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Influence of Risk Management on Project Implementation, a Case Study of Indoor Residual Spraying Project in Rwanda

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Abstract

The study entitled "Influence of Risk Management on Project Implementation, a case of Indoor Residual Spraying (IRS) Project in Rwanda". The purpose of the study was to investigate the influence of project risk management on project implementation in Rwanda with reference to Indoor Residual Spraying (IRS) Project. The study was guided by four specific objectives: to examine the influence of project risk identification on implementation of Indoor Residual Spraying (IRS) Project, to assess the influence of Project Risk Analysis on the implementation of Indoor Residual Spraying (IRS) Project, to find out the influence of project risk response planning on the implementation of Indoor Residual Spraying (IRS) Project and to ascertain the influence of Project risk monitoring and control on the implementation of Indoor Residual Spraying (IRS) Project. The research designs that were used in this study are descriptive research design and analytical research design. The study used 83 employees of Indoor Residual Spraying (IRS) Project as sample size. The study used stratified sampling techniques to select whole population to participate in this study. The study used questionnaires, interview guide and documentary review as method of data collection and finally the study used descriptive statistics and inferential statistics such as correlation analysis and multiple linear regression analysis as method of data analysis. For the first objective, the findings revealed that there existed a significant moderate positive correlation ($R = 0.552^{**}$, p-value=0.002<0.01) between project risk identification and implementation of (IRS) Project and also results revealed that project risk identification have significance positive effect on implementation of (IRS) Project as indicated by β1= 0.199, p=0.000<0.05, t= 3.257. The implication is that an increase of one unit in project risk identification would lead to an increase in implementation of (IRS) Project by 0.199 units. For the second objective, the findings revealed that there existed a significant weak positive correlation ($R = 0.375^{**}$,p-value=0.000<0.01) between project risk analysis and implementation of (IRS) Project and also the results revealed that project risk analysis have significance positive effect on implementation of (IRS) Project as indicated by β_2=1.226, p=0.000<0.05, t=8.797. For the third objective, the findings revealed that there existed significant high positive correlation ($R = 0.797^{**}$,p-value=0.003<0.01) between project risk response and implementation of (IRS) Project and also the results revealed that project risk response planning have significance positive effect on implementation of (IRS) Project as indicated by β_3= 0.396, p=0.000<0.05, t= 3.781. For the fourth objective, the findings revealed that the study established the existed of a strong positive correlation ($R = 0.681^{**}$,p-value=0.001<0.01) between project risk monitoring & control and implementation of (IRS) Project and also the regression results revealed that project risk monitoring and control have significance positive effect on implementation of (IRS) Project as indicated by β_4= 0.341, p=0.040<0.05, t= 2.085. As such, the project management team should explore ways for enhancing the effectiveness of the tools in risk analysis by providing more orientation of stakeholders on this.

Introduction

Berg (2015) asserts that to boost the potential and chance of a proposed project to succeed, it is necessary for the organisation to understand the impending risks. This can be achieved through systematic and

quantitative assessment of risks, modelling possible causes and influences, and then selecting appropriate approaches of dealing with the risk exposures. To ensure influenceive management of all risk exposures, the risk process needs to be explicitly integrated into the business or organisational decision-making process Miles & Wilson (2018) describe risk management as a continuous business process that involves the identification, analysis, evaluation, and treatment of loss exposures as well as an incessant monitoring and control procedure of the risks identified.

Motaleb & Kishk (2014) posit that risk management is a human activity which integrates recognition of risk, risk assessment, development of strategies to manage those exposures, and mitigation of risk using managerial resources. Liu (2015) add that risk management as a business process involves a focused assessment and ascertainment of project viability through feasibility studies, analysing and controlling the potential risks involved to minimize loss, planning accordingly in order to alleviate risk, and lastly avoiding or suspending projects that are considered too risky yet less profitable and thus enhancing the implementation of the projects and that of the organization.

In the globalized era nowadays, there has been a wide implementation of risk management in various sectors. Health projects are more unique in a way that they have so many stakeholders, lots of capital investment and complexity. For such constrains, success in health projects is dependent on the quality of preparations and processes. Sam (2011) stated that risk is any potential threat or occurrence which may prevent you from achieving your defined business objectives. It may affect timescale, cost, quality, or benefits. All projects are exposed to risks in some form but the extent of this will vary considerably. As regards to opportunity, it is possible that your project may go better than you planned. Therefore, risk and opportunity are what may go wrong or right. A risk or opportunity will become an issue if the event occurs. Thus, issues can be resolved either within the scope of the project as currently defined or via a change to the project.

Since recent decades, in developed countries like, Sweden, project risk management has become an important function in organizations like World Health Organization (WHO), United Nations International Children's Emergency Fund (UNICEF) and United Nations Educational, Scientific and Cultural Organization (UNESCO). These organizations undertake increasingly complex and ambitious projects, and those projects must be executed successfully, in an uncertain and often risky environment. Wabomba (2015) argued that adopting risk management practices has a significant positive impact on project success. In addition, there is a positive impact from the presence of a risk manager on project success.

Project risk management in health sector is cruel since within clinical risk, medical errors may occur during multiple hospital processes, from therapy prescription, thorough preparation, distribution, and administration (Amos & Dents, 2015).

In USA, the measures which reinforce risk management in health sector are strongly implemented by State. Edwards and Bowen (2015) argue that project risk management involves an informed and thorough identification, assessment, and prioritization of risks and then the application of resources to reduce, monitor, and control the chance and/or impact of ill-fated events or to take full advantage of viable opportunities. According to Elkington & Smallman (2015), there exists strong positive association between the amount of risk management undertaken in a project and the level of success of the project or rather the implementation of a project.

A study performed in Australia by Segismundo & Miguel (2018), reveals that about fifty percent of adverse events taking place in healthcare systems may be prevented through application of project risk management strategies. This highlights a strong need for understanding the triggering events of medical errors as well as

their correlations to decrease the probability of the occurrence of these errors by working on all their possible causes (Addison, &Vallabh,2012)

In African countries like Ghana, expert knowledge elicitation has been widely applied not only to risk identification but also to risk assessment being translated into probability distributions (Rozenes *et al*., 2016). In a healthcare system, characterized by human-based activities, managing criticalities by means of an individual perspective allows fortification of barriers against the flow of energy associated with adverse events. Preventing risks require understanding how to strengthen those procedural, administrative, physical, and individual barriers intercepting and blocking the energy flow responsible for deviations.

In Rwanda, national health project managers are now faced with increasing challenges that require them to fulfil expectations, and hence assess risks, that extend beyond the traditional project constraints of budget, schedule, and scope. Projects must be assessed on their ability to deliver value in various forms such financial value, budgetary compliance, economic benefits, internal value, customer related value, and long-term future value (Lowitt, 2011). It is worth noting that, the commitment towards a healthier environment is not limited to project management professions and practices that have tangible outcomes. As a result, the modern project managers must cultivate an array of skills both hard and soft, to ensure that risks associated with sustainability; and more precisely with environmental factors, are carefully identified, assessed, and managed. This ability is a necessity to deliver successful projects that meet the quality and implementation standards now being legally imposed by controlling agents, governments, and society. However, the methods for reporting and managing risks vary in complexity, cost, and sophistication.

One of the most common constraints on health project implementation encountered in Rwanda's field operations reveal that they did not conduct risk analyses prior to project design, lack of concrete risk management strategies and inadequate consideration of contextual issues, such as inadequate infrastructure or financial services has led to poor project implementation in the sector. Therefore, the current study is aimed at identifying the influences of risk management on the implementation of health projects in Rwanda with reference to Indoor Residual Spraying (IRS) for the period of 2018 up to 2020.

Today, the number and complexity of health projects is growing rapidly and executed by partnering institutions (Miller, 2014). Akintoye & Macleod (2017) argue that all projects are inherently risky because they are unique, constrained, complex, based on assumptions, and performed by people. As a result, project risk management must be built into the management of projects and should be used throughout the project lifecycle.

MOH (2018), observes that in spite of this momentum of change, more than 50 of health projects fail through different stages of project cycle. There were 112 health projects implemented in Rwanda in the year 2017. Out of the above-mentioned number, 35 of projects did not meet expected time, 65 of projects did not meet expected budget, 22 of projects did not continue after projects' funders withdrew funds and 55 of projects did not meet all expected project objectives. Available studies present empirical, methodological, and contextual gaps on the need to consider an expanded framework of variables making up the risk management process, the need to shift focus from vendor's perspective to a client's perspective. The study therefore focuses on project risk Management and its influence on implementation of health projects with reference to Indoor Residual Spraying (IRS) Project

In Rwanda, the report of Ministry of health of (2018), reported that in health sector most projects fail because their managers assume that all the projects would succeed and they therefore do not identify, analyze, and provide mitigation or contingency strategies for the risk elements involved in the project. This shows that risks may hinder key project milestones and actions hence affecting project delivery as the

project may lag behind the schedule, delivered outside the initial project architectural plan and budget line. It is in this regard that the researcher is prompted to assess the influence of risk management strategies on success of public health projects in Rwanda.

