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The Impact of Project Evaluation and Analysis on Project Success: A Case Study of Ugi Technologies, Lagos, Nigeria

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Abstract


Evaluation and analysis of a project are essential processes; they help project managers determine if a project was a success or failure, and how to improve subsequent projects through the areas of pains and gains noted in the evaluated projects. This study assessed the effect of project evaluation and analysis on project success using UGI Technologies in Lagos, Nigeria. The study hypothesized that budget and Budgetary Control (BC) do not affect the specification of projects and that the socio-economic effect of projects does not affect clients or Customer Satisfaction (CS). This study adopted a survey research design and the simple random sampling technique. 108 staff of UGI Technologies, Lagos, Nigeria, currently working in the firm as project managers, product owners, procurement officers and developers formed the population for the study. Taro Yamane was used to reduce the population to a manageable sample size of 85, data was collected using a structured questionnaire. 85 copies of questionnaires were given out to respondents and 85 were returned, indicating a 100% response rate. Descriptive and inferential statistical analysis using IBM SPSS was done on the data obtained from the research instrument. The findings revealed that there were significant relationships between budget and BC and project specification ($R = 0.120$; $P < 0.05$), and the socio-economic effects of projects and customers' satisfaction ($R = 0.556$; $P < 0.05$). Therefore, findings show that project analysis and evaluation are key to the success of projects and should be observed throughout the project lifecycle.

Keywords: Budget, Budgetary control, Customer satisfaction, Project analysis, Project evaluation.

1 | Introduction

1.1 | Background to the Study

Evaluation and analysis of a project are essential processes in project management. They assist project managers in determining if a project was a success or failure [1] and how to improve subsequent projects through the areas of pains and gains noted in the evaluated projects [2]. Evaluating a project entails

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determining how well a project met its goals, objectives, and other criteria during its execution. On the other hand, project analysis entails investigating the aspects of the project at hand, including its components, methods, and results, to determine its positives and negatives [3], [4].

An initial Cost-Benefit Analysis (CBA) of a proposed capital investment is a simple way to define project analysis. The purpose of this type of analysis is to ensure the most effective use of limited resources across a range of alternative investment opportunities to accomplish some predetermined goals [5], [6].

Project evaluation is the most specialised planning procedure, and it entails the methodical, objective, and complete evaluation of a development programme for particular projects and commodities [7]. It is the process of analysing the rate of returns on a project, as well as “the project's social profitability and any side effects it may have on the growth rate of population, employment labour, and management training on the rate of reinvestment” [5]. Evaluation and analysis of projects have received a significant amount of attention in the published research. To review and analyse projects, researchers have created a wide variety of frameworks, methodologies, and strategies [8], [9].

The Logical Framework Approach (LFA) is one example of this framework [10]. Though LFA is often used in development projects, the LFA methodology is a strategy that is both methodical and collaborative, and it assists project managers in determining the project's goals, indicators, and targets, in addition to the risks and assumptions that are involved with the project. Creating a monitoring and assessment strategy for the project is another thing that might be helpful [8], [11].

The Results-Based Management (RBM) approach is yet another method that is often used for the assessment of projects [12]. RBM is a management technique that emphasizes the accomplishment of outcomes rather than the management of activities and inputs. It entails defining goals in a way that is both specific and quantifiable, coming up with a strategy to accomplish those objectives, and then monitoring and assessing progress made towards those results [9], [13].

In addition to these frameworks, there are a variety of methods and techniques that may be used to evaluate and analyse projects. Some examples of these methods and techniques are the Social Return on Investment (SROI), the CBA, and the SWOT analysis. An examination of costs and benefits, often known as a CBA, is used to establish whether or not a proposed project is feasible from a financial perspective. To determine a project's Social And Environmental Returns on Investment (SROI), in addition to its economic returns, an SROI study must be performed [14].

Doing a SWOT analysis on a project requires determining its advantages, disadvantages, opportunities, and potential risks. In the past, evaluation and analysis of projects were mistakenly utilised just for project identification; however, Kabeyi [7] and Olorunfemi and Adeniran [5] proposes that it should also be used as one of the primary management control systems. This is a significant change from the previous practice.

Regarding project management, two of the most important and challenging choices are project selection and project termination. The criteria that must be evaluated to choose projects and those that must be used to justify their cancellation are also the same [6]. Consequently, doing an appropriate feasibility assessment before beginning a project helps with the correct selection of projects, which leads to the successful completion of such projects.

Analysing a project and evaluating that project is similar to making investments since they help eliminate ambiguity and refine information to decide whether or not initiatives are viable. It is commonly believed that projects can generate momentum, and because of this belief, those working on those projects are tempted to assume that the projects will continue to be completed according to the plans that have been laid out unless there are new factors to disrupt the flow of the project [5]. The re-evaluation and analysis of projects, including things like budget and Budgetary Control (BC), as well as the socio-economic effects of projects on customer and client satisfaction, should be done periodically to accomplish project success. This is necessary to reconcile the milestones of projects with their respective objectives.

1.2 | Statement of the Problem

There is limited research on the effects of project evaluation and project analysis on project success in technological firms. Previous studies have focused on the incorporation of project management professional code of conduct in evaluating and analysing projects in firms implementing projects and have tested it in the banking industry [6], others tested it on large multi-multinationals and national organisations [15].

However, this study aims to investigate the effects of project evaluation and project analysis on project success at UGI Technologies, Lagos employing indicators such as budget and BC, socio-economic effects of projects, project specification and client satisfaction as factors or indicators that are likely to contribute to these effects.

UGI Technologies in Lagos sees budget and budgetary management as an important part of their project planning process, and this has played a vital role in deciding the sort of project that has been picked and put into practice in this company. Conducting projects with a limited budget runs the risk of destroying the project's deliverables and, as a result, defying or falling short of the project's specification; the exact degree to which this will occur is something that cannot be determined.

