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Abstract

Risks in construction projects cannot be eliminated, however through proper risk management practices, the risks facing the construction projects can be minimized. The study entitled "Effect of project risk management on successful delivery of Vision City Project phase one" was guided by the following specific objectives: to find out the effect of project risk identification on successful delivery of Vision City project, to find out the effect of project risk response planning on successful delivery of Vision City project and to determine the effect of project risk monitoring and control on successful delivery of Vision City project. The study used descriptive research design and inferential statistics. The population of the study comprises of 188 employees of Vision City project and the sample size of the study is 188 employees of Vision City project. The study used universal sampling techniques because the sample size equal to the population of the study. Structured questionnaires were used to collect data and descriptive statistics using both quantitative and qualitative approach and correlation. Multiple linear regressions were used to analyse data. The findings revealed that project risk identification has significance positive role on successful delivery of Vision City Project as indicated by $\beta_1 = 0.592$, $p\text{-value} = 0.000 < 0.05$. Project risk response planning has significance positive role on successful delivery of Vision City Project as indicated by $\beta_2 = 0.146$, $p\text{-value} = 0.018 < 0.05$ and project risk monitoring and control has significance positive role on successful delivery of Vision City Project as indicated by $\beta_3 = 0.219$, $p\text{-value} = 0.000 < 0.05$. Risk identification had effect on successful delivery of Vision City project. Project begin with the unknown which means that risk identification has to be one of the most significant starting points, when using a risk management program. However, the risks have to be mitigated after they are identified to ensure that the effect on the organization is minimize. The study came into a conclusion that risk monitoring had important effects on successful delivery of Vision City project. Risk control/ loss control involves partnering with others to control the influence of risk or loss to the project. According to field data result, Vision City project as stated by its manager has reduced legal, labor, and other risks types by developing a joint venture with the main contractors whom participated in the execution of the project and they were all located in Rwanda. The study recommended that on project risk response planning, the study recommends involvement of all stakeholders with interest in

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building construction project and adoption of a wide range of responses to risks with emphasis on risk prevention. On project risk monitoring and control, the study recommends that risk be monitored and controlled more frequently to ensure success building construction project.

Keywords: *Project Risk Management, Successful Delivery, Vision City Project, Phase One, Rwanda.*

1. Introduction

In Rwanda, according to Auditor General (AG) report (2019) noted that some projects failed to achieve their objectives and the city of Kigali has put on notice owners of 153 abandoned properties to resume their construction projects. Construction projects can fail for a variety of reasons, but a common contributing factor is poor project risk management. This is evidenced by (Makombo, 2019) who stated that lack of risk management in the early stages of a project are the most significant obstacles to the risk management process in construction sector

Despite the efforts of project managers to mitigate risks, projects can still fail due to a variety of issues encountered at different stages of the project such as cost overruns, failed procurement, unavailability of funding, scope and inadequate project risk assessments which may result into not meeting project objectives, abandoning the project, or not meeting acceptance criteria after completion of the project.

Studies evidenced that project failure is characterized by inefficiency, poor productivity, lack of effective control and lack of project risk management. Adeleke, Nasidi and Bamgbade (2018) assessed the influence of project risk management practices on construction projects in Lagos and findings of the study revealed that risk management practices have a positive correlation with project success. Risk is frequently regarded in the construction industry as an incident that has an influence on project objectives, customer satisfaction, project sustainability and quality achieved. In search of ways to overcome project failure, it is contended that effective project risk management may lead to successful delivery of construction projects in Rwanda.

Vision City is the biggest Upscale suburb in Rwanda and it offers an exclusive, holistic and sustainable living experience. It combine smart, wellness features and green architecture to provide a wide range of sustainable luxury to its clients. The present study seeks to find out whether project risk identification, project risk response planning and project risk monitoring & control affect the successful delivery of Vision City. Therefore, this study seeks to analyze the effect of project risk management on successful delivery construction projects in Rwanda with reference to Vision City project phase one.

1.1 Objectives of the study

1.1.1 General objective

The general objective of the study is to analyze the effect of project risk management on successful delivery of Vision City project phase one.

1.1.2 Specific objectives

(i) To find out the effect of project risk identification on successful delivery of Vision City project.

(ii) To find out the effect of project risk response planning on successful delivery of Vision City project.

(iii) To determine the effect of project risk monitoring & control on successful delivery of Vision City project.

1.2 Research hypotheses

H₀₁: There is no significant effect of project risk identification on the successful delivery of Vision City project.

H₀₂. There is no significant effect of project risk response planning on successful delivery of Vision City project.

H₀₃. There is no significant effect of project risk monitoring & control on successful delivery of Vision City project.

2.1 Empirical Review

2.1.1 Project risk identification and successful delivery of construction project

Gateka (2021) conducted a study on the influence of risk management on Rabbit LTD project success in Rwanda, using the Rabbit Project as an example. The influence of risk management on Rabbit LTD project performance in Rwanda. Inferential data analysis was performed using multiple regression analysis to establish the relationship between the variables. Descriptive statistics were used because they allow the researcher to meaningfully describe the distribution of scores or measurements using few indices. In addition, the researcher distributed questionnaires to 80 responders. The stratified sampling methodology was utilized in the study because it is an incredibly productive type of sampling when the researcher desires to focus primarily on certain strata from the available population data. The acquired data was entered and analyzed using SPSS.

Descriptive statistics were used for the first and third objectives because they allow the researcher to meaningfully describe the distribution of scores or measurements using a few indices. For the second objective, inferential data analysis was performed using multiple regression analysis to establish the relationship between the variables. The overall mean of (M= 4.50, SD= 0.44) Perceptions of respondents on risk identification are rather high. Perceptions of respondents on Risk Analysis presented an overall mean of (M= 4.64, SD= 0.30) indicating it was practiced to a Large Extent. Perceptions of respondents on Risk Response overall mean of (M= 4.04, SD= 0.39) effect of risk response on Rabbit LTD projects success to a large extent. Perceptions of respondents on Risk Review on project success an overall mean of (M= 4.67, SD= 0.35) to a large extent. Perceptions of respondents on Risk Control on project success with an overall mean of (M= 4.71, SD= 0.44) meaning is to a large extent.