The general objective of the study was to investigate the influence of project risk management on project implementation in Rwanda with reference to Indoor Residual Spraying (IRS) Project. The study was guided by the following Specific objectives:

i. To examine influence of project risk identification on implementation of Indoor Residual Spraying (IRS) Project
ii. To assess influence of Project Risk Analysis on the implementation of Indoor Residual Spraying (IRS) Project
iii. To find out influence of project risk response planning on the implementation of Indoor Residual Spraying (IRS) Project
iv. To ascertain influence of Project Risk Monitoring and Control on the implementation of Indoor Residual Spraying (IRS) Project

Literature

Theoretical framework

Several management theories have been proposed by many studies each applying to a different business situation. Among the theories are contingency theory and agency theory. The following is a detailed discussion of each one of them.

Contingency Theory

The word possibility shows how the earth (outer wellspring of hazard) relates with the framework and decides the exercises and development of a hierarchical framework (Longenecker & Pringle, 2013). Panthi et al. (2009) have called attention that ventures are unpredictable and extraordinary, and in light of the fact that it is hard to assess the level of dangers in ventures, it is in this manner likewise difficult to apply venture chance administration exercises suitable. One of the unavoidable results of a task is variety that may prompt unfavorable influences on time, cost and quality. Thus, using possibility hypothesis in ventures is helpful for relieving these varieties that emerge later, through authoritative realizing which utilizes past encounters and applies them to current circumstances where conceivable.

Liu and low (2009) considered adaptability as a significant answer for the cutting-edge dangers and along these lines have underscored on the capacity of possibility hypothesis for exhibiting a clarification relying upon the conditions and realities of every case.

As Figueiredo and Kitson (2009) have introduced possibility is a cost component of a gauge to cover the likelihood of unforeseeable occasions to happen and that if they happen, they will probably bring about extra expenses inside the characterized venture scope. A few expenses in the activities cannot be promptly decided or they are huge in the total yet too little to be evaluated independently; so, keeping in mind the end goal to represent these costs it is helpful to incorporate possibility in any cost gauge, for example, cost estimation for development ventures (Tummala and Schoenherr, 2011). It ought to be noticed that possibility is unique in relation to remittances in the activities. The occasions which are relied upon to happen and are inside the extent of the venture drive the remittances and therefore the stipends are not hazard based or subordinate (Noor & Tichacek, 2009).

The concentration of this proposition is overseeing danger of ventures and attesting that because of erratic nature of the tasks there is no most ideal approach to oversee them. As said above, possibility hypothesis perceives that there is a scope of relevant dangers each impacting the venture that the hypothesis will be connected to. Consequently, picking possibility hypothesis can be considered as a suitable hypothetical structure for this postulation on the grounds that the fundamental idea of this hypothesis is in the same manner as the concentration of this proposal; the hypothesis rejects that there is one most ideal route for overseeing. Possibility is for the most part produced for evacuating or diminishing the negative results of unanticipated occasions. Since the possibility hypothesis is chance based, it can be adequate to deal with the acknowledgment of dangers and accordingly has been picked as the hypothetical structure of this proposition which is concentrating on the dangers related with health project in Rwanda (Wabomba, 2015).

Contingency theory recognizes that there is a range of contextual variables (risks), each influencing the project that the theory is going to be applied to. Improvement in organizational offensiveness is what contingency theory aims at responding to uncertainty in project implementation. Contingency is mainly generated for removing or decreasing the negative outcomes of unforeseen events. So, contingency theory is used in this study to describe an approach in managing risk of projects that best suit the health project current situation. Thus, contingency theory helps in understanding risk control strategy and its influence on project implementation.

Agency Theory

The agency theory was developed by Jensen and Meckling (1976), is probably the most important theory of corporate governance both in private and public organization. Agency relationship is a situation where a principal appoints an agent to perform services on behalf of the former and delegate decision making authority to the latter. The under-lying premise of this theory is that those individuals tasked with representation of others should ultimately commit the corporate resources to value maximization for those they represent. The agents are expected to exercise due diligence and care in making corporate decision and ensure the interest of the principal are safeguarded.

Organization hypothesis is coordinated at the pervasive office relationship as indicated by Floricel and Lampel (1998), in which one gathering delegates work to the operator, who plays out that work. In building ventures this relationship is characterized by the customers and the contractual workers. Organization hypothesis is worried about settling two issues that happen in office connections. The first is the organization issue that emerges when (a) the wants or objectives of the essential and specialist strife (b) it is the troublesome or costly for the foremost to check what the operator is really doing. The issue here is that the key cannot confirm that the specialist has carried on fittingly prompting deficient yield. The second is the issue of the risk distribution that arises when the central and operator have distinctive states of mind towards the chance. The question here is the key and the operator may incline toward various activities because of the diverse risk predispositions. Thus, perfect chief-operator connections ought to reflect influence association of data and the hazard bearing expenses to best maintain a strategic distance from these issues.

As indicated by Tummala and Schoenherr (2011), in venture, administrator office sorts of contentions might be maintained as strategic distance from by all around developed contracts which determine the legally binding connections between the undertaking proprietor and the essential contractual workers. Conduct based contract and result based contracts are two on-specific sorts of legally binding connections which have been created to relieve the issues which emerge from the irreconcilable circumstance amongst important and operator.

This theory therefore informs this study since project risk management is highly informed by the organization's transaction exposure, accounting exposure and economic exposure. To mitigate the project risk exposure, health project must implement appropriate strategies to hedge against such potential losses. A successfully implemented project risk management strategies will ensure organization achieves its goals and objectives. This theory thus helps in understanding risk transfer strategy and its influence on project implementation.

Constraints Theory

This theory is credited to Goldratt, a physicist from Israeli. This theory sought to establish an organised perspective to identify the reasons hindering a company from attaining its goals of making income for its stakeholders. Theory of Constraints believes that project managers understand their projects and through this knowledge they acquire a sense of being leaders who are dynamic as well as enterprising. Theory of Constraints accredits team managers by providing a regular system for detecting challenges (Mabin, 1990).

In their study, Simsit, Gunay &Vayvay (2014) saw Theory of Constraints as an ideology which emphasises on the frail rings to improve implementation of systems. Companies should be knowledgeable about their composition in terms of processes which are dependent on one another and are viewed as rings of the same chain. This theory is focused on the weakest segments and tries to determine their relationships and therefore it is an important tool for solving root problems. Theory of Constraints strongly believes that each system has at least one type of condition or a set of circumstances that prevent the system from achieving success as far as its objectives and goals are concerned.

Constraint's theory focuses on enhancing the immediate constraint to a point that it does not limit output and then focuses on the next constraint. It uses a specific methodology of identification and elimination of constraints known as the Five Focusing Steps. These steps include identification of the constraints, improving the implementation of the constraint, making an evaluation of each undertaking in the system to make sure that they are allied and backup the constraint's requirements. On elimination of the constraint and the succeeding step is to head for the next constraint (Rotich, 2017). The success of every project is in its implementation. In this study, Theory of Constraints will apply to the dependent variable (implementation) will be achieved by elimination of constraints which hinder the achievement of objectives of health projects. Theory of Constraints is relevant to this study because the project team members will be in a position to investigate and pinpoint the constraint which is currently limiting implementation in terms of cost, time, and community acceptance and positively impacting the project team members as well as the community and in this case introducing risk management strategies means to enhance the limiting factor.

Theory of Systems

This theory's origin evolved from the concept of everything being part of a bigger system with parts that are dependent on each other. According to Loosemore & Cheung (2015), a system is an entity consisting of a lot of interrelated elements, which are put together in a manner to attain a distinctive function for a specific purpose. From an organizational point of view, this theory is a comprehensive approach that sees organizations as a series of interrelated subsystems of people, processes and technologies that cooperate towards attainment of a common objective. Systems theory in risk management helps us to understand how systems are linked and their interdependencies to change, and their ability to adapt and develop by themselves without the influence of external managers. Theory of Systems is useful for viewing the relationship between interdependent parts in a system and how those relationships influence the success of projects. A project is therefore seen as a system made up of mutually dependent parts (Rotich, 2017. Activities of every part therefore should be in coordination with those of the rest of the parts in the system to avoid undesired conflicts within the system in order achieve a common goal.

This theory applies to the dependent variable risk avoidance in that when all the parts within a system are well coordinated, and every activity within the project is carried out by the relevant part through use of detailed work plans, a lot of mistakes that bring about undesired outcomes/events are avoided. Systems theory is relevant to this study because it will be used to understand the relationship and contribution of project parts (team members) in achievement of project objectives, and it will be useful in understanding the roles of each team member in similar future health projects.

Conceptual review

The conceptual review of this study is regarding to project risk management and project implementation:

Project risk management

Risk is the uncertainty that surrounds future events and outcomes with the probability to influence the attainment of an organization's requirements (Berg, 2012). According to Njagi (2016), risk is a concept with a probable influence on some characteristics of importance that may be caused by some present or future events. Management of risks therefore is an essential part of project organization's strategic management which is a process that is carried out throughout the lifecycle of the projects.

Project Risk Management includes the process concerned with conducting risk management through planning, identification, analysis, responses, monitoring and control on a project (PMBOK, 2004). The discipline of project risk management has developed over the recent decades as an important part of project management (PMI, 2015).

