programme (UNDP (2012) simple examples of how devolution of projects was essential and is still essential in the world today are exemplified by the Egyptian and Syrian ancient agrarian periods. However, studies have shown that projects all too frequently fail to achieve their goals due to a number of problems that could be termed managerial and organizational (Kwak, 2002). In the USA for example, after the country gained its independence, the citizens were in dire need of a revolutionized state with political, racial, economic, security and social stability. Providing an economically stable country required resources, expertise and proper identification and management of projects that could reach the citizens irrespective of their location.

Project design is the starting point that involves a systematic and theoretical conceptions, tried primary assumptions, and credible information that which enable the delivery of a project within a specified timeline. Sanoff (2000) posits that designing of a project requires calculative thinking and investment because failure to this exposes the project to higher risk of failure or poor quality of implementation. Due to complexity and uniqueness of projects, Sanders & Binder (2010) posits that it is important to carefully select the most appropriate design method, tools and techniques to apply in a specific project. To make project design effective, Hussain & Sanders, (2012) advises that projects need to remain sensitive to the history and culture of the community where the project is implemented. This requirement will be achieved if community participation in the project design is promoted. Kim (2006) points out that top down approach to project design where experts dictate the process is an impediment to active project beneficiary participation. Very often projects are designed at national level, based on considerations such as political priorities, technical concerns, and macroeconomic goals. These national level considerations by project designers can actually be in conflict with the factors effecting change behavior of villagers which in turn affect the overall success of rural development projects. Laah et al (2013) explains that to achieve success in projects, there is need to involve beneficiaries in the design and implementation of the projects. Participatory project design is a design approach where the project designers, project beneficiaries and users together with the relevant stakeholders work together to design a project (Sanders & Binder, 2010). This is what (Sanders & Binder (2010) refers to as co-designing which needs to take full advantage of the knowledge system of the host community.

B. *Concept of project goals attainment*

When a project succeeds in reaching its objectives, both public and private clients get worried. The bulk of committed execution depends on how well it is carried out. Munns & Bjeirmi (2010). Fulfilling project goals in long-distance transportation remains a serious challenge everywhere in the world. The most well-known determinants of project exhibitions acknowledged by the inquiry group are spread mission, upper management support, extend plan/design, the client counsel, faculty, and creative thinking to support the project, customer recognition observing and criticism, channels of messages, and investigating skill. The term "venture execution" describes the arbitrary and numerical criteria used to determine if a business has a good chance of succeeding (Turner, 2007).

The concerns of project success measurement (success criteria) and execution (success factors) are thoroughly explored in the literature. But people continue to use these two ideas interchangeably. (Davis 2017). This section fills a gap on the exclusion of contextual elements by presenting the findings of a literature research on success criteria and success factors. Cooke-Davies (2016) identified 12 actual project success characteristics at three separate levels in his research, including project management success, the success of a specific project, and ongoing project success.

According to Westerveld's (2011) Project Excellence Model, organizational areas (success factors) should be tailored to the project's goals in addition to external factors like the project manager and his team, the project's particulars, the project's parent organization, and the external environment. His model also shows how success variables and criteria are related. Another excellent research on success factors is White (2016)'s analysis of 63 publications, which found 27 important success criteria. (CSFs). They showed that there was only a weak degree of scholarly agreement on these standards. These 63 publications most frequently refer to the following six factors: client involvement, precise and practical project goals, a successful project plan, excellent communication and feedback, and a capable project team.

Because success criteria are not expressly included in this model, it is unclear how these success indicators relate to project success criteria. Toor and Ogunlana (2008)

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divided the critical success factors for big building projects into four main categories based on the perceptions of project professionals: comprehension, competence, commitment, and communication. Cserháti and Szabó found success factors and determinants for organizational event initiatives. (2014). The research found that success factors can be divided into five categories: project designs, project resources, project teams, corporate cultures, and communication and cooperation. They also examined the connections between these variables and success factors.