After analyzing the data collected from the workers of Rabbit Ltd and basing on the findings, the researcher concludes that there is a considerable contribution of Rabbit Project success of workers in Rwanda. The study sought to establish the effect of risk management on Rabbit ltd project success in Rabbit ltd in Rwanda. Research findings indicate that there is a strong relationship (R²= 0.84) between risk management and the project success of Rabbit project.

2.1.2. Project risk response planning and successful delivery of construction project

The empirical that assessed the risk Management and performance in construction projects in Rwanda by Munyangango (2022) employed a descriptive and correlation research design with a population of 64 respondents, including 15 supervision managers and 49 technical staff. Both primary and secondary data were utilized, and research instruments included questionnaires and interview guides. SPSS was used for data analysis, with correlation analysis revealing that risk management strategies had a high positive correlation (Pearson correlation values $> .5$) with construction project performance. The regression analysis for specific objectives demonstrated significant positive relationships: risk avoidance ($\beta_1 = .204$, $p = .017 < 0.05$), risk reduction ($\beta_2 = .163$, $p = .040 < 0.05$), risk transfer ($\beta_3 = .288$, $p = .002 < 0.05$), and risk retention ($\beta_4 = .296$, $p = 0.003 < 0.05$). The study concluded that effective risk management accelerates projects, prevents delays, and ensures adherence to budgetary allocations.

The study on the influence of risk management practices in Indian construction firms by Singh, Deep, and Banerjee (2017) employed a descriptive research design, utilizing questionnaires to investigate the influence of risk management practices in construction firms. The study included 152 respondents, comprising project managers, project teams, supervisors, and general managers from three construction firms. Findings revealed the use of risk prevention strategies such as safety inspections, safety systems, contingency plans, and detailed work plans. The study also identified alternative approaches for risk prevention. The research design and findings collectively emphasized the importance of risk prevention strategies in influencing construction project performance.

The research on risk management practices on construction industry performance in Nigeria by Ubani et al. (2019) adopted a case study research design to investigate the influence of risk management practices on the construction industry. The target population included contractors, clients, and consultants, with 84 respondents representing the sample size. Questionnaires were administered to 15 construction companies, and SPSS was used for data analysis. Findings revealed that construction firms adopted risk control strategies, including risk identification, quantification, and response in alignment with each firm's risk management policy. Adjusting plans, monitoring risks, making timely decisions, and keeping project managers informed were identified as effective risk control measures. The study concluded that implementing risk control measures enhances the performance of construction projects by ensuring adherence to time and budget constraints.

2.1.3 Project risk monitoring and control and successful delivery of construction project

Ubani *et al* (2019) conducted a study in Nigeria to investigate the influence of risk management practices on construction industry. The study adopted a case study research design and the study's target population consisted of contractors, clients and consultants in the construction industry. A total of 84 respondents represented the sampling size. For data collection the study adopted use of questionnaires that were administered to 15 construction companies. Data collected was then analyzed using SPSS and the findings of the study revealed that the construction firms adopted risk retention through active retention by taking self-insurance after evaluation of possible losses and costs of alternative ways of handling risks. The study findings further implicated that risk retention positively influences performance of the construction firms.

Sibomana, Shukla and Oduor (2019) conducted a study in Rwanda to investigate the effects of risk management methods on the performance of construction projects facilitated by RBSS

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multi-storey building projects. The study adopted a descriptive research design and a total of 291 project team located in 4 districts were the study’ population. The study used simple random sampling and the sample size was 169. Study employed structured questionnaires, documentary review and In-depth interviews for data collection and for data analysis the study adopted qualitative analysis techniques. Findings of the study revealed that the construction firm purchase insurance and have detailed crisis management plan and a disaster recovery plan in the case of hurricanes. The findings of the study revealed that risk retention positively influenced the performance of the construction projects.

Ali, Stewart and Qureshi (2017) conducted a study in Pakistan to investigate the risk management practices adopted in Construction industry. The study adopted a descriptive research design the study target population consisted of construction practitioners, construction managers and construction project team. Questionnaires were successfully administered to 40 respondents and data collected was statistically analyzed using descriptive statistics and inferential statistics. Findings of the study implicated that the risk retention strategies adopted by the construction company such as taking insurance and contingency plan influence completion of projects. The study concluded that risk retention policies have a strong positive influence on project performance.

2.2 Conceptual framework

The study is guided by the concept of project risk management and successful project. This research deals with two variables as independent variable: project risk management including project risk identification, project risk analysis, project risk response planning and project risk monitoring and control and dependent variable which is successful delivery project measured by successful within timelines, within budget and cost, project quality performance and stakeholder’s satisfaction.