Risk management process is the basic principle of understanding and managing risks in a project. It consists of the main phases which include identification, assessment, analysis and response. All steps in risk management planning should be included when dealing with risks, to efficiently implement the process in the project. There are many variations of risk management planning available in literature, but most described frameworks consist of those mentioned steps (Motaleb & Kishk, 2014).

Several other studies have been done in project risk management and project management especially include Bakker et al (2009) in a study on whether risk management contributes to project success concludes that risk management can only be influence in specific project situations and that knowledge of the risks alone is not enough to contribute to project success. Furthermore, it would be interesting to combine the relation found by Cooke-Davies (2000) between risk management planning and a timely delivery of the project with the work of Weick and Sutcliffe (2007), who discuss awareness creation and attention shaping as conditions for stakeholder behavior in uncertain situations. In this view, risk management contributes to project success, because the stakeholders know there are risks, based on which they adjust their expectations and behavior accordingly.

According to Kutsch and Hall (2012) knowledge of the risks does not automatically imply that this knowledge is used for managing those risks. That less is known about what happens inside the risk management process; what risk management practices are used within a project, which stakeholders are participating in these practices, how these risk management practices influence stakeholders, and how these practices influence project success. These are relevant questions, to which the risk management approach so far has not provided satisfactory answered, and neither does it give a truthful representation of how stakeholders behave.

Influence of project risk identification on project implementation

Risk identification generates the list of all the possible risks that could affect the project, is the start of risks management process. During the planning phase, a risk management team, using brainstorming and other

problem identifying techniques, try to identify potential problems that are probable risks. Identification of potential threats follows the first step of risk planning, discovering, and outlining those elements that affect the objectives of an organization. After identifying the sources of risks, it is when the consequences of the identified risks are known (Berg, 2015). To help management team identify and eventually analyze risks, organizations use Risks Breakdown Structures (RBS) in conjunction with Work Breakdown Structure (WBS).

Risks Breakdown Structure (RBS) is defined as a source-oriented grouping of project risks that organizes and defines the total risk exposure of the project. Each descending level represents an increasingly detailed definition of sources of risk to the project (Babou, 2015). After the macro risks have been identified, then specific areas can be checked. The WBS is an influenceive tool for identifying specific risks. Multiple teams can be organized around specific deliverables and should submit their risk management reports to the project manager. Indeed, the Risk Breakdown Structure is an important tool for a project manager to run the project successfully. What is the most interesting is to identify the risk in planning stage and as planning is not a one-time task; risk identification is also not a one-time task for a project manager (Kululanga & Kotcha, 2015).

Risk identification is iterative and progressively elaborated in nature. As work progresses, number of risks will increase because of better clarity in scope of the work. Risk identification is therefore a project manager's all-time task through which he should identify the risk from project initiation to project closing stage given the fact that risk could be anywhere and anytime. In the framework of risk identification, beside the RBS there is another useful tool that is "risk profile" defined as a list of questions that address traditional areas of uncertainty of project. The risks profile will then outline the number of risks, type of risk and potential influences of risks. This outline allows a project to anticipate additional costs or disruption to operations. This outline also is described as the willingness of a project to take risks and how those risks will affect the operational strategy of the project (Babou, 2015).

Influence of project analysis on project implementation

Risk analysis involves the assessment of the likelihood and impact of risks to determine their magnitude for the range of forces that could produce an adverse influence are known. The assets that could be affected are recognized, the features that increase the risk likelihood are identified and the extent to which the risk manifests itself. Tools associated with this stage include the use of probability/impact matrixes or strengths, weaknesses, opportunities, threats (SWOT) analysis, and top ten risk item tracking technique (Kululanga & Kotcha, 2015).

The project manager must develop methods for scrutinizing through the list of risks, eliminating inconsequential or redundant ones and stratifying worthy ones in terms of significance and need for attention. The easiest and most used technique is the scenario analysis. Through this technique, team members assess the importance of each risk event in terms of the following: (i) Probability of the event (ii) Impact of the event.

In other words, risks need to be evaluated in terms of the likelihood the event is going to occur and the impact or consequences of its occurrence. Furthermore, a responsible project manager needs to be aware of these risks (Eric & Clifford, 2011).

Kinyua et al. (2015) study findings indicated that an influenceive risk management practices especially the risk analysis procedures and tools help the information communication and technology enterprises to identify and quantify risks and aid in developing appropriate control strategies such as risk reduction

policies. The researcher identified a statistically significant positive relationship between project risk analysis and information communication and technology project implementation for small and medium enterprises (SMEs) in Kenya. Didraga (2013) in the study on the role and influences of risk management in information technology projects Success in Romanian IT companies found out that project risk analysis impacts positively on both subjective and objective measures of Project implementation.

Influence of project risk response planning on implementation of project

Risk response focuses on the identified and quantified project risks. Risk responses include, eliminating the risk by avoiding it usually by treating the root causes; accept the risk but have a contingency plan in place; shift risk to a third party by transferring it, for example, through insurance; and reducing the likelihood of its occurrence by mitigation (Shenhar, et al, 2012).

This risk response practice involves an internal management mechanism channeled at reducing controlling risk. Jaafari (2011) suggested that it is conducive when avoiding the risk that has been handled by a particular company is impossible, there might be a small or insignificant financial loss and the probability of its occurrences are insignificant, making it uneconomical to transfer. The project risk response planning comprises of avoidance, retention, transfer, and risk reduction. In accordance with (PMBOK, 2008), risk management strategies include, risk avoidance, risk transfer, risk retention and risk reduction, among others.

Risk avoidance is an approach where an organization alters the original plans for the projects to prevent or remove risky elements. This could include the decision not to perform a particular activity that is associated with risks thus altering the project's scope. It should be noted that areas in a project that are riskier are also the areas that have higher worth or value. Avoiding such activities therefore may result in removing the most profitable bits of the project. It is therefore advisable to adopt a strategy that can retain those risky activities (Kululanga& Kuotcha, 2015).

Risk retention or acceptance involves being aware that a certain threat exists and deciding to embrace the associated risk level without taking any measures to curb it (CS Goh & Abdul Rahman, 2013). According to Strelnick (2016), when risks cannot be avoided or transferred, the concerned party then has no choice than be the risk taker and reap the associated reward. Anca, Cezar & Adrian (2015) the strategy can either be passive or active. Passive acceptance needs no action apart from the team members documenting and reviewing the threat periodically to ascertain that it does not have consequential change. Active retention on the other hand involves establishment of contingency reserves which include money, time and resources to cope with the risk.

Risk transfer is the act of shifting a proportion or the whole risk to another party. This third party now handles the risk events that are less likely but have a huge economic impact on occurrence. Risks can also be shifted from one phase of the project to the next phase to curb delays, cost overruns and design omissions. For risk transfer to be smooth and efficient, then there must be proper communication between the stakeholders, clear regulations, and transparency to avoid creation of more risks (Bhoola, Hiremath & Mallik, 2014).

As the name denotes; this risk response practice employs the transfer of risk from one management team to another or from one project to the other. The introduction of insurance premiums in construction projects are beneficial, however, it does not discharge all the identified risks of the project but covers a portion of risks.

Moreover, the transfer of risk essentially can be done in two ways: transferring the risk from the responsible entity by hiring sub-contractor on the hazardous projects; and retention of the property or activity but transferring the financial risk through surety and insurances packages (Musyoka, 2012).

Influence of Project risk monitoring and control on project implementation

Risk monitoring and continuous reassessment involves monitoring known risks, identifying new risks, reducing risks, and evaluating the influence of risk reduction. The main output at this stage has been associated with corrective actions and project change requests. Continuous reassessment involves periodic reviews of project risk status to identify new risks, and to examine changes in probabilities or impacts and changes in the contractor's project risk responses (Cervone, 2006).

Checking on identifiable risks and new risks as well as monitoring of residual risks are expected as the project progresses. This stage of the management process ensures that implementation of risk schedule and evaluation on how to reduce it and special reports prepared often to ascertain the possibility of new risks and ways to handle them. This is a lifetime cycle as longer as the project is in existence and managers in industries, according to Kremlijak (2015), should have a complete data on future events by providing contingency plans based on the system in question. In the developing construction sectors, this phenomenon is common and experimental tools should be tried to bring acceptable solutions.

Jun et al. (2011) the findings established that project monitoring and control makes a greater contribution to process implementation under low levels of inherent uncertainty. On the other hand, user participation makes a greater contribution to product implementation under high levels of inherent uncertainty. Oehmen, Olechowski, Kenley, & Ben Daya (2014) undertook a study on the influence of risk management practices on the implementation of new product development programs. The study was based on a survey of 291 product development programs. Study results indicated that risk management practices are directly associated with three outcome measures namely improved decision making, program stability and problem solving. The findings further established a strong link between monitor and control of risks with project implementation. Didraga (2013) established a strong link between project risk monitoring and control and project implementation indicated by both objective and subjective measures.

Project implementation

Effective project implementation or simply put, project success can be measured on the basis of time, cost and quality (performance), commonly known as the triple constraint. These three factors represent the Key Performance Indicators (KPIs). To establish whether a project has been effectively implemented, or better still, if the project has been successful, one has to go back to the initial project goals of time, cost and quality (performance) and be able to measure the extent of their individual achievement (Gitau, 2015).