C. Theoretical Review

The theory constraints, theory of change, uncertainty theory, and contingency theory were used in the study.

➢ *Stewardship Theory*

The Stewardship Theory of Davis (1991 and 1993) provides another framework for comprehending the connections that already exist between business ownership and management. As capable corporate stewards, managers diligently target high company profit levels and shareholder returns. (Ronald, 2014). In actuality, a stewardship strategy aims towards a project's success, such as sustainability. (Tosi et al., 2003). Therefore, obtaining this outcome when both the manager and the principle in the employment relationship choose to behave as stewards is crucial to the success of One Laptop per Child.

This study focused on the central government's (Ministry of Education) and local institutions' roles in carrying out the "One laptop per child" initiative, which emphasizes the Boards' role in offering plans or direction and sees Managers as dependable people. (Selected sectors of Kirehe district). The stewardship concept's foundations are based on social psychology, which prioritizes executive conduct. In order to gain the trust of stakeholders and act as responsible stewards of the company's assets, directors must uphold a fiduciary duty to them. Supporters of the stewardship idea concur that managers give superior performance a higher priority than generating shareholder gains. This is because managers, who oversee the business on a daily basis, have a better understanding of it and can make better decisions than directors, who tend to be more of an outsider. (Donaldson, 2014).

It has been found that if a shareholder's value is maximized, the utilities of stewards are also maximized because organizational performance will meet the majority's wants and the stewards will have a clear aim. (Smallman, 2014). In order to achieve a dynamic performance equilibrium for balanced governance, stewardship theory refers to a claim made in the performance of companies that fulfills the needs of the interested parties. According to Donaldson & Davis (2013), stewardship theorists have proposed that senior executives within a company won't penalize shareholders because of fear for endangering their reputation. The conclusion of this theory is that in order to assure more effective and efficient decision-making, any project's principle and agents need to obtain a large amount of counsel.

Stewardship theory, which supports our first independent variable, suggests that the managers' success and the firms' success must be considered as having a positive relationship. The stewards use the success of the business to boost and protect shareholder wealth. According to Davis, Schoorman, and Donaldson (2014), the majority of stakeholder groups within an organization are pleased by a steward who successfully improves performance when these groups have interests that are well-served by increasing the firm's wealth. In this article, stewardship theory and agency theory are contrasted.

In contrast to agency theory, which emphasizes control and conflict, stewardship theory provides a non-economic framework for describing relationships. The hypothesis was the basis for this study's assessment of stakeholder collaboration in One Laptop Per Child and how it affects the district of Kirehe's goal-achievement.

➢ *Theory of Change*

The Aspen Institution Roundtable on Social Change developed the Theory of Transformation in the 1990s to study and evaluate intricate network processes. Since 1980, eminent methodologists including Carol Weiss, Peter Rossi, Huey Chen, Heléne Clark, Michael Quinn Patton, and others have been thinking about how to apply program principles to assessment. The Roundtable initially focused on discussing the challenges of evaluating intricate network operations. This concept defines each step required to complete a specific long-term objective. 2015 (Harris).

A realistic representation of the change process is a change framework or change pathway, which consists of a number of related phases sometimes known as results, products, events, or requirements. (Akpan & Chizea, 2014). A theory of change provides a detailed explanation of how and why a desired change is anticipated to occur in an environment. (Andersen, 2015).

It focuses on filling in the "missing middle" between the interventions or activities that make up a change or program endeavor and how they contribute to the accomplishment of desired goals. (Chizea, 2012).

This suggests that One Laptop Per Child's objective is to transform Rwanda's educational system by incorporating ICT into instruction at every level. The "One Laptop Per Child" project has made it easier for young children to become accustomed to using a laptop. Additionally, because it makes the process simpler for them, it aids teachers in their efforts to teaching students more effectively. The One Laptop per Child project is encouraged by this theory to first establish the desired long-term project/goals performance and then work backward from these to lay out all the conditions (outcomes) that should be in place for the goals to take place, making it suitable to the study. (and the tangential connections between these). Making sure infrastructure, time, money, and human resources are used effectively and efficiently may fall under this category.