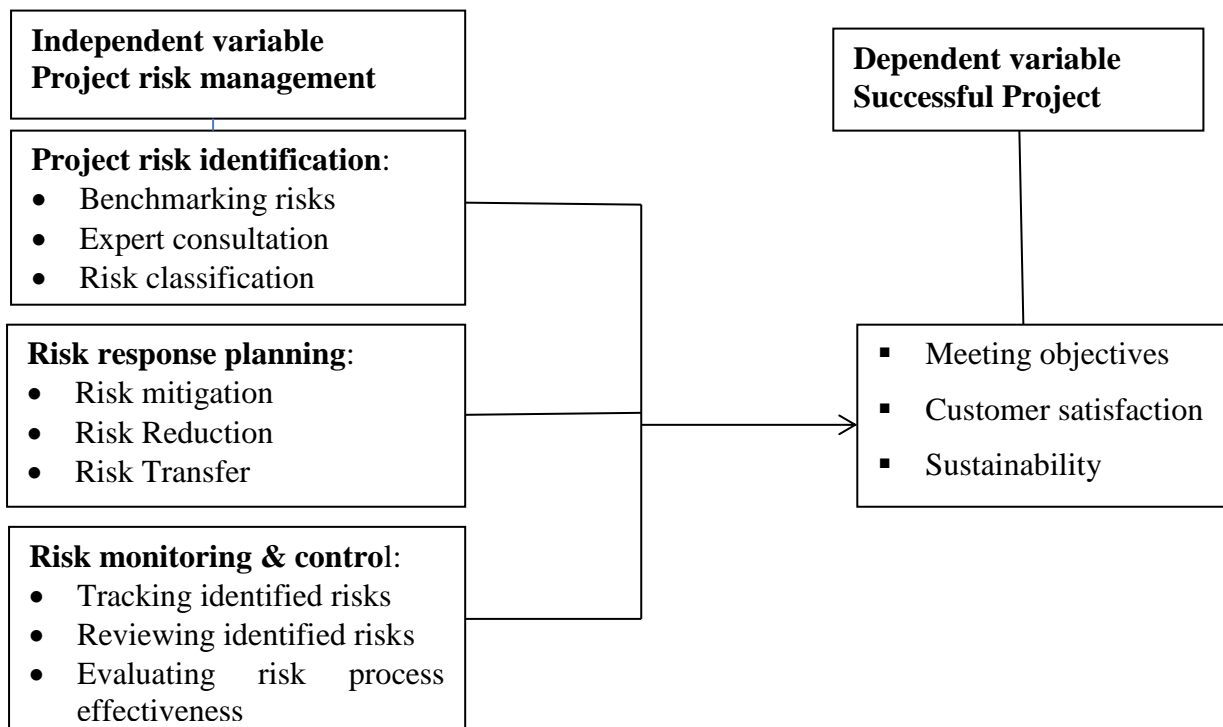


Figure 2.1: Conceptual framework

2.3 Research gap

From the foregoing review of relevant literature, it is evident that research around project risk management has been done but not in a comprehensive approach. All the literature reviewed indicates that previous researchers only concentrated on a few variables of Project risk management while this study covers additional important variables that were omitted by previous studies like, project risk identification and project risk response planning. This makes the study more comprehensive. From survey of relevant literature, it has been found out that there are few studies specific to Rwanda on the link of Project risk management and successful construction projects in the Country. This study therefore intends to fill these pertinent gaps in literature by studying the effect of project risk management on successful construction projects in Rwanda.

3. Materials and Methods

This research employs a mixed-method approach, combining descriptive and inferential research designs, to delve into the factors influencing project risk management and their subsequent effects on the successful delivery of construction projects, with a focus on Vision City Project in Rwanda. The descriptive design serves to delineate critical elements of project risk management, encompassing risk identification, response planning, and monitoring and control. Additionally, it aims to portray the level of successful delivery in terms of meeting objectives, ensuring quality, fostering sustainability, and satisfying customer expectations. Inferential statistics, including correlation analysis and multiple linear regressions, are then applied to establish relationships between project risk management practices and the successful delivery of Vision City Project.

The study encompasses a diverse population consisting of 4 UDL technical team members, 5 UDL Board members, 7 CCECC Management team members, 165 CCECC staff, and 12 Synergy team members. Adopting a census-sampling procedure, the entire target population of 188 Vision City Project employees is included in the study. Data collection instruments encompass structured questionnaires, utilizing a 5-point Likert rating scale, and interview guides distributed among the employees. Additionally, interview schedules are incorporated specifically for managers within the Vision City Project.

Data analysis encompasses both descriptive and inferential statistical methods. Descriptive statistics, including mean, frequency, and standard deviation, are employed to gauge the level of successful delivery. Multiple regression models are utilized to assess the impact of multiple predictor variables, such as risk identification, response planning, and monitoring & control, on the dependent variable, i.e., successful delivery. Ethical considerations are paramount, with explicit consent sought from participants, an emphasis on participant anonymity, and a commitment to address any concerns raised by participants.

The pilot study serves as a crucial step in establishing the validity and reliability of the measurement instruments. The Calculated Validity Index (CVI) surpasses the recommended value of 0.60, and the Cronbach's Alpha of 0.762 indicates the instruments' reliability. Subsequent data processing involves meticulous editing, coding, and presentation through tables. The study concludes with a robust ethical framework, underscoring the principles of voluntary participation, participant anonymity, and the confidential handling of collected information. The anticipated findings hold promise for enriching the understanding of how project risk management practices influence successful construction project delivery, offering practical implications for elevating performance not only in Vision City but also in analogous contexts.

4.1 Presentation of findings

4.1.1 Project risk identification and successful delivery of Vision City Project

The research sought to assess the perception of respondents on project risk identification and successful delivery of Vision City Project. The respondents were asked whether agreed or disagreed with the statements regarding project risk identification and successful delivery of Vision City Project. The response was as transposed in Table 4.4 below:

Table 4.1: Project risk identification and successful delivery of Vision City Project

	SD		D		N		A		SA		Mean	St. dev
	fi	%	Fi	%	fi	%	Fi	%	fi	%		
Risk classification technique has enabled our project managers to identify the risks in terms of potentiality to minimize risk handling and maximize project time	24	12.8	29	15.4	2	1.1	25	13.3	108	57.4	3.87	1.53
Identifying risk type at early stage presents a clear path to managing various risks even the unforeseen risks.	5	2.7	45	23.9	17	9.0	39	20.7	82	43.6	3.79	1.30
Early identification of both internal and external sources of risk lead to early identification of risks.	2	1.1	22	11.7	8	4.3	55	29.3	101	53.7	4.23	1.05
There is a standardized document for risk identification processes	2	1.1	18	9.6	2	1.1	52	27.7	114	60.6	4.37	.98
Risk identification processes is fully integrated in the project processes	1	0.5	28	14.9	7	3.7	82	43.6	70	37.2	4.02	1.03
There is always brainstorming, meetings and interviewing of project team to identify potential risks	4	2.1	4	2.1	6	3.2	49	26.1	125	66.5	4.53	.84
The project design is made in such a way to identify risks in time	0	0.0	18	9.6	10	5.3	18	9.6	142	75.5	4.51	.97
Pilot sites are always carried out to identify potential risks in time	4	2.1	12	6.4	16	8.5	24	12.8	132	70.2	4.43	1.03
Overall Mean											4.21	1.09

About project risk identification and successful delivery project, the results in Table 4.1 revealed that 12.8% of respondents strongly disagreed, 15.4% of respondents disagreed and 1.1% of respondents were neutral whereas 13.3% of respondents agreed and the majority 57.4% of respondents strongly agreed that risk classification technique has enabled our project managers to identify the risks in terms of potentiality to minimize risk handling and maximize project time with very high mean of 3.87 which implies that there is strong evidence of existing of fact and standard deviation of 1.53 implies heterogeneity of responses.