Koelmans (2004) noted that project implementation in the public entities generally lack clear policies to guide the process and encourage suppliers who can do business with them. For instance, the existing guidelines discourage supplier development and collaborations due to the short-term nature of most corporations. Secondly, the payment procedures for goods supplied and work done takes long time to be made thus exposing procurement performance to a very high risk. To implement its projects, KenGen is committed to efficient generation of reliable, safe, quality and competitively priced electric energy to the satisfaction of their customers.

Project implemented within time schedule

Project implemented within time schedule refers to the duration for completing a project and often, projects experience delays. It was contended that the lateness was mainly due to unrealistic expectation of clients about the project duration during the preconstruction stage. Ward et al. (2011) also identified that client time expectations are frequently based upon either on their own experience of similar works or on advice from

'specialist advisors'. This behaviour of clients may be an indication of the adherence to or rejection of advice of project consultants, who have been formally employed to lead management projects.

The project time schedule includes a planned start date and a planned finish date for each activity. A project schedule may be presented in a summary form referred to as a master schedule or milestone schedule or may be presented in detail. Often, the project schedule is presented graphically using milestone charts, bar charts, and project schedule network diagrams. The schedule baseline is developed from the schedule network analysis and is accepted and approved by the project management team as the baseline with baseline start dates and baseline finish dates. The baseline is a key element in schedule control and time management (PMI, 2008).

Project implemented within budget

Project implemented within budget has been defined as the degree to which the general conditions promote the completion of a project within the estimated budget (Bubashit and Almohawis, 2014). It covers overall costs incurred from project inception to completion. This highlights the importance that must be attached to every project management activity carried out through every stage of the project development up to completion. Chan and Chan (2004) also argue that cost is not only confined to the tender sum and that it is the overall cost that a project incurs from inception to completion, which includes any cost arising from variations, modifications during construction Period. Also, cost variables give indication of certain additional practices that when engaged during the project management process would have both direct and indirect implications for the Project cost implementation. To measure the cost implementation, the cost variance technique is used and measure in terms of units, cost, and percentage of net variation over the final cost (Chan & Tam, 2000). Furthermore, Ntwari (2019) presented the cost implementation index (CPI) as other technique to measure implementation of a project for the reliability and the confidence of results.

Project implemented with quality

Project quality implementation is defined as the totality of the features required to satisfy a given need, fitness for purpose. The extent to which projects are monitored, the experience of project consultants, quality and past implementation record of contractors and the number of variation orders issued all have influence on quality. How all these factors can be competently coordinated would be relevant to achieving satisfactory quality implementation (Kashiwagi and Parmar, 2004).

Project quality includes three tasks: plan quality management, perform quality assurance, and control quality, which appear in three process groups that are planning, executing, monitoring and controlling. The manager identifies the project quality requirements and compliance indicators in the planning process group, ensures the use of quality standards in the executing phase, monitoring and assessing implementation during the monitoring and controlling stage (Ahsan & Gunawan, 2015)

Empirical Review

Ndambiri & Kimutai (2018), conducted the study on the risk management and implementation of health systems digitalization projects in public hospitals in Nyeri County, Kenya. The purpose of this study was to determine the influence of project risk management on implementation of health systems, digitalization of projects in public hospitals in Nyeri County of Kenya. The study used a descriptive research design and the study targeted all the five public hospitals in Nyeri County and targeted all the sixty-five (65) departmental heads. Descriptive and regression analysis were conducted with the aid of SPSS. There was a significant relationship (F=0.360, P=0.012) between risk management and project implementation. Risk management had a strong positive correlation (r=0.899) with project implementation. Approximately 80.10 of the variation in the project implementation (the dependent variable) was explained by variability in the

independent variables. Project risk identification (p=0.032), project risk analysis (p=0.043), project risk response planning (p=0.032) and project risk monitoring and control (p=0.022) were all statistically significant. The study recommended training of staff at all levels on different aspects of project risk management to enhance project implementation.

Mutisya (2018), did the study on the risk management strategies and implementation of government funded youth projects in Machakos County (Kenya). The purpose of this study was to examine the influence of risk management strategies on the implementation of government funded youth projects in Machakos County. Stratified simple sampling technique was used to arrive at a sample size of 122 respondents from the project members and staff. A structured questionnaire was used to collect primary data from the respondents. Descriptive statistics and inferential statistics which included regression and correlation analysis were used to analyse and summarize data. The study findings show that the four predictor variables such as risk avoidance, risk retention, risk transfer and risk reduction accounted for 57.5 of the total variation on project implementation because the (R square) value is 0.575. It further recommended that more research be carried out in youth projects in other counties in the government sector in Kenya.

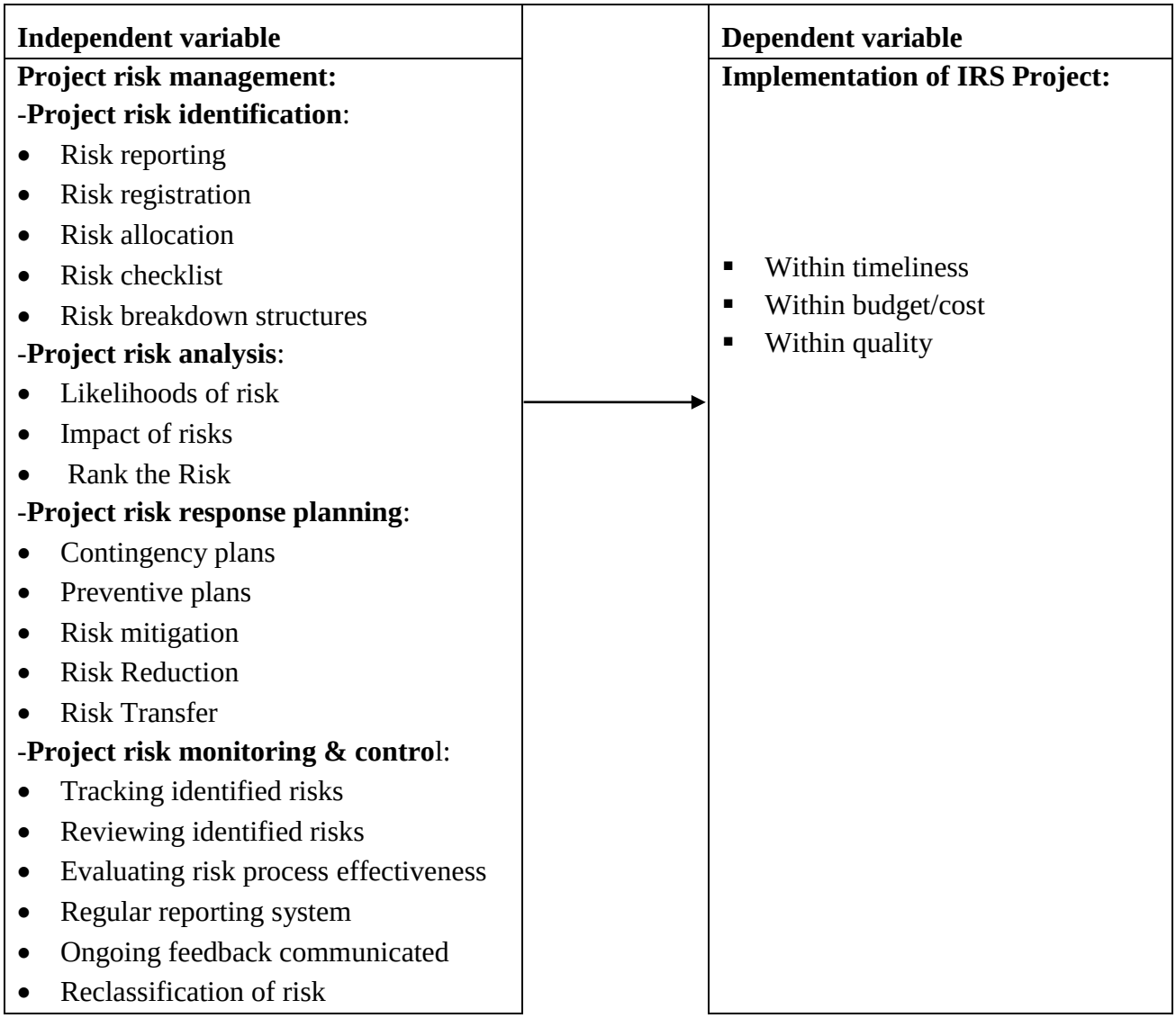
Aduma & Kimutai (2018) conducted a study on Project risk management strategies and project implementation at the National Hospital Insurance Fund in Kenya. The purpose of the study was to establish the influence of project risk management techniques on project implementation at national hospital insurance fund (NHIF) in Kenya. The study adopted a descriptive research design. The target population for this study will be 651 management staff. A sample population of 241 was picked using stratified proportionate random sampling technique. Primary data was obtained using self-administered questionnaires. The study used descriptive statistics and inferential data analysis. The findings revealed that 69 of variation in NHIF project implementation was due to the change of risk prevention, risk transfer, risk control and risk acceptance.