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➢ *Uncertainty Theory*

Liu (2010) proposed this idea according to the generality of the area of doubt. According to uncertainty theory, the truth-value was defined as an indefinite measure that the claim is correct (Mwangi & Ngugi, 2018). The risk of uncertainty has an impact on how project managers approach stakeholder management. The project team can use the expression "proactively occupy the white places in the agreement" to stress that by expecting uncertainty, they can mark in eventualities that reflect those indecisions ahead of time, staking a claim before other stakeholders. This suggests that, in order for the One Laptop Per Child initiative to be successful, there should be techniques to precisely gauge the degree of uncertainty inherent in the project during its design to aid in their swift adaptation to it.

Even the most experienced managers find it difficult to deal with some level of uncertainty, which will undoubtedly be present in most projects. Even though they use risk management to prevent disasters, decision milestones to predict outcomes, and successive iteration to ensure that everyone is producing the desired result, the project still ends up over budget, behind schedule, or fails altogether (Mwangi & Ngugi, 2018).

This implies that, manager of the project should not be troubleshooting, nevertheless also be able to do as a sensitive consolidator of whatever has been accomplished to that point in the project. The project stakeholders, all risks should be identified and handled. All risks, according to this idea, come from anticipated uncertainty during project implementation. As a result, for our research, the theory assists in the planning, identification, and mitigation of risks connected with design, legal, contract, and real project implementation for One laptop per child project.

According to this signaling theory, when information asymmetry is significant, organizations are more inclined to develop a risk management program. Businesses use debt to build tax shelters. Debt, on the other hand, increases the likelihood of financial issues and insolvency for a corporation (Smith & Stulz, 1985). The interests of risk-averse managers do not align with those of well-diversified risk-neutral shareholders (Giambona et al., 2018).

There are several reasons that give to the current prominence of threat management discipline. Organizations today have to deal with greater volatility and competition, which has compelled them to use at least some risk awareness (Spikin, 2005). Authorities and regulators, on the other hand, place legal responsibilities on businesses in general, necessitating the use of more complicated risk management approaches. Furthermore, as technology has increased a company's efficiency, it has also exposed it to a plethora of new dangerous risks.

In fact, it is believed that managing uncertainty is a necessary condition for effective project management. Projects and the management of them are significantly impacted by a variety of sources of uncertainty. This suggests that identifying what can be done, deciding what must be done, and guaranteeing that it is carried out in accordance with plan were all addressed in this study's effective uncertainty management. For instance, effective milestone-setting, planning, coordination, and change control practices all work to take control of uncertainty.

D. Empirical Review

Pinto and Prescott (2019) used a descriptive methodology to conduct research on the objectives of the project definition and accomplishment of projects in Poland. They found that there was a 0.47 association between a timeline or plan and project success, but a 0.57 correlation between the project's purpose and specific technical tasks. Pinto and Prescott (1990) found yet again that planning factors control the project longevity. Planning was found to have the greatest impact on the two success categories "Perceived value of the project" (R2=.35) and "Client satisfaction" (R2=.39). How well a model is likely capable of forecasting future events is shown by its rate of determination R2.

Commercial projects must be planned and executed to the delight of the project's managing organization, the client organization, and all other stakeholders, according to a study on project planning and performance by Jamal et al. (2014). Project performance has frequently fallen short despite a number of valuable contributions to the discipline of project management. A tool was developed as a result of the study to evaluate project planning and performance components and consider the managerial implications. Factor analysis and Pearson coefficients of correlation were used to achieve this.

Nine components make up the link among project planning and performance. Adherence to specifications is revealed to be the most important of these, followed by other factors such as planning and the expected criteria of project success. The paper's recommendations should help project managers prioritize various planning factors and thereby enhance performance.