The results indicate that 2.7% of respondents strongly disagreed, 23.9% of respondents disagreed and 9% of respondents were neutral whereas 20.7% of respondents agreed and the majority 43.6% of respondents strongly agreed that identifying risk type at early stage presents a clear path to managing various risks even the unforeseen risks with very high mean of 3.79 which implies that there is strong evidence of existing of fact and standard deviation of 1.30 implies heterogeneity of responses.

The results indicate that 1.1% of respondents strongly disagreed, 11.7% of respondents disagreed while 4.3% of respondents were netral whereas 29.3% of respondents agreed and the majority 53.7% of respondents strongly agreed that early identification of both internal and external sources of risk lead to early identification of risks with very high mean of 4.23 which implies that there is strong evidence of existing of fact and standard deviation of 1.05 implies heterogeneity of responses.

The results indicate that 1.1% of respondents strongly disagreed, 9.6% of respondents disagreed while 1.1% of respondents were neutral and 27.7% of respondents agreed and the majority 60.6% of respondents strongly agreed that there is a standardized document for risk identification processes with very high mean of 4.37 which implies that there is strong evidence of existing of fact and standard deviation of 0.98 implies heterogeneity of responses.

The results indicate that 0.5% of respondents strongly disagreed, 14.9% of respondents disagreed, 3.7% of respondents were neutral whereas the majority 43.6% of respondents agreed and 37.2% of respondents strongly agreed that risk identification processes is fully integrated in the project processes with very high mean of 4.02 which implies that there is strong evidence of existing of fact and standard deviation of 0.1.03 implies heterogeneity of responses.

The results indicate that 2.1% of respondents strongly disagreed, 2.1% of respondents disagreed while 3.2% of respondents were neutral whereas 26.1% of respondents agreed and the majority 66.5% of respondents strongly agreed that there is always brainstorming, meetings and interviewing of project team to identify potential risks with very high mean of 4.53 which implies that there is strong evidence of existing of fact and standard deviation of 0.84 implies heterogeneity of responses.

The results indicate that 9.6% of respondents disagreed while 5.3% of respondents were neutral and 9.6% of respondents agreed and the majority 75.5% of respondents strongly agreed that the project design is made in such a way to identify risks in time with very high mean of 4.51 which implies that there is strong evidence of existing of fact and standard deviation of 0.97 implies heterogeneity of responses.

The results indicate that 2.1% of respondents strongly disagreed, 6.4% of respondents disagreed, 8.5% of respondents were neutral whereas 12.8% of respondents agreed and the majority 70.2% of respondents strongly agreed that pilot sites are always carried out to identify potential risks in time with very high mean of 4.43 which implies that there is strong evidence of existing of fact and standard deviation of 0.1.03 implies heterogeneity of responses.

The overall view of respondents on project risk identification and successful delivery of Vision City Project was excellent with mean score of 4.21 and the standard deviation of 1.09 which implies that there is strong evidence of existing of fact and heterogeneity response. Risk identification is very crucial in project and may determine the level of project performance. A study by Reddy (2015) in British Airways Authority confirms that identification of the risks is most significant for the contractor to receive alert and prepare in advance uncertainty that can occur. Without proper identification management of risk is difficult and impossible to manage risk, most uncertainties occur due to lack of appropriate identification. The risk identification was conceptualised by Matere (2016) as ranking of risks according to their severity. Risk identification is therefore a project manager's all-time task through which he has to identify the risk from project initiation to project closing stage given the fact that risk could be anywhere and anytime. According to Zou *et al.* (2017), identification of risk is considered to be the opening point of the risk management process.

4.1.2 Risk response planning and successful delivery of Vision City Project

The research sought to assess the perception of respondents on risk response planning. The respondents were asked whether agreed or disagreed with the statements regarding risk response planning. The response was as transposed in Table 4.2 below:

Table 4.2: Risk response planning and successful delivery of Vision City Project

	SD		D		N		A		SA		Mean	St. dev
	fi	%	Fi	%	fi	%	Fi	%	fi	%		
The project team always plans for new risks before they occur	0	0.0	6	3.2	4	2.1	40	21.3	138	73.4	4.65	.68
The project ensures that there is adherence to technical specifications to reduce cost and time overruns	0	0.0	30	16.0	0	0.0	22	11.7	136	72.3	4.40	1.10
Project work is normally contracted to third parties and agreement on key performance targets executed	14	7.4	16	8.5	4	2.1	28	14.9	126	67.0	4.26	1.28
There are dispute resolution mechanisms (contracting wording, avoid ambiguity) by use of dispute clauses in the contracts	4	2.1	22	11.7	8	4.3	30	16.0	124	66.0	4.32	1.13
The project management has a viable contingency plan in case of natural disaster.	22	11.7	22	11.7	2	1.1	26	13.8	116	61.7	4.02	1.47
The organization has put to practice decision support criteria when handling problems with limited options	4	2.1	58	30.9	10	5.3	52	27.7	64	34.0	3.61	1.29
Overall Mean											4.21	1.15