Njuguna (2019), studied on the risk management practices and implementation of projects in Nairobi City County, Kenya. The study' general objective was to determine the influence of risk management practices on implementation of projects in Nairobi City County, Kenya. The study adopted a descriptive design. The study employed semi structured questionnaires to gather relevant information from a total of 135 project managers, supervisors, risk managers, construction firms and finance officers. The findings revealed that coefficient of correlation R of 0.819 is an indication of strong correlation between the variables. The adjusted R2 was 0.849 which implies that 84.9 of the variation in project implementation was accounted for by the four independent variables which include: risk transfer, risk prevention, risk control and risk retention. The study concluded that risk transfer had a significant and to a great extent affected the implementation of the projects in Nairobi City, Kenya.

Kipkoech & Kenneth (2018) conducted the study on the influence of Project Risk Management on implementation of telecommunication network modernization projects in Kenya. The study adopted a case study research design. Total number of 60 respondents was reached, representing the entire population. The study used multiple regression analysis and Analysis of Variance (ANOVA) to analyze the degree of relationship between the variables in the study at 5 level of significance. The findings revealed that regression analysis yielded an R-square value of .423 indicating that the independent variables jointly explain 42.3 of the variability in implementation of network modernization projects at the 5-significance level. The study recommended that telecommunication firms should pay great emphasis on the three aspects of risk management, namely project risk identification, project risk monitoring and project risk response.

Conceptual Framework

A conceptual framework forms the heart of the study; it is the foundation of the very objectives (research questions) of the study; It dictates the direction of literature review, forms the basis of analysis, conclusions and recommendations. The study was guided by the concept that Project Risk Management including risk management tools and techniques influence the success o f a project. These practices include carrying out a comprehensive project risk identification, project risk analysis, project risk response planning and project risk monitoring & control the influence project implementation.



Source: Researcher, 2022

Figure 2.1: Conceptual framework

Methodology

This study adopted a descriptive research design and correlation research design. Descriptive research design was useful in describing the project risk management used by Indoor Residual Spraying (IRS) Project in term of project risk identification, project risk assessment and analysis, planning for risk response and monitoring and control. Furthermore, descriptive research design was useful in describing the level of project implementation in term of project timeliness**,** completion with set budget, project quality implementation and project scope implementation. The study used correlation research design to establish the relationship between project risk management strategies and implementation of Indoor Residual Spraying (IRS) Project.

According to Ngechu (2004), a population is a well-defined or set of people, services, elements, and events, group of things or households that are being investigated. The population of interest of this study is 490 employees of Indoor Residual Spraying (IRS) Project and two top administrative managers.

Table 3.1: Employees of Indoor Residual Spraying (IRS) Project

	Population size
Project director	1
Sector coordinators	34
Sector supervisors	114
Finance and accounting departments	6
IEC supervisors	36
Clinical director	3
M&E department	9
Team leader	36
Procurement office	3
IT officers	3
Community health worker	245
Total employees of (IRS) Project	**490**

Source: Abt Associates (Abt)**,** 2020

The study used Slovin's Formula to determine the sample size that was used in data collection because 490 employees of Indoor Residual Spraying (IRS) Project is large which is great than 100, therefore the sample size is calculated as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where: n= the sample size,

N= Population size and

e= the margin of error (10).

$$\boldsymbol{n} = \frac{490}{1+490\,\boldsymbol{(0.1)^2}} = \frac{490}{6.14} = 83.05 \approx 83$$

The study collected data on 83 employees of Indoor Residual Spraying (IRS) Project

Table 3.2: Sample size

Population size	**Population size**	**Sample size**
Project director	1	1
Sector coordinators	34	5
Sector supervisors	114	19
Finance and accounting departments	6	1
IEC supervisors	36	6
Clinical director	3	1

M&E department	9	1
Team leader	36	6
Procurement office	3	1
IT officers	3	1
Community health worker	245	41
Total employees of (IRS) Project	**490**	**83**

Source: Abt Associates (Abt)**,** 2020

Sampling is that part of statistical practice that is concerned with selection of individual items intended to yield some knowledge about the population of concern, especially for the purpose of making statistical inferences (Cooper and Schindler, 2007). The researcher used stratified sampling techniques for selecting 83 employees of IRS project and purposive sapling techniques for selecting 2 top managers of IRS project.

According to Vander Stoep &Johnson (2009), stratified random sampling is a probability sampling technique where the researcher divides the entire population into different subgroups or strata, and then randomly selects the final subjects proportionally from the different strata. This study will use stratified random sampling technique to select 83 employees of Indoor Residual Spraying (IRS) Project among 490 employees of Indoor Residual Spraying (IRS) Project that will participate in the research based on their department.

The study used purposive sampling technique. Among employees of Indoor Residual Spraying (IRS) Project, the researcher selected only two top leaders of Indoor Residual Spraying (IRS) Project because they have more information on how influence Project Risk Management used by Indoor Residual Spraying (IRS) Project influence the success of the project.

The study applied mainly qualitative and quantitative approach. Basically, qualitative data focused on respondent's perceptions towards the respective study objectives, while the quantitative methods focused on frequencies and percentages mean and standard deviation with regards to the relevant data collected from the respective respondents. Regarding the nature of this study, both primary and secondary data was used.

Primary data collected by use of structured questionnaires and interview guides in the field from people who are believed to give firsthand information on the subject under study.

Secondary data was gotten from sources like; Annual reports, Journal articles, internet, magazines, newspapers, and books related to the subject of the study. These were consulted at length to extract the information required to support the findings from the study respondents. The researcher visited such places and obtained information that was related to the study variables as presented in literatures review.

The study incorporates the use of various tools in the process of data collection in a bid to come up with sound, concrete, and credible research findings. The researcher therefore amalgamates the use of questionnaire, interviews, and documentary analysis in the process of collecting primary data. An open and close ended questionnaire was constructed and self-administered where the researcher allowed the study respondents to fill the questionnaire in the study field. The questionnaire tool was used to collect information from employees of Indoor Residual Spraying (IRS) Project. Interview guide was drafted with a set of questions that the researcher asked respondents during interview, and this was open ended in nature. The researcher personally records the provided responses as per study respondents during the process of carrying out an interview. This tool was used to collect information from two top managers of Indoor Residual Spraying (IRS) Project include country director and Deputy of country director.

3.6.3. Documentation review

According to Burns & Grove (2003) stated that documents are materials which contain the information about a phenomenon that researchers wish to study. In this study the documents (books, journals and web site sources) was used in order to get more information.

Project risk identification and implementation of IRS Project

The study sought to assess the perception of respondents on project risk identification used by IRS project. The respondents were employees of IRS project. The respondents were asked whether they agreed or disagreed with the statements regarding project risk identification strategies. The results were summarized in the table 4.2 by using mean and standard deviation of responses.

Table 4.2:Project risk identification and implementation of IRS Project

	SD		D		N		A		SA		Mean	St. Dev
	fi	%	fi	%	fi	%	fi	%	fi	%		
Risk identification process was carried out at the inception of the project to identify both internal and external factors affecting the project.	0	.0	14	16.9	3	3.6	24	28.9	42	50.6	4.13	1.10
Project team members who were involved during the risk identification process they gained required expertise in the project	2	2.4	5	6.0	3	3.6	11	13.3	62	74.7	4.52	.99
Screening of project risks and taking appropriate measures influencing project schedule implementation	1	1.2	14	16.9	3	3.6	12	14.5	53	63.9	4.23	1.19
Various tools and techniques were used to identify these risks, including review of documentation, brainstorming, interview expert judgment etc.	1	1.2	8	9.6	4	4.8	21	25.3	49	59.0	4.31	1.02
Project managers consider the rights and views of stakeholders during risk management.	1	1.2	5	6.0	6	7.2	7	8.4	64	77.1	4.54	.95
Project managers are committed to ensuring that risks are identified and acted upon in a timely manner.	0	.0	4	4.8	9	10.8	8	9.6	62	74.7	4.54	.87
There is a documented standardized risk identification process in place that is used by all projects.	0	.0	7	8.4	4	4.8	21	25.3	51	61.4	4.40	.92
The IRS Project uses information from past successful projects to identify potential project risks.	0	.0	4	4.8	0	.0	12	14.5	67	80.7	4.71	.71
Overall mean											**4.42**	**0.96**

Source: Primary data, 2022

About project risk identification and implementation of IRS Project, the results from the table 4.2 show that 16.9% of respondents disagreed, 3.6% of respondents were neutral while 28.9% of respondents agreed and the majority 50.6% of respondents strongly agreed that risk identification process was carried out at the inception of the project to identify both internal and external factors affecting the project with very high mean score of 4.13 and standard deviation of 1.10 which implies that the fact appear more and heterogeneity responses.