Son (2015) studied pre-planning procedures and how they affected cost performance in the USA. This study aims to identify the key factors that affect green building projects' cost performance during the pre-project planning stage. This study confirms the relationship between a few crucial elements and the cost-effectiveness of green building initiatives.

The data set utilized to implement Support vector machine-recursive feature elimination (SVM-RFE), a feature selection technique based on data mining, consists of 53 green building projects. The results of the study show that 10 out of 64 project definition rating index (PDRI) criteria have the greatest influence on the price of green construction projects.

According to a study by Petrovic (2017), respondents in the Swedish construction industry represented a variety of professions and used various approaches for risk detection. Around 88% of respondents chose using checklists and previous project experience, with brainstorming coming in second at 48% and interviews at 12%. In terms of risk identification, it was also discovered that the usage of

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checklists and documentation was common throughout the early stages of a project. Many people utilize the brainstorming technique to add their experience and to talk about the lessons they've learnt from previous initiatives. Checklists are a crucial tool for spotting risks in the workplace, particularly in the inventory of tasks requiring measures that are compliant with local laws.

According to research, security checks are performed daily or weekly depending on the project's size, with checklists serving as the field tool for risk assessment. Use risk management in Ghanaian projects where top-ranked methods like checklists and brainstorming are employed by micro- to small-scale construction firms. (Hayford & Sarfraz, 2013).

According to Ropel and Gajewska (2011), the instrument for risk identification in a Swedish school construction project includes historical experience, debate, brainstorming, and a case-based approach. The study also discovered that a checklist could be utilized to gather the various risks associated with construction projects and apply them to upcoming ones.

Bajaj et al., (1997), in Australia, New South Wales revealed the most typical method employed in risk identification is top-down approach practice, where the project is appraised from the starting point. According to research by Renault et al. (2018), formation of key threats to be controlled in a project is part of risk identification.

According to a research conducted by Reddy (2015) for the British Airways Authority, identifying hazards is crucial for the contractor to receive alerts and make preparations for potential uncertainties. Since most uncertainties arise from a lack of appropriate identification, risk management without it is challenging or impossible.

Gitau (2015) reports that 92.5 percent of the surveyed Rwandan construction projects had a strategy in place for identifying risks throughout the project-planning stage. In 60% of the projects, the risk management method was informal, and in 40%, it was formal.

Nasser (2021) looked into how the creation of contingency plans affected the success of construction projects. This study used quantitative methods to examine this association. The poll comprised project managers from Oman's second to excellent grades. The results demonstrated that risk management strategies significantly improve the efficiency of construction projects. Based on this conclusion, it is essential to engage with project managers who are qualified and knowledgeable about risk management's operational procedures.

The development of a risk management strategy includes putting methodologies, procedures, means, and tools into practice. Threats are not insignificant and have the potential to negatively affect a project's goals if they are not properly handled and given the necessary management attention. Threat can be a concern when the event happens and felt its influence.

Threat measured based on probability, timeframe, schedule, scope, budget and quality. Main concern given to treats and response activities are from risk experience level. Threat is considered in project decision, planning and everyday actions. Certain threats come from outside influence, such as activities of environment and adverse actions by project and individuals. Several risks come from inside factors, such as an acceptable assumption, wrong design choices, or too optimistic plan. The method is to discover and have the risk as initial in the procedures as possible (EDR, 2011).

The process of identifying opportunities and choosing actions to enhance alternatives and reduce risks to the project's objectives is known as risk response. (PMI, 2000). The project's risks are addressed through the risk response. Only 27% of respondents surveyed in a South African study said they always reacted favorably to risk. The results show that threats are identified more frequently than they are dealt with, indicating that participants do not support the use of risk management in practice. (Shunmugam & Rwelamila, 2014).