Source: Primary data, 2023

About project risk response planning and successful delivery project, the findings from the table 4.2 revealed that 3.2% of respondent disagreed and 2.1% of respondents were neutral whereas 21.3% of respondents agreed and the majority 73.4% of respondents strongly agreed that the project team always plans for new risks before they occur with very high mean score of 4.65 and standard deviation of 0.68 which implies that there is strong evidence of existing of fact and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The findings show that 16% of respondent disagreed whereas 11.7% of respondents agreed and the majority 72.3% of respondents strongly agreed the project ensures that there is adherence to technical specifications to reduce cost and time overruns with high mean score of 4.40 and standard deviation of 1.10 which implies that the fact appear more and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The findings revealed that 7.4% of respondents strongly disagreed, 8.5% of respondent disagreed and 2.1% of respondents were neutral whereas 14.9% of respondents agreed and the majority 67% of respondents strongly agreed that project work is normally contracted to third parties and agreement on key performance targets executed with high mean score of 4.26 and standard deviation of 1.28 which implies that the fact appear more and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The findings revealed that 2.1% of respondents strongly disagreed and 11.7% of respondent disagreed and 4.3% of respondents were neutral whereas 16% of respondents agreed and the majority 66% of respondents strongly agreed that there are dispute resolution mechanisms (contracting wording, avoid ambiguity) by use of dispute clauses in the contracts with high mean score of 4.32 and standard deviation of 1.13 which implies that the fact appear more and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The findings show that 11.7% of respondents strongly disagreed, 11.7% of respondent disagreed and 1.1% of respondents were neutral whereas 13.8% of respondents agreed and the majority 61.7% of respondents strongly agreed that the project management has a viable contingency plan in case of natural disaster with high mean score of 4.02 and standard deviation of 1.47 which implies that the fact appear more and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The findings revealed that 2.1% of respondents strongly disagreed, 30.9% of respondents disagreed and 5.3% of respondents were neutral whereas 27.7% of respondents agreed and the majority 34% of respondents strongly agreed that the organization has put to practice decision support criteria when handling problems with limited options with high mean score of 3.61 and standard deviation of 1.29 which implies that the fact appear more and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The overall views on the project risk response planning and successful delivery project was at high extent with very high mean score of 4.21 and standard deviation of 1.15 which implies that there is strong evidence of existing of fact that project risk response planning and successful delivery project was at very high extent and heterogeneity responses. The risk response plan establishes the strategy for controlling project risk and specifies the methods, procedures, means, and tools to be used. Risks are not trivial, and if they are not managed properly, they can have a significant influence on the project's goals. When an event occurs and its impact is felt, it can be a source of concern. This is evidenced by Aimable (2015) who stated that risk avoidance assisted RSSB in ensuring quality in multi-store constructions by 29 percent, while risk avoidance assisted them in managing resources by 41 percent, and risk avoidance assisted them in ensuring project plan by 11 percent. Risk transfer is a mechanism for allocating the risk of a commercial contract's performance among contracting parties

4.1.3 Monitoring and control and successful delivery of Vision City Project

The research sought to assess the perception of respondents on monitoring and control. The respondents were asked whether agreed or disagreed with the statements regarding monitoring and control. The response was as transposed on Table 4.3 below:

Table 4.3: Monitoring and control and successful delivery of Vision City Project

	SD		D		N		A		SA		Mean	St. dev
	fi	%	Fi	%	fi	%	Fi	%	fi	%		
There is risk audits being carried at every stage of the project	20	10.6	22	11.7	2	1.1	22	11.7	122	64.9	4.09	1.45
There is continuous risk assessments to reduce cost overruns	8	4.3	39	20.7	9	4.8	39	20.7	93	49.5	3.90	1.32
There is continuous risk trend analysis to reduce time overruns	6	3.2	25	13.3	12	6.4	52	27.7	93	49.5	4.07	1.17
The project carries out external and internal investigation of risks at every stage of the project	3	1.6	19	10.1	10	5.3	48	25.5	108	57.4	4.27	1.05
There is continuous cost revisions to reduce cost overruns	0	0.0	30	16.0	6	3.2	86	45.7	66	35.1	4.00	1.01
There is continuous schedule revisions to reduce time overruns	1	0.5	12	6.4	4	2.1	39	20.7	132	70.2	4.54	.86
There is forecasting to ensure compliance with the time and cost requirements	0	0.0	8	4.3	2	1.1	28	14.9	150	79.8	4.70	.70
Overall Mean											4.22	1.08

Source: Primary data, 2023

About monitoring and control and successful delivery of Vision City Project, the findings from the table 4.6, showing that 10.6% of respondents strongly disagreed, 11.7% of respondent disagreed and 1.1% of respondents were neutral whereas 11.7% of respondents agreed and the majority 64.9% of respondents strongly agreed that there is risk audits being carried at every stage of the project with very high mean score of 4.09 and standard deviation of 1.45 which implies that there is strong evidence of existing of fact and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The findings show that 4.3% of respondents strongly disagreed, 20.7% of respondent disagreed and 4.8% of respondents were neutral whereas 20.7% of respondents agreed and the majority 49.5% of respondents strongly agreed there is continuous risk assessments to reduce cost overruns with high mean score of 3.90 and standard deviation of 1.32 which

implies that the fact appear more and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The findings revealed that 3.2% of respondents strongly disagreed, 13.3% of respondent disagreed 6.4% of respondents were neutral whereas 27.7% of respondents agreed and the majority 49.5% of respondents strongly agreed that there is continuous risk trend analysis to reduce time overruns with high mean score of 4.07 and standard deviation of 1.17 which implies that the fact appear more and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The findings revealed that 0.5% of respondents strongly disagreed, 6.4% of respondent disagreed and 2.1% of respondents were neutral whereas 20.7% of respondents agreed and the majority 70.2% of respondents strongly agreed that the project carries out external and internal investigation of risks at every stage of the project with high mean score of 4.27 and standard deviation of 1.05 which implies that the fact appear more and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The findings revealed that 16% of respondent disagreed and 3.2% of respondents were neutral whereas 45.7% of respondents agreed and the majority 35.1% of respondents strongly agreed that there is continuous cost revisions to reduce cost overruns with high mean score of 4.00 and standard deviation of 1.01 which implies that the fact appear more and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The findings revealed that 0.5% of respondents strongly disagreed, 6.4% of respondent disagreed and 2.1% of respondents were neutral whereas 20.7% of respondents agreed and the majority 70.2% of respondents strongly agreed that there is continuous schedule revisions to reduce time overruns with high mean score of 4.54 and standard deviation of 0.86 which implies that the fact appear more and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The findings revealed that 4.3% of respondent disagreed and 1.1% of respondents were neutral whereas 14.9% of respondents agreed and the majority 79.8% of respondents strongly agreed that there is forecasting to ensure compliance with the time and cost requirements with high mean score of 4.70 and standard deviation of 0.70 which implies that the fact appear more and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The overall views on the project risk monitoring and control and successful delivery project were at high extent with very high mean score of 4.31 and standard deviation of 1.08 which implies that there is strong evidence of existing of fact that of project risk monitoring and control and successful delivery project was at very high extent and heterogeneity responses. The study concurs with Ubani et al (2015) who stated that by adopting risk control measures the construction company's performance of projects is enhanced through working within the time limit and budget of projects. He stated that all of the construction firms adjusted plans and scope of work in order to counter risk effects, monitoring risk making timely decisions and keeping project managers informed about possible risk. The study concluded that by adopting risk control measures the construction company's performance of projects is enhanced through working within the time limit and budget of projects