The results show that 2.4% of respondents strongly disagreed, 6% of respondents disagreed and 3.6% of respondents were neutral while 13.3% of respondents agreed and the majority 74.7% of respondents strongly agreed that Project team members who were involved during the risk identification process have gained required expertise in the project with very high mean score of 4.52 and standard deviation of 0.99 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 1.2% of respondents strongly disagreed, 16.9% of respondents disagreed and 3.6% of respondents were neutral while 14.5% of respondents agreed and the majority 63.9% of respondents strongly agreed that screening of project risks and taking appropriate measures influence project schedule implementation with very high mean score of 4.23 and standard deviation of 1.19 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 1.2% of respondents strongly disagreed, 9.6% of respondents disagreed and 4.8% of respondents were neutral while 25.3% of respondents agreed and the majority 59% of respondents strongly agreed that various tools and techniques were used to identify these risks, including review of documentation, brainstorming, interviews expert judgment etc. with very high mean score of 4.31 and standard deviation of 1.02 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 1.2% of respondents strongly disagreed, 6% of respondents disagreed, 7.2% of respondents were neutral while 8.4% of respondents agreed and the majority 77.1% of respondents strongly agreed that project managers consider the rights and views of stakeholders during risk management. With very high mean score of 4.54 and standard deviation of 0.95 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 4.8 % of respondents disagreed, 10.8% of respondents were neutral while 9.6% of respondents agreed and the majority 74.7% of respondents agreed that Project managers are committed to ensuring that risks are identified and acted upon in a timely manner. With very high mean score of 4.54 and standard deviation of 0.87 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 8.4% of respondents disagreed, 4.8% of respondents were neutral while 25.3% of respondents agreed and the majority 61.4% of respondents strongly agreed that there is a documented standardized risk identification process in place that is used by all projects. with very high mean score of 4.40 and standard deviation of 0.92 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 4.8% of respondents disagreed, 14.5 % of respondents agreed and the majority 80.7% of respondents strongly agreed that The IRS Project uses information from past successful projects to identify potential project risks with very high mean score of 4.71 and standard deviation of 0.71 which implies that there is strong evidence of existed fact and heterogeneity responses.

Table 4.2 presented statistics on responses regarding the project risk identification condition for the IRS Project. The mean of the means stood at (4.42) which demonstrated high application of various project risk identification processes was at very high extent. The average standard deviation stood at a low of (0.95) which demonstrated that the data was held close to the mean further affirming the high level of application of project risk identification processes. Most respondents recommended more stakeholder engagement in project risk management to ensure more productive identification of project risks. This implied that the enterprises distinctive risk identification effort to influence achievement of project performance. This communication of identifying project risks was found as an appropriate way of risk mitigation thus influencing the project success. The finding supported by Bakker et al. (2012) who found that project risk identification was the most influential process in project management through communications of risk, reporting, risk registration and risk allocation, risk analysis and risk control at influencing project's performance. These findings are in line with Cagno *et al*., (2017) who informs that it is also very important to consider the expected desired outcome of the project during risk identification. In project management, the required level of detail in any project is considered very crucial since special approaches exist to analyse major risk in complex projects.

Project risk analysis and the implementation of (IRS) Project

The researcher sought to assess the perception of respondents on project risk analysis and the implementation of (IRS) Project. Respondents were required to rate various statements regarding to project risk analysis. The results were summarized in the table 4.3 below by using frequency, percentage, mean and standard deviation.

Project risk analysis and the implementation of (IRS) Project

	SD		D		N		A		SA		Mean	St. Dev
	fi	%	fi	%	fi	%	fi	%	fi	%		
We regularly assess the nature and type of possible causes and influences of the identified risks;	0	.0	3	3.6	0	.0	8	9.6	72	86.7	4.80	.62
There is a documented standardized risk analysis process in place that is used by all projects	0	.0	2	2.4	0	.0	57	68.7	24	28.9	4.24	.58
The risk likelihood for the projects is always assessed	0	.0	7	8.4	5	6.0	6	7.2	65	78.3	4.55	.94
Risk exposure for projects is always estimated in advance	0	.0	22	26.5	13	15.7	6	7.2	42	50.6	3.82	1.31
The risks identified were ranked depending on their significance to the project.	5	6.0	10	12.0	7	8.4	6	7.2	55	66.3	4.16	1.33
Risks in the institution are ranked in the order of magnitude and frequency.	0	.0	6	7.2	3	3.6	2	2.4	72	86.7	4.69	.85
The tools employed by management in risk analysis in the IRS Project are viable	6	7.2	8	9.6	0	.0	22	26.5	47	56.6	4.16	1.26

The management of IRS Project utilizes both internal and external human resources in risk analysis process.	0	.0	3	3.6	0	.0	11	13.3	69	83.1	4.76	.64
Risk analysis helps in creating a better understanding of risk impacts in IRS Project	0	.0	6	7.2	3	3.6	5	6.0	69	83.1	4.65	.86
The management conducts both qualitative and quantitative risk analysis with regard to the IRS Project	0	.0	13	15.7	0	.0	7	8.4	63	75.9	4.45	1.10
Overall mean											**4.42**	**0.94**

Source: Primary data, 2022

About project risk analysis and implementation of IRS Project, the results from the table 4.3 show that 3.6% of respondents disagreed, 9.6% of respondents agreed and the majority 86.7% of respondents strongly agreed that we regularly assess the nature and type of possible causes and influences of the identified risks with very high mean score of 4.80 and standard deviation of 0.62 which implies that the fact appears more and heterogeneity responses.

The results show that 2.4% of respondents disagreed, the majority 68.7% of respondents agreed and 28.9% of respondents strongly agreed that there is a documented standardized risk analysis process in place that is used by all projects with very high mean score of 4.24 and standard deviation of 0.58 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 8.4% of respondents were neutral, 6% of respondents agreed while 7.2% of respondents agreed the majority 78.3% of respondents strongly agreed that the risk likelihood for the projects is always assessed with very high mean score of 4.55 and standard deviation of 0.94 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 26.5% of respondents disagreed, 15.7% of respondents were neutral while 7.2% of respondents agreed and the majority 50.6% of respondents strongly agreed that risk exposure for projects is always estimated in advance with very high mean score of 3.82 and standard deviation of 1.31 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 6% of respondents strongly disagreed, 12% of respondents disagreed, 8.4% of respondents were neutral while 7.2% of respondents agreed and the majority 66.3% of respondents strongly agreed that the risks identified were ranked depending on their significance to the project with very high mean score of 4.16 and standard deviation of 1.33 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 7.2% of respondents disagreed, 3.6% of respondents were neutral while 2.4% of respondents disagreed and the majority 86.7% of respondents agreed that risks in the institution are ranked in the order of magnitude and frequency with very high mean score of 4.69 and standard deviation of 0.85 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 7.2% of respondents strongly disagreed, 9.6% of respondents disagreed while 26.5% of respondents agreed and the majority 56.6% of respondents strongly agreed that tools employed by

management in risk analysis in the IRS Project are viable with very high mean score of 4.16 and standard deviation of 1.26 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 3.6% of respondents disagreed,13.3% of respondents agreed and the majority 83.1% of respondents strongly agreed that the management of IRS Project utilizes both internal and external human resources in risk analysis process with very high mean score of 4.76 and standard deviation of 0.64 which implies that the fact appear more and heterogeneity responses.

The results show that 7.2% of respondents disagreed,3.6% of respondents were neutral while 6% of respondents agreed and the majority 83.1% of respondents strongly agreed that risk analysis helps in creating a better understanding of risk impacts in IRS Project with very high mean score of 4. 63 standard deviations of 0.86 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 15.7% of respondents disagreed, 8.4% of respondents agreed and the majority 75.9% of respondents strongly agreed that the management conducts both qualitative and quantitative risk analysis regarding the IRS Project with very high mean score of 4.45 and standard deviation of 1.10 which implies that the fact appear more and heterogeneity responses.

Table 4.3 presented statistics on the level of application of various risk analysis tools and techniques. The mean of the means of the individual risk analysis tools utilised in IRS Project stood at (4.42). This indicated generally a high level of application of the different risk analysis tools available. The average standard deviation stood at a low of (0.94) which indicated that the data on these variables were held close to the mean which underlines the high level of application of the project risk analysis tools. This implies that risk analysis and assessment function is important for it focuses on identification of internal and external sources of risks that could have detrimental implications on the operational effectiveness and efficiency of reporting performance matters. These findings are in agreement with Roque and de Carvalho (2013) who contradict the findings by indicating that most ICT project failed to assess risk measures leading to poor ICS SMEs project performance in terms of timeliness, profitability, costs and project schedules.

Project risk response planning and the implementation of (IRS) Project

The researcher sought to assess the perception of respondents on project risk response planning and the implementation of (IRS) Project. Respondents were required to rate various statements regarding to project risk response planning. The results were summarized in the table 4.4 below by using frequency, percentage, mean and standard deviation.

	SD		D		N		A		SA		Mean	St. Dev
	fi	%	fi	%	fi	%	fi	%	fi	%		
The management of IRS Project always choose the best risk treatment option (accept, avoid, control, transfer or monitor risk	0	.0	2	2.4	0	.0	3	3.6	78	94.0	4.89	.49
The management of IRS project regularly design risk mitigation plans by assessing user needs	3	3.6	10	12.0	3	3.6	10	12.0	57	68.7	4.30	1.21
The management of IRS Project regularly prepare mitigation plan content.	0	.0	9	10.8	3	3.6	10	12.0	61	73.5	4.48	.99

The risk management plan developed from analysis of risks affecting the project was communicated to all stakeholders.	2	2.4	20	24.1	3	3.6	5	6.0	53	63.9	4.05	1.37
Some of the strategies deployed included taking insurance covers, implementation guarantees, and retention sum and defect liability period.	18	21.7	3	3.6	10	12.0	13	15.7	39	47.0	3.63	1.61
The risk matrix was reviewed and updated throughout the life cycle of the project.	12	14.5	8	9.6	5	6.0	9	10.8	49	59.0	3.90	1.54
Overall mean											**4.20**	**1.20**

Source: Primary data, 2022

About project risk response planning and implementation of IRS Project, the results from the table 4.4 show that 2.4% of respondents disagreed, 3.6% of respondents agreed and the majority 94% of respondents strongly agreed that the management of IRS Project always choose the best risk treatment option (accept, avoid, control, transfer or monitor risk with very high mean score of 4.89 and standard deviation of 0.49 which implies that the fact appear more and heterogeneity responses.