The project manager must work to eliminate threats and guarantee that possibilities materialize. The task of the project manager is to reduce the likelihood and impact of risk while boosting the likelihood and significance of opportunity. An Aimable (2015) study conducted in Rwanda indicated that 29% risk avoidance assisted multi-storey buildings of RSSB in ensuring quality, while 41% risk avoidance assisted them in managing resources, and 11% risk avoidance assisted them in ensuring with project plan.

A system of allocating the risk associated with the fulfilment of a commercial contract among the contracting parties is known as risk transfer. Risk retention is the strategy that transfers risk from one party to another, and 44% of risk retention has an effect on multi-story buildings, according to risk transfer observations. According to the findings of Swedish construction projects, the majority of respondents place a high priority on avoidance (62%), mitigation (61%), and acceptance (55%), while a low priority on transfer (36%) (Petrovic, 2017).

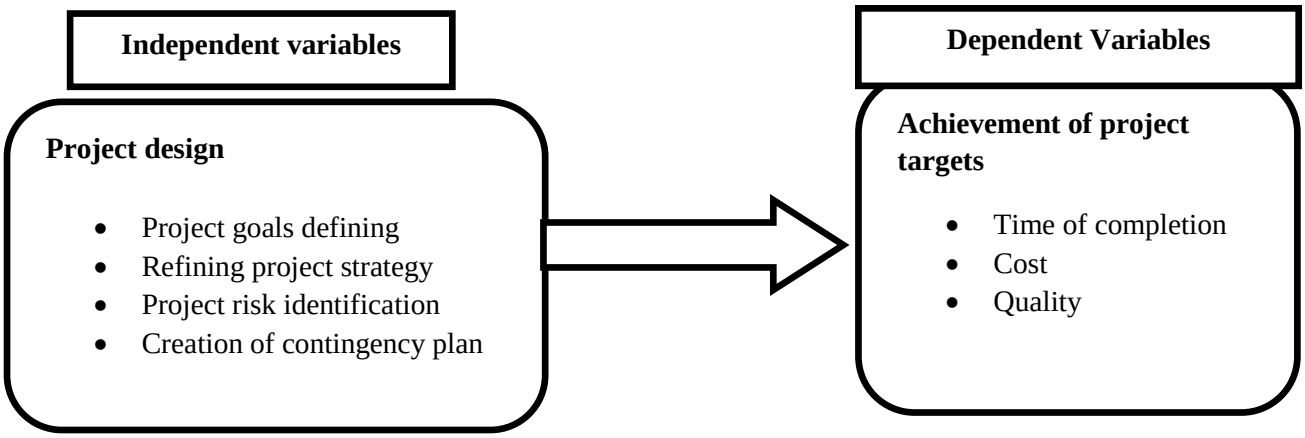
E. Gap analysis

As a matter of fact, numerous researchers have carried out studies relating to project management and the performance of these projects, such as Pinto and Prescott's (2019) investigation on project success in Poland. In 2014, Jamal et al. did study on the performance of projects. Peter (2018) studied how project implementation tactics affected the success of community projects. David (2021) studied the planning and accomplishment of project objectives in Rwandan public institutions, and Kaburame (2017) investigated the use of time management strategies to highway projects for enhanced performance. These academics concentrated on overall project performance and project management. They haven't really examined how the project design affects the accomplishment of the project objectives.

In this vein, the current study examined how project design affects reaching project goals, particularly those of government initiatives. The research addressed the issue by examining how project goals defining, refining project strategy, project risk identification and creation of contingency plan contribute to the achievement of project goals. In order to do so, the researcher employed a descriptive study design and regression analysis to demonstrate the link between project design and achievement of the intended goals.

F. Conceptual framework

An analytical tool with many settings and adjustments is a conceptual framework. It is employed to classify and organize ideas. Strong conceptual frameworks that are quickly remembered and effectively reflect reality.