4.1.4 Level of successful delivery of Vision City Project

The research sought to assess the perception of respondents on the level of successful delivery of Vision City Project. The respondents were asked whether agreed or disagreed with the statements regarding the level of successful delivery of Vision City Project The response was as transposed on Table 4.4 below:

Table 4.4: Level of successful delivery of Vision City Project

	SD		D		N		A		SA		Mean	St. dev
	fi	%	Fi	%	fi	%	Fi	%	fi	%		
Project deliverable always fulfill the customer requirements	24	12.8	22	11.7	2	1.1	26	13.8	114	60.6	3.98	1.50
The final output of project is of the desired quality	4	2.1	58	30.9	12	6.4	42	22.3	72	38.3	3.64	1.32
Project meet its intended goals and objectives	2	1.1	32	17.0	6	3.2	60	31.9	88	46.8	4.06	1.13
Project is completed within the set targets to ensure sustainability	0	0.0	30	16.0	2	1.1	60	31.9	96	51.1	4.18	1.06
Benefits from the project are enjoyed by most beneficiaries	0	0.0	40	21.3	2	1.1	132	70.2	14	7.4	3.64	.90
Project responds to business value achieved	2	1.1	0	0.0	2	1.1	50	26.6	134	71.3	4.67	.61
Overall Mean											4.02	1.08

Source: Primary data, 2023

About the level of successful delivery of Vision City Project, the findings from the table 4.4, showing that 12.8% of respondents strongly disagreed, 11.7% of respondent disagreed and 1.1% of respondents were neutral whereas 13.8% of respondents agreed and the majority 60.6% of respondents strongly agreed that project deliverable always fulfill the customer requirements with very high mean score of 3.98 and standard deviation of 1.50 which implies that there is strong evidence of existing of fact and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The findings show that 2.1% of respondents strongly disagreed, 30.9% of respondent disagreed and 6.4% of respondents were neutral whereas 22.3% of respondents agreed and the majority 38.3% of respondents strongly agreed the final output of project is of the desired quality with high mean score of 3.64 and standard deviation of 1.32 which implies that the fact appear more and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The findings revealed that 1.1% of respondents strongly disagreed, 17% of respondent disagreed and 3.2% of respondents were neutral whereas 31.9% of respondents agreed and the majority 46.8% of respondents strongly agreed that project meet its intended goals and objectives with high mean score of 4.06 and standard deviation of 1.13 which implies that the fact appear more and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The findings revealed that 16% of respondent disagreed and 1.1% of respondents were neutral whereas 31.9% of respondents agreed and the majority 51.1% of respondents strongly agreed that project is completed within the set targets to ensure sustainability with high mean score of 4.18 and standard deviation of 1.06 which implies that the fact appear more and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The findings revealed that 21.3% of respondents disagreed and 1.1% of respondents were neutral whereas 7.4% of respondents agreed and the majority 70.2% of respondents strongly agreed that Benefits from the project are enjoyed by most beneficiaries with high mean score of 3.64 and standard deviation of 0.90 which implies that the fact appear more and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The findings show that 1.1% of respondents strongly disagreed and 1.1% of respondents were neutral whereas 26.6% of respondents agreed and the majority 71.3% of respondents strongly agreed that project responds to business value achieved with high mean score of 4.67 and standard deviation of 0.61 which implies that the fact appear more and respondents had large variation in responses from the mean which implies that heterogeneity responses.

The overall views on the level of successful delivery project at high extent with very high mean score of 4.02 and standard deviation of 1.08 which implies that there is strong evidence of existing of fact that successful delivery project was at very high extent and heterogeneity responses.

4.2 Inferential statistics

This section helps the researcher to establish the relationship between project risk management and successful delivery of Vision City Project and to establish the effect of project risk management and successful delivery of Vision City Project. To achieve these objectives Pearson correction method and multiple linear regressions were used.

4.2.1 Correlations analysis

This section of the study sought to establish the significance, direction and strength of the relationship between successful delivery of Vision City Project which is dependent variable and project risk management such as project risk identification, project risk response planning and project monitoring and control as independent variable. The structuring of the questionnaire in a five-point Likert scale enabled the responses to be computed into composite scores of their means for all the study variables. The composite mean scores for the independent variables were correlated with the composite mean scores for the dependent variable. Pearson correlation coefficient was utilized in examining the relationship.

Table 4.5 Correlations analysis

	X1	X2	X3	Y
X1= Project identification Pearson Correlation	1			
X2= Project risk response planning Pearson Correlation	.708**	1		
X3= Project risk monitoring & control Pearson Correlation	.669**	.558**	1	
Y = Successful delivery of Vision City Project Pearson Correlation	.864**	.688**	.697**	1
	Sig. (2-tailed)	.000	.000	.000

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

Source: Primary data, 2023

The results from the table 4.5 show that there is high positive significant relationship between project risk identification and successful delivery of Vision City Project at $r = 0.864^{**}$; $p\text{-value} = 0.000 < 0.01$.

This means that project risk identification had a positive role on successful delivery of Vision City Project. The results from the table 4.8 revealed that there is high positive significant relationship between project risk response planning and successful delivery of Vision City Project at $r = 0.688^{**}$; $p\text{-value} = 0.000 < 0.01$. This means that project risk response planning had a positive role on successful delivery of Vision City Project The results indicate that there is moderate positive significant relationship between project risk monitoring & control and successful delivery of Vision City Project at $r = 0.697^{**}$; $p\text{-value} = 0.000 < 0.01$. This means that project risk monitoring & control had a positive role on successful delivery of Vision City Project.