Hence, this study seeks to uncover how budget and BC affect the specification of projects (PS) carried out at UGI Technologies in Lagos. Mathematically expressible as $PS = f(BC)$.

Past studies show that, fraught with unpredictable systems such as projects, requires conducting how the socio-economic activities of the environment impact project quality and invariably Customer Satisfaction (CS) among end users of information technology projects' outputs. This has rarely been assessed by past researchers and stakeholders. When it comes to keeping customers satisfied, the project's deliverables could determine the level of customers' degree of satisfaction and invariably retention. Thus, having a solid understanding of how project activity is influenced by economic activity and social processes may be of critical value. Thus, this study seeks to quantitatively measure the socio-economic effects of projects (SE) on clients or CS at UGI Technologies in Lagos.

1.3 | Objectives of the Study

The primary objective of this study is to evaluate the effects of project evaluation and project analysis on project success using UGI Technologies in Lagos as a case study. To achieve this, the specific objectives are to assess the extent to which budget and BC affect the specification of projects in UGI Technologies in Lagos and to examine how the socio-economic effect of projects affects clients or CS at UGI Technologies in Lagos.

1.4 | Research Hypotheses

The following hypotheses are formulated for the study:

- I. Budget and BC do not affect the specification of projects in UGI Technologies in Lagos.
- II. The socioeconomic effect of projects does not affect clients or CS at UGI Technologies in Lagos.

1.5 | Significance of the Study

The study is expected to make positive contributions and provide useful lessons to UGI Technologies in Lagos, project management consultants and other project management organisations. This study will also serve as a reference material for scholars, academicians and researchers who were working relatedly to the research topic. The study could further be of great value to the government authorities, and the stakeholders, for it will bring into light the scope, advantages and limitations of the topic.

1.6 | Scope of the Study

This study evaluates the effects of project evaluation and project analysis on project success using UGI Technologies in Lagos as a case study. It covers the indicators identified in this study. These indicators include budget and BC, socio-economic effects of projects, project specification and customer or client satisfaction.

1.7 | Limitations of the Study

Researchers in developing countries alike are confronted by numerous environmental problems in the course of carrying out any research. These problems are multiplied in studies that involve collection and collation of data. The net effect is that conclusions drawn from such studies may be limited in their applicability and correctness. The following are the main foreseeable limitations in the course of carrying out this research

- I. Insufficient research statistical report.
- II. The respondents may be biased in filling out their questionnaire and this might to some extent limit the validity of the project
- III. Explicit financial cost is also one of the major constraints to any research work to be embarked upon.
- IV. Time factor: The time given for compilation and submission is grossly inadequate for a project of this magnitude.

1.8 | Operationalisation of the Study Variable

$PS = f(PA \times PE)$, where PS = Project Success.

PA = Project Analysis.

PE = Project Evaluation.

Indicators for PS= Project Specification (Ps) and Client/CS.

Indicators for PA = Budget and BC.

Indicators for PE = Socio-economic effects of project (SE).

$SE \times BC = f(Ps \times CS)$.

Objective 1: $BC = f(Ps)$.

Objective 2: $SE = f(CS)$.

1.9 | Definition of Terms

Some of the concepts are defined in this section to clarify the research problem. The definitions in this section serve as guidelines to reduce the ambiguity which accompanies some of the concepts.

Project analysis

This is the detailed evaluation of the project process to see if the project ran as expected and also within budget.

Budget

This is an estimation of revenue and expenses over a specified future period, usually compiled and re-evaluated periodically.

Project specification

It is simply the complete description of the functionality and purpose or requirements of a project.

Client/CS

This is a measure of customers' satisfaction with products, services or deliverables.

Project success

This is a situation where a project is completed within budget, on time and according to specification.

Socio-economic effects of projects

This is a quantitative evaluation of the utility of projects. This gives room for all social, environmental, economic and financial impacts of a project to be measured.

2 | Literature Review

There are many different motivations for carrying out evaluations, but in general, evaluations may be carried out to exercise control [16], and enable learning and illumination. These motivations can be broken down into four categories: strategic, tactical, symbolic, and constitutive.

Project analysis and project plan

A project plan's goal is to keep a project under control. Projects constantly run the risk of going over budget and running over schedule. The plan is the best instrument to help keep control [6]. Project design, implementation, feasibility, and evaluation all benefit from project analysis. Examining a project's components while staying under budget is known as project analysis [17]. Not every endeavour achieves the desired goal. Only project analysis can determine sustainability because some may be viable but fall short in other aspects. Projects should function within established limitations and financial restrictions because they are expensive. Project analysis ensures that the projects are completed within the allotted time.

In essence, project analysis comprises the production, administration, and distribution of reports that are pertinent to a project. To track progress and guarantee project success, it also includes several additional elements, such as the upkeep of project assets and monitoring and evaluation of the project.

Budget and BC

Projects employ budgeting as a tool for long-term financial planning. Budgets are created for the major project areas of purchases, sales (revenue), production, and labour, and they offer specific project plans for the upcoming three, six, or twelve months [18]. Companies must make plans. Such planning is extremely formal in large companies, although it is less formal in smaller companies. Three time frames that apply to future planning, long-term (up to, and sometimes even beyond, twenty years), medium-term (one to three years out), short-term (the plan for the upcoming year).

Planning for these various time frames requires a variety of strategies; the plans become less thorough as time goes on. An organisation will set broad business objectives for the longer term. Although they are probably written down in a major company, such goals do not need to be formalised. With smaller organisations, the owners or management will undoubtedly take objectives into account and debate them. These broader corporate goals are taken into consideration during planning, which then lays out how they are to be accomplished