VI. MATERIALS AND METHODS

A. Research design

Descriptive and correlating study designs were used by the researcher. The aim of descriptive research is to fairly represent the subjects under study. In other words, the goal of descriptive research is to describe the study's participants. Through the descriptive study methodology, the researcher collects data regarding the One Laptop per Child project from staff members in selected sectors of the Kirehe district administration and sectors within that district. Researchers can assess two variables, understand their statistical relationship, and evaluate it without the influence of any other factors using a non-experimental research method known as a correlation research design. It was chosen because it showed how the two research variables—project design and project target achievement relate to one another.

B. Target population, sample size and sampling procedures

The study's target audience consisted of 158 individuals who work for the Selected Sectors of the Kirehe District, which include Gahara, Gatore, Kigarama, Kigina, Kirehe, Mahama, and Mpanga. (Kirehe dostroct, 2022).

The sample size refers to the number of people the researcher chooses to include in a study as a representative of the total group of participants. The population for the study was selected using Sloven's formula $n = \frac{N}{1+N(e)2}$ (Kuzel, 1992) whereby n is the sample size, N is the total population and e is the sampling error (0.05).

$$n = \frac{158}{1 + 158(0.05)2}$$

$$n = \frac{158}{1 + 158(0.0025)}$$

$$n = \frac{158}{1 + 0.395}$$

$$n = \frac{158}{1.395} = 133$$

The sample size of the study was 133.

The researcher used a convenient sampling technique to select respondents with information relate to the research were selected. This technique was used because the whole population was used as a sample size.

C. Data collection procedures

➢ *Questionnaire*

Respondents choose from a list of options for closed-ended questions in the survey. The following benefits of using a questionnaire led to its selection: time savings from handling several respondents at once; simple data analysis; and ease of use when the sample is literate.

The researcher employed a Likert scale when creating surveys to gauge respondents' opinions on the crucial project design elements. The elements affecting the achievement of project goals were also rated using the same scale. The respondent answered on a Likert scale whether they strongly agree (SA), agree (A), disagree (D), or disagree strongly (SD).

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➢ *Interviews*

An interview in qualitative research is a conversation where questions are asked to elicit information, typically regarding a product or service, to better understand a respondent's viewpoint. The aim of the qualitative research interview is to outline and clarify the relevance of major themes in the life of the interviewees. (Allen, 2011). The main objective of conducting interviews is to comprehend the meaning of the respondents' comments.

D. Data Analysis Methods

Statistical Package for the Social Sciences (SPSS) version 21 was used by the researcher in this study to process and analyze data, which influenced how the results, analysis, and interpretation were presented. The research topics was the main topic of the presentation. The type of statistical analysis is dependent on the nature of the issue, particularly the particulars and type of data collected. In this research, Spearman Test was used to analyze the relationship or correlation between project design and goals attainment.

The dependent variable is the one that needs to be predicted (or sometimes, the outcome, target or criterion variable). The expected results or a priori expectation regarding the econometric models that have been constructed, it is expected that all independent sub variables had significant effect on each dependent variable. This kind of effect is to positively check for each econometric model. Generally, there are significant and positive relationship between project design and goals attainment.

X = Agriculture practices
Y = Goals attainment
Y = f(x)

Where,
X = ($X_{1=}$ defining goals, $X_{2=}$refining strategy,
$X_{3=}$project risk identification and $X_{3=}$ creation of contingency pln

Therefore the model used in the study took the form below :

$$Y= \alpha+\beta_1X_1+ \beta_2X_2 + \beta_3X_3 + \beta_4X_4 +ę$$

VII. RESULTS AND DISCUSSIONS OF FINDINGS

A study was conducted using multiple linear regression analysis to determine how the independent variables an assessment worker The investigator utilized multiple linear regressions with a 95% confidence interval to determine the correlation between the independent and dependent variables. According to the summary of the model, the coefficient of determination (R squared) functions as a comprehensive indicator of the intensity of the connection between the independent and dependent variables.