4.2.2 Multiple linear regression analysis

With this test, it was assumed that the kind of relationship that exists between independent and dependent variables is linear. To ascertain this, and to know the extent to which the predictors affect successful delivery of Vision City Project, regression test was carried out; the predictors in this case include; project risk identification, project risk response planning and project monitoring and control while dependent variable is successful delivery of Vision City Project. The findings are presented in table below:

Table 4.6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.883 ^a	.780	.776	.27562

a. Predictors: (Constant), X3= Project risk monitoring & control, X2= Project risk response planning, X1= Project risk identification

Source: Primary data, 2023

<https://doi.org/10.53819/81018102t2319>

Findings established an R-squared value of .78. This meant that when all the independent variables were taken together, they gave an R-squared value of 0.78(78%). Thus, the independent variables (project risk identification, project risk response planning and project monitoring and control) taken together could account for up to 78% of the total variation in successful delivery of Vision City Project at 95% of confidence interval. The remaining 22% in the variation in successful delivery of Vision City Project could be explained by other factors not in the model.

Table 4.7: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	49.426	3	16.475	216.871	.000 ^b
	Residual	13.978	184	.076		
	Total	63.404	187			

a. Dependent Variable: Y = Successful delivery of Vision City Project

b. Predictors: (Constant), X3= Project risk monitoring & control, X2= Project risk response planning, X1= Project risk identification.

Source: Primary data, 2023

In order to examine on whether the data was good fit for regression model, the ANOVA was undertaken and the data being good fit for data was tested at 5% level of significance. Since from the Table 4.7 indicated an F-value of 216.871 is larger than the critical $F(v_1=4, v_2=184) = 2.65$ and also because p-value calculated =0.000 is less than Critical p-value =0.05 level of significant. Therefore, this implies that project risk management such as project risk identification, project risk response planning and project risk monitoring and control as independent variable are good predictors of successful delivery of Vision City Project.

Table 4.8: Regression coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.060	.198		.303	.762
	X1= risk identification	.592	.051	.648	11.676	.000
	X2= Project risk response planning	.146	.061	.119	2.389	.018
	X3= Project risk monitoring & control	.219	.052	.198	4.201	.000

a. Dependent Variable: Y = Successful delivery of Vision City Project

The equation ($Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$) becomes: successful delivery of Vision City Project = $0.06 + 0.592X_1 + 0.146X_2 + 0.219X_3$

The regression equation above has established that taking all factors into account (project risk identification, project risk response planning and project risk monitoring and control) constant at zero, successful delivery of Vision City Project will be 0.060.

The regression results revealed that project risk identification has significance positive role on successful delivery of Vision City Project as indicated by $\beta_1 = 0.592$, $p\text{-value} = 0.000 < 0.05$. The implication is that an increase of one unit in project risk identification would lead to an increase in the successful delivery of Vision City Project by 0.592 units.

The regression results revealed that project risk response planning has significance positive role on successful delivery of Vision City Project as indicated by $\beta_2 = 0.146$, $p\text{-value} = 0.018 < 0.05$. The implication is that an increase of one unit in project risk response planning would lead to an increase in successful delivery of Vision City Project by 0.146 units.

The regression results revealed that project risk monitoring and control has significance positive role on successful delivery of Vision City Project as indicated by $\beta_3 = 0.219$, $p\text{-value} = 0.000 < 0.05$. The implication is that an increase one unit in project risk monitoring and control would lead to an increase in successful delivery of Vision City Project by 0.219 units.

4.3 Hypothesis testing

In order to test the study's five formulated hypotheses, the t statistic that tests whether a B value is significantly different from zero ($H_0: \beta = 0$). The study computed simple regression analysis to test the study hypothesis. For $p < 0.05$, H_0 was rejected; and H_1 accepted was considered (refer to Table 4.11)

4.3.1 Testing the first Hypothesis

Hypothesis one states that there is no significant effect of project risk identification on successful delivery of Vision City Project. $H_{01}: \beta_1 = 0$. Reject the null hypothesis if p-value (Sig. value) is less than 0.05. As evident in Table 4.11, the unstandardized beta value for project risk identification was significantly greater than zero ($\beta_1 = 0.592$, $p\text{-value} = 0.000 < 0.05$). Subsequently, the null hypothesis was rejected because $p\text{-value} = 0.000$ was less than 5% level of significant. Hence, project risk identification had a statistically significant influence on successful delivery of Vision City Project.

4.3.2 Testing the second Hypothesis

Hypothesis two states that there is no significant effect of project risk response planning on successful delivery of Vision City Project. $H_{02}: \beta_2 = 0$. Reject the null hypothesis if p-value (Sig. value) is less than 0.05. As evident in Table 4.11, the unstandardized beta value for project risk response planning was significantly greater than zero ($\beta_2 = 0.146$, $p = 0.018 < 0.05$). Subsequently, the null hypothesis was rejected because $p\text{-value} = 0.000$ was less than 5% level of significant. Hence, project risk response planning had a statistically significant influence on successful delivery of Vision City Project.

4.3.3 Testing the third Hypothesis

Hypothesis three states that there is no significant effect of project monitoring and control on successful delivery of Vision City Project $H_{03}: \beta_3 = 0$. Reject the null hypothesis if p-value (Sig. value) is less than 0.05. As evident in Table 4.11, the unstandardized beta value for project monitoring and control was significantly greater than zero ($\beta_3 = 0.292$, $p\text{-value} = 0.00 < 0.05$). Subsequently, the null hypothesis was rejected because $p\text{-value} = 0.018$ was

less than 5% level of significant. Hence, project monitoring and control had a statistically significant effect on successful delivery of Vision City Project.