The results show that 3.6% of respondents strongly disagreed, 12% of respondents disagreed and 3.6% of respondents were neutral while 12% of respondents agreed and the majority 68.7% of respondents strongly agreed that the management of IRS Project regularly design risk mitigation plans by assessing user needs with very high mean score of 4.30 and standard deviation of 1.21 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 10.8% of respondents disagreed, 3.6% of respondents were neutral while 12% of respondents agreed and the majority 73.5% of respondents strongly agreed that the management of IRS Project regularly prepare mitigation plan content. with very high mean score of 4.48 and standard deviation of 0.99 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 20.5% of respondents strongly disagreed, 2.4% of respondents disagreed while 14.5% of respondents agreed and the majority 62.7% of respondents strongly agreed that the management of IRS Project has open and influence communication channels in the project team, the contractors, suppliers, client and other project stakeholders with very high mean score of 3.96 and standard deviation of 1.61 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 2.4% of respondents strongly disagreed, 2.4% of respondents disagreed while 3.6% of respondents were neutral while 6% of respondents agreed and the majority 63.9% of respondents strongly agreed that the project's senior staff accept the risk management plan developed from analysis of risks affecting the project was communicated to all stakeholders with very high mean score of 4.05 and standard deviation of 1.37 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 21.7% of respondents strongly disagreed, 3.6% of respondents disagreed and 12% of respondents were neutral 15.7% of respondents agreed and the majority 47 % of respondents agreed that some of the strategies deployed included taking insurance covers, implementation guarantees, and retention sum and defect liability period with very high mean score of 3.63 and standard deviation of 1.61 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 14.5% of respondents strongly disagreed, 9.6% of respondents disagreed and 6% of respondents were neutral while 10.8% of respondents agreed and the majority 59% of respondents strongly agreed that the risk matrix was reviewed and updated throughout the life cycle of the project with very high mean score of 3.90 and standard deviation of 1.54 which implies that there is strong evidence of existed fact and heterogeneity responses.

Table 4.5 presented statistics on the level of application of various risk responses plan used by IRS Project. The mean regarding the application of various project risk response plan stood at (4.20) which indicated that they were applied to a great extent. The average standard deviation for the application of various risk response stood at (1.20) which indicates that the observations with regard to these responses were closely held to the mean. This further underlined the high level of application of the various risk responses for IRS Project. Involvement of all stakeholders with interest in IRS Project was fronted as a key improvement option for the risk response planning in IRS project. These findings are in line with Bharwani & Mathews (2012), states that the project managers are required to draw up a plan to be used in the project in which there will be predefined risk mitigation procedures which will be indicated in the risk management plan. Furthermore, monitor the tools to be used in order to determine that the results are accurate and will not generate new problems.

Project risk monitoring and control on the implementation of (IRS) Project

The study sought to assess the perception of respondents on project risk monitoring strategies used by IRS project. The respondents were employees of ISR project. The respondents were asked where agreed or disagreed with the statements regarding to project risk monitoring and control. The results were summarized in the table 4.5 by using mean and standard deviation of responses.

	SD		D		N		A		SA		Mean	St. Dev
	fi	%	fi	%	fi	%	fi	%	fi	%		
The management of IRS Project had to reclassify some risks after they turned out to be more disastrous.	3	3.6	7	8.4	2	2.4	18	21.7	53	63.9	4.34	1.11
The project team always plans for new risks before they occur	8	9.6	11	13.3	9	10.8	10	12.0	45	54.2	3.88	1.43
Regular reviews of risk management efforts and reporting to senior management.	12	14.5	10	12.0	0	.0	15	18.1	46	55.4	3.88	1.53
The project has in place a regular reporting system regarding risk management for senior officers and the management	6	7.2	8	9.6	0	.0	22	26.5	47	56.6	4.16	1.26

The project regularly reviews country ratings if their financing or investments are international	5	6.0	7	8.4	4	4.8	18	21.7	49	59.0	4.19	1.22
Ongoing feedback communicated to the stakeholders on the risks management.	3	3.6	7	8.4	5	6.0	13	15.7	55	66.3	4.33	1.14
Overall mean											**4.13**	**1.28**

Source: Primary data, 2022

About project risk monitoring and control on the implementation of (IRS) Project, the results from the table 4.5 show that 3.6% of respondents strongly disagreed, 8.4% of respondents disagreed and 2.4% of respondents were neutral while 21.7% of respondents agreed and the majority 63.9% of respondents strongly agreed that the management of IRS Project had to reclassify some risks after they turned out to be more disastrous with very high mean score of 4.34 and standard deviation of 1.11 which implies that the fact appear more and heterogeneity responses.

The results show that 9.6% of respondents strongly disagreed, 13.3% of respondents disagreed and 10.8% of respondents were neutral while 12% of respondents agreed and the majority 54.2% of respondents strongly agreed that the project team always plans for new risks before they occur with very high mean score of 3.88 and standard deviation of 1.43 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 14.5% of respondents strongly disagreed, 12% of respondents disagreed while 18.1% of respondents agreed and the majority 55.4% of respondents strongly agreed that regular reviews of risk management efforts and reporting to senior management with very high mean score of 3.88 and standard deviation of 1.58 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 7.2% of respondents strongly disagreed and 9.6% of respondents disagreed while 26.5% of respondents agreed and the majority 56.6% of respondents strongly agreed that the project has in place a regular reporting system regarding risk management for senior officers and the management with high mean score of 4.16 and standard deviation of 1.26 which suggests that the fact appear more and heterogeneity responses.

The results show that 6 % of respondents disagreed, 8.4% of respondents disagreed, 4.8% of respondents were neutral while 21.7% of respondents agreed and the majority 59 % of respondents strongly agreed that the project regularly reviews country ratings if their financing or investments are international with very high mean score of 4.19 and standard deviation of 1.22 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 3.6% of respondents strongly disagreed, 8.4% of respondents disagreed and 6% of respondents were neutral while 15.7% of respondents agreed the majority 66.3% of respondents agreed that ongoing feedback communicated to the stakeholders on the risks management with very high mean score of 4.33 and standard deviation of 1.14 which implies that there is strong evidence of existed fact and heterogeneity responses.

Table 4.5 showed the extent to which various risk monitoring and control processes were applied in IRS Project. It is important to note that the means with respect to all the risk monitoring and control processes was good where the mean of the means with regard to the application of these processes stood at (4.13) indicating a wide level of application of project risk monitoring and control processes. The average standard deviation for the individual factors under project risk monitoring and control stood at (1.28) which demonstrated that the observations were largely close to the mean affirming the high application of project risk monitoring and control processes. Improving the frequency with which monitoring, and control as outlined above is the most viable improvement option to ensure success of IRS project. This implies that IRS project have effective project risk monitoring helping them in keeping track of the identified risks, control residual risks and identifying new risks, ensuring the execution of risk plans, and evaluating their effectiveness in reducing risk. Risk control records risk metrics that are associated with implementing contingency plans. Risk control is an ongoing process for the life of the project. The risks change as the project matures, new risks develop, or anticipated risks disappear. Good risk control processes provide information that assists with making effective decisions in advance of the risk´s occurring. Communication to all project stakeholders is needed to assess periodically the acceptability of the level of risk on the project. Risk monitoring and control may involve choosing alternative strategies, implementing a contingency plan, taking corrective action, or re-planning the project. The risk response owner should report periodically to the project manager and the risk team leader on the effectiveness of the plan, any unanticipated effects, and any mid-course correction needed to mitigate the risk.

The questionnaire having five items project quality is adopted by (Iacovou & Jeff, 2009). The items of the scale in this organization, projects are completed within budget and schedule. The project quality of the produced work is good, the work is done by interacting regularly with consultants, the project has ability to complete its goals. The answers are obtained by 5-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree).