Table 1: Correlation coefficient

		Achievement of One Laptop per Child goals	Project goals defining	Refining project strategy	Project risk identification	Creation of contingency plan
Achievement of One Laptop per Child goals	Pearson Correlation	1	.923**	.960**	.945**	.981**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	133	133	133	133	133
Project goals defining	Pearson Correlation	.923**	1	.937**	.961**	.949**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	133	133	133	133	133
Refining project strategy	Pearson Correlation	.960**	.937**	1	.981**	.973**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	133	133	133	133	133
Project risk identification	Pearson Correlation	.945**	.961**	.981**	1	.963**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	133	133	133	133	133
Creation of contingency plan	Pearson Correlation	.981**	.949**	.973**	.963**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	133	133	133	133	133

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

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

Results in table 1, indicated that there was a substantial and positive correlation between the project goals' definition and the achievement of the one laptop per child goals (r= 0.923, p value0.05). This suggests that a unit change in the project's objectives will affect the One Laptop per Child goals' achievement by 92.3%. Second, there was a substantial correlation between the achievement of the One Laptop per Child goals and the improvement of project strategy (r= 0.960, p value 0.05). This suggests that a unit

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change in the project's strategy for improving it would have a 96.0% impact on the achievement of its goals.

Thirdly, there was a substantial correlation between the achievement of the One Laptop per Child goals and the identification of project risk (r= 0.945, p 0.05). This suggests that an increase of 94.5% in the achievement of the One Laptop per Child goals results from a unit change in project risk identification. The development of a contingency plan and the achievement of the One Laptop per Child goals had a positive and significant link (r= 0.981, p value 0.05). This suggests that a modification of one unit in the contingency plan's formulation would affect the achievement of the One Laptop per Child goals by 98.1%.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.953[a]	.908	.623	.16282

a. Predictors: (Constant), seedling/seeds, fertilizer/pesticide, irrigation and productivity

Regression analysis of table 2 showed a favorable connection (R = 953). The project goals defining project strategy refinement, project risk identification, and formulation of contingency plan are the predictors of the model, and they have a 95.3% correlation with the dependent variable, according to the R coefficient of 0.953. (Achievement of One Laptop per Child targets) The study also showed that the achievement of the One Laptop per Child targets was 90.8% (R2= 0.908) due to a combination of project goals and refining project strategy, project risk detection, and establishment of contingency plans.

Table 3: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.992	4	.248	5.11	.015[a]
	Residual	.369	128	.045		
	Total	1.361	132			

a. Predictors: (Constant), Project goals defining refining project strategy, project risk identification, creation of contingency plan

b. Dependent Variable: Attainment of project goals

The table 2 validates that the model can explain variations in the realization of One Laptop per Child aims attainment to the level of 72.8% or 0.992 out of 1.361, is due to the project design through the sub variables of independent variable used in the research, while other variables not included in this model can explain 27.1% or 0.369 out of 1.361of the disparities in the targets. The model's F value yields a p-value of 0.015, which deviates considerably from zero. For data with a normally distributed distribution, a p-value of 0.015 is less than the predetermined threshold of significance of 0.05 (0.0150.05). This indicates that the model is important in understanding Kirehe District's One Laptop per Child targets.

Table 4: Regression coefficients

		Unstandardized Coefficients		**Standardized Coefficients**		
Model		**B**	**Std. Error**	**Beta**	t	Sig.
1	(Constant)	1.127	.389		2.893	.005
	Project goals defining	.059	.059	.079	1.008	.023
	Refining project strategy	.075	.060	.159	1.260	.021
	Project risk identification	.023	.076	.038	-.301	.041
	Creation of contingency plan	.618	.063	.938	9.771	.000

a. Dependent Variable: Wellbeing of Mageragere community.