4.4 Analysis and discussion of findings

Based on the findings on project risk identification influences the successful delivery of Vision City Project revealed that the overall view of respondents on project risk identification and successful delivery of Vision City Project was excellent with mean score of 4.21 and the standard deviation of 1.09 which implies that there is strong evidence of existing of fact and heterogeneity response. The result from interview confirms that the main risk identified were design and procurements risks where they stated in order to catchup with delays leading to stack in activities, acceleration and overloading resources to meet deadlines are undertaken. Stakeholder management was also one of the risks as given the project's nature and its high public profile, it resulted in interferences as multiple stakeholders involved or would like to influence the outcome of the project. They also stated that change in client team and especially decision makers which could delay decisions and affect the progress. This also affected the clarity. In this context, risk identification has been noted to ensure that there is effective risk management and forms a basis for its analysis and control (Gitau, 2015). The results indicated a strong positive linear relationship between successful delivery of New Vision Project and risk identification, $r = 0.592$; $p < 5\%$.

Based on the findings revealed that 73.4% of respondents stated that the project team always plans for new risks before they occur and 72.3% of respondents strongly agreed the project ensures that there is adherence to technical specifications to reduce cost and time overruns. The findings revealed that project risk response affects the successful delivery of Vision City Project. Project manager also was asked about the effect of project risk plan response on successful delivery of New Vision project; he stated that “ the project risk plan affects successful delivery of New Vision project” and he continued by saying that: “The connection among the project risk management plan and successful delivery of New Vision project is that project risk management plan facilitates the efficient response to risks on project for a good project's performance and again the project risk plan relates to the successful delivery of New Vision project helps to respond on time and efficiently any risk on the project”. This is supported Ubani, Amade, Benefidct, Aku, Agwu and Okogbuo (2015) who in their study on project risk management issues and project performance concluded that project management practices are critical for peak project performance. The study indicated that organizations adjust plans and scope of work in order to counter risk effects, monitoring risks making timely decisions and keeping project managers informed about possible risk contributes to positive project performance.

The findings revealed that project risk monitoring and control and successful delivery project was at high extent with very high mean score of 4.31 and standard deviation of 1.08 which implies that there is strong evidence of existing of fact that of project risk monitoring and control and successful delivery project was at very high extent and heterogeneity responses. This is confirmed by the regression results revealed that project risk monitoring and control has significance positive role on successful delivery of Vision City Project as indicated by $\beta_3 = 0.219$, $p\text{-value} = .000 < 0.05$. This shows that risk control significantly and to a great extent affected the successful delivery of Vision City Project. Similarly, Okumu and Wanjira (2017) in their study on risk mitigation strategies and performance of insurance industry in Kenya established that risk control strategies such as risk control meetings, use of quality assurance, signed contracts and use of contingency positively influenced performance of firms.

Most of the construction projects are having their own risks and loss factors involved, and hence in order to control such damages, they have to use strategies to control those risk and loss factors related to project. For construction projects, there are many risk and loss facets as well as complicated relations, which will influence it. The managers stated that the complicated relations include direct, indirect, obvious, implicit or unpredictable. What's more, the various risk factors will cause different severity of the consequences. If you do not consider these risk factors, or ignore the major factors, they all will cause damage because of decision-making errors. Quality targets, time targets, cost targets are the three objectives of project management. The manager stated that the face the risk of design and procurement

Change in client team and especially decision makers who could delay decisions and affect the progress. This is also affected the clarity of the project team in the understanding the clients (RSSB) brief and objectives. Cost consultant not bringing the client through the cost plan journey so that the client is aware on the cost movements as the design evolves so that the clients go to know really, they are off budget by the time the tenders came out. In the construction project, the time objective is closely and inseparably related to the cost objective. The findings concur with Ubani *et al* (2019) who concluded that by adopting risk control measures the construction company's performance of projects is enhanced through working within the time limit and budget of projects.

Based on the findings of project risk management affect successful delivery of New Vison project. This is confirmed by the overall mean score of 4.02 and standard deviation of 1.08 which implies that there is strong evidence of existing of fact that project risk management affect successful delivery of New Vison project. The variable coefficients indicate that the relationship between risk management practices identified and successful delivery of New Vison project was positive and significant. These findings are similar to those by Aimable, Shukla and Oduor (2015) who on their study on effects of risk management methods on project performance in Rwandan Construction industry. The researchers indicated that detailed that risk management practices have a significant and positive effect on project performance.

5.1 Conclusion

In conclusion, this study came into a conclusion that risk identification had effect on successful delivery of Vision City project. The overall views on the level of successful delivery project at high extent with very high mean score of 4.02 and standard deviation of 1.08 which implies that there is strong evidence of existing of fact that of policy and legal framework was at very high extent and heterogeneity responses. Risk control/ loss control involves partnering with others to control the influence of risk or loss to the project. According to field data result, Vision City project as stated by its manager has reduced legal, labor, and other risks types by developing a joint venture with the main contractors whom participated in the execution of the project and they were all located in Rwanda. However, the risks have to be mitigated after they are identified to ensure that the effect on the organization is minimized. This variable was determined to have the greatest impact on the performance of infrastructure projects.

The study came into a conclusion that risk monitoring had important effects on successful delivery of Vision City project. To this point, respondents were asked within the criteria (project deliverable always fulfill the customer requirements, project with a desired quality, project responds to business value achieved and benefits from the project are enjoyed by most beneficiaries) which criteria they consider as measures of risk control vis-à-vis to the

successful delivery of Vision City project. Their views and findings to the approach were positive hence rated 60.6% of respondents strongly agreed that project deliverable always fulfill the customer requirements 38.3% of respondents strongly agreed the final output of project is of the desired quality, 46.8% of respondents strongly agreed that project meet its intended goals and objectives. The 51.1% of respondents strongly agreed that project is completed within the set targets to ensure sustainability, 70.2% of respondents strongly agreed that benefits from the project are enjoyed by most beneficiaries and 71.3% of respondents strongly agreed that project responds to business value achieved.

5.2 Recommendations

The study emphasizes the critical impact of risk identification on the successful delivery of Vision City project, urging management to implement cost-effective measures for timely identification to safeguard project performance. For risk response planning, the recommendation is broad stakeholder involvement and the adoption of diverse response strategies, prioritizing prevention. Regarding risk monitoring and control, the study suggests frequent monitoring to ensure project success. Overall, the study advocates prioritizing risk identification, integrating risk strategy into business planning, adopting robust risk planning, control, and monitoring practices at Vision City Project.

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