	SD		D		N		A		SA		Mean	St. Dev
	fi	%	fi	%	fi	%	fi	%	fi	%		
The project was handled upon the company's overall standards.	2	2.4	12	14.5	0	.0	8	9.6	61	73.5	4.37	1.19
The final output of project is of the desired quality	0	.0	1	1.2	0	.0	14	16.9	68	81.9	4.80	.49
The project met most of the scheduled milestones	3	3.6	7	8.4	4	4.8	16	19.3	53	63.9	4.31	1.13
The project was finished on time	5	6.0	7	8.4	9	10.8	20	24.1	42	50.6	4.05	1.23
The project was finished on or under budget	0	.0	9	10.8	4	4.8	11	13.3	59	71.1	4.45	1.00
The project continuation of positive benefits to their beneficiaries after completion	2	2.4	13	15.7	2	2.4	11	13.3	55	66.3	4.25	1.22

The project delivered to funders satisfaction are an indicator of project implementation	0	.0	4	4.8	0	.0	14	16.9	65	78.3	4.69	.71
The outcome of project has improved the living conditions of its beneficiaries and their family members.	2	2.4	13	15.7	5	6.0	13	15.7	50	60.2	4.16	1.22
The incidence and prevalence of malaria has been reduced over the last 4 years	0	.0	3	3.6	0	.0	19	22.9	61	73.5	4.66	.67
Exposure to malaria vectors has been limited over the 4 years	0	.0	2	2.4	0	.0	11	13.3	70	84.3	4.80	.56
Overall mean											**4.45**	**0.94**

Source: Primary data, 2022

About the level of implementation of IRS Project, the results from the table 4.6 show that 2.4% of respondents strongly disagreed, 14.5% of respondents disagreed while 9.6% of respondents agreed and the majority 61.5% of respondents strongly agreed that the project was handled upon the company's overall standards with very high mean score of 4.37 and standard deviation of 1.19 which implies that the fact appear more and heterogeneity responses.

The results show that 1.2% of respondents disagreed, 16.9% of respondents agreed and the majority 81.9% of respondents strongly agreed that the final output of project is of the desired quality with very high mean score of 4.80 and standard deviation of 0.49 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 3.6% of respondents strongly disagreed, 8.4% of respondents disagreed and 4.8% of respondents were neutral while 19.3% of respondents agreed and the majority 63.9% of respondents strongly agreed that the project met most of the scheduled milestones with very high mean score of 4.31 and standard deviation of 1.13 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 6% of respondents strongly disagreed, 8.4% of respondents disagreed and 10.8% of respondents were neutral while 24.1% of respondents agreed and the majority 50.6% of respondents strongly agreed that the project was finished on time with very high mean score of 4.05 and standard deviation of 1.23 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 10.8% of respondents disagreed, 4.8% of respondents were neutral while 13.3% of respondents agreed and the majority 71.1% of respondents strongly agreed that the project was finished on or under budget with very high mean score of 4.45 and standard deviation of 1.0 which implies that there is strong evidence of existed fact and heterogeneity responses.

The results show that 2.4% of respondents strongly disagreed, 15.7% of respondents disagreed and 2.4% of respondents were neutral while 13.3% of respondents agreed and the majority 66.3% of respondents agreed

that the project continuation of positive benefits to their beneficiaries after completion with very high mean score of 4.25 and standard deviation of 1.22 which implies that there is strong evidence of existed fact and heterogeneity responses

The results show that 4.8% of respondents disagreed while 16.9% of respondents agreed and the majority 78.3% of respondents strongly agreed that the project delivered to funders satisfaction are an indicator of project implementation with very high mean score of 4.69 and standard deviation of 0.71 which implies that there is strong evidence of existed fact and heterogeneousness responses.

The results show that 2.4% of respondents strongly disagreed, 15.7% of respondents disagreed and 6% of respondents were neutral while 15.7% of respondents agreed and the majority 60.2% of respondents agreed that the outcome of project has improved the living conditions of its beneficiaries and their family members with very high mean score of 4.16 and standard deviation of 1.22 which implies that there is strong evidence of existed fact and heterogeneity responses

The results show that 3.6% of respondents disagreed, 22.9% of respondents agreed and the majority 73.5% of respondents agreed that the incidence and prevalence of malaria has been reduced over the last 4 years with very high mean score of 4.66 and standard deviation of 0.67 which implies that there is strong evidence of existed fact and heterogeneity responses

The results show that 2.4% of respondents disagreed, 13.3% of respondents agreed and the majority 84.3% of respondents agreed that exposure to malaria vectors has been limited over the 4 years with very high mean score of 4.80 and standard deviation of 0.56 which implies that there is strong evidence of existed fact and heterogeneity responses

The overall view of respondents on the level of implementation of IRS Project was very high mean equal to 4.45 which implies that there is strong evidence fact that implementation of IRS project was at very high extent and standard deviation of 0.94 which implies that heterogeneity responses which demonstrated that the observations were largely close to the mean affirming there is existing fact that implementation of IRS project was effective. This suggests that effectively use risk management strategies by IRS project to influence project performance. This contradicts by Wabomba, (2015) which found that software projects were unable to be delivered on schedule, within budget due to ineffective risk management.

Summary Of Findings

The summary of main findings is based on the research objectives which were to examine the influence of project risk identification on implementation of Indoor Residual Spraying (IRS) Project, to assess the influence of Project Risk Analysis on the implementation of Indoor Residual Spraying (IRS) Project, to find out the influence of project risk response planning on the implementation of Indoor Residual Spraying (IRS) Project and to ascertain the influence of Project Risk Monitoring and control on the implementation of Indoor Residual Spraying (IRS) Project

For the first objective, the findings revealed that there existed a significant moderate positive correlation ($R = 0.552^{**}$, p-value=0.002<0.01) between project risk identification and implementation of (IRS) Project. Furthermore, the results revealed that project risk identification have significant positive effect on implementation of (IRS) Project as indicated by $\beta1= 0.199$, p=0.000<0.05, t= 3.257. The implication is that an increase of one unit in project risk identification would lead to an increase in implementation of (IRS) Project by 0.199 units.

For the second objective, the findings revealed that there existed a significant weak positive correlation ($R = 0.375^{**}$, p-value=0.000<0.01) between project risk analysis and implementation of (IRS) Project and the

results revealed that project risk analysis have significance positive effect on implementation of (IRS) Project as indicated by β_2=1.226, p=0.000<0.05, t=8.797. The implication is that an increase of one unit in project risk analysis would lead to an increase in implementation of (IRS) Project by 1.226 units.

For the third objective, the findings revealed that there existed significant high positive correlation (R = 0.797**, p-value=0.003<0.01) between project risk response and implementation of (IRS) Project. Also, the results revealed that project risk response planning have significance positive effect on implementation of (IRS) Project as indicated by β_3= 0.396, p=0.000<0.05, t= 3.781. The implication there is sufficient evidence that an increase of unit in project risk response planning would lead to an increase in implementation of (IRS) Project by 0.396 units.

For the fourth objective, the findings revealed that the study established the existed of a strong positive correlation (R = 0.681**, p-value=0.001<0.01) between project risk monitoring & control and implementation of (IRS) Project. The regression results revealed that project risk monitoring and control have significance positive effect on implementation of (IRS) Project as indicated by β_4= 0.341, p=0.040<0.05, t= 2.085. The implication there is sufficient evidence that an increase of unit in project risk monitoring and control would lead to an increase in implementation of (IRS) Project by 0.341 units.

Conclusions

Based on the findings from chapter four, the study concluded that project risk management was key in influencing the level of implementation of IRS project in terms of cost (budget), quality (scope), schedule (time) measures. On project risk identification, a conclusion is made that project risk identification strongly and positively influences project performance as explained by cost (budget), quality (scope), schedule (time), customer metrics (acquisition and retention), learning and growth (talent retention and attraction) measures. On project risk response planning, the study concludes that project risk response planning has affects the level of project performance. Further, a conclusion was reached that project risk response planning has a strong, positive relationship with project performance indicated by cost (budget), quality (scope), schedule (time) measures. On project risk monitoring and control, it was concluded that project risk monitoring and control significantly drives the level of project performance.

Recommendations

Recommendation Based on the research results, the following recommendations can be offered:

The study recommended training of staff at all levels on different aspects of project risk management to further improve the implementation framework in order to ensure time (schedule), scope (quality) and cost (budget) compliance of (IRS) Project.

On project risk identification, the study recommends more stakeholder engagement in project risk management to ensure more productive identification of project risks.

Regarding project risk analysis, the study established that the analysis tools utilised were only moderately effective and viable in risk analysis. As such, the project management team should explore ways for enhancing the effectiveness of the tools in risk analysis by providing more orientation of stakeholders on this area.

On project risk response planning, the study recommends involvement of all stakeholders with interest in IRS Project and adoption of a wide range of responses to risks with emphasis on risk prevention. Finally, on project risk monitoring and control, the study recommends that risk be monitored and controlled more frequently to ensure success of IRS Project.

The management of IRS Project should keep up the project risk analysis protocols that are in place and try to improve by providing an effective linkage between the project risk identification process and the analysis since the latter is a natural progression from the former. It should also consider the use of more quantitative risk analysis tools such as critical path scheduling or cost estimating to boost the project risk analysis effort even further.

The management of IRS Project should continue improving its risk control measures given the dynamic nature of risks especially in health sector. It should also invest even more resources in monitoring and evaluation systems to enhance its level of preparedness.

Suggestion For Further Researcher

Given that the variation of 74% in implementation IRS are respectively due to risk management. This study further suggests a study on the factors that describe the remaining portion. In the light of this, the study recommends that future studies focus on the role of resources and organizational capabilities in influencing the implementation of project risk management. A study on; the effect of organizational resources and capabilities on project performance is therefore recommended. Future studies should also consider other projects other than IRS projects.

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