Table 3 showed that the achievement of One Laptop per Child targets would be 2.893 if project goals definition, project strategy improvement, project risk identification, and contingency plan creation were all held constant at zero. Even though the y-intercept constant is not a realistic constant, the model requires it.

Additionally, a unit change in project goals definition, a unit change in project strategy refinement, a unit change in project risk identification, a unit change in project contingency plan creation, and a unit change in project risk identification would all have an impact on the achievement of the One Laptop per Child targets by a factor of 0.079, 0.159, and 0.159, respectively. The study also discovered

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that every p-value was less than 0.05, proving that every variable had a statistically significant impact on whether the One Laptop per Child targets were met.

The first hypothesis stated that the definition of project goals had no bearing on the achievement of the One Laptop per Child targets, while the second hypothesis stated that the refinement of project strategies had no bearing on the achievement of the One Laptop per Child targets, and the third hypothesis stated that the identification of project risks had no bearing on the achievement of the One Laptop per Child targets; therefore subsequently the t-values were bigger than 0.05 the researcher rejected altogether hypothesizes of the research as it has been revealed that project goals defining, refining project strategy, project risk identification and creation of contingency plan influence the achievement of One Laptop per Child targets.

A. Results discussion

The research was about the project design and goals attainment of One Laptop Per Child in Kirehe district. The project design was measured through the goals defining, refining strategy, project risk identification and creation contingency plan. Regression analysis of table 4.9 showed a favorable connection (R = 953). The project goals defining project strategy refinement, project risk identification, and formulation of contingency plan are the predictors of the model, and they have a 95.3% correlation with the dependent variable, according to the R coefficient of 0.953. (Achievement of One Laptop per Child targets) The study also showed that the achievement of the One Laptop per Child targets was 90.8% (R2= 0.908) due to a combination of project goals and refining project strategy, project risk detection, and establishment of contingency plans.

Based on the results above, it is clear that the project contributes effectively to the attainment of goals of One Laptop Per Child. That is supported by Project design is a critical factor in the effectiveness and success of a project. (Idoro, 2018). Numerous empirical studies of the variables that contribute to project management success have identified project design as one of the field determinants of project success. (Lechler, 2009). Each and every project manager must develop a solid project plan and see it through to conclusion. (Shenharc, 2019).

VIII. CONCLUSION AND RECOMMENDATIONS

A. Conclusion

This study's main research topic was to investigate how project design may contribute effectively to the accomplishment of project objectives. Nevertheless, due to the discovery that project performance and success are frequently unrelated, this question has not yet received a comprehensive response. Generally, respondents indicate that the project of OLPC is well designed in Kirehe district. where it is highlighted that project goals defining was observed during the designing of the project, the project strategy was refined, project risk was identified and there was a creation of contingency plan.

All these factors are indicated by the fact that to all statements relate to the project design, most of respondents strongly agree and agree with the them which given homogenous answers regarding the project design and attainment of its goals. This is corroborated by the fact that the model accounts for 72.8% of the variations in One Laptop per Child target achievement, while other variables not included in the model can only account for 27.1% (0.369 out of 1.361), or the variations in One Laptop per Child target achievement caused by the project design. From this juncture, the researcher conclude that the project design leads to the achievement of project goals.

B. Recommendations

Even, though the research indicated that project design contributed to the achievement of One Laptop per Child targets, there have been short comings of the research, thus research recommends the government of Rwanda to strengthen the refining of project strategy and project risk identification since both have shown weak influence on the achievement of One Laptop per Child targets.

The policy makers' planners' services providers should take up challenges to make the overall physical and socio economic conditions of government schools to at least be at par with private schools. It was found that lack adequate infrastructure have influences implementation of OLPC project in Kirehe district, it is strongly recommended that Ministry of education should empowering the rural school to get all needed infrastructure that facilitate them to use these laptops. Government should ensure the provision of adequate educational facilities accessible even to students from poor family. Education Board should play a role of sensitizing the parents on how influential is home environment on their children academic performance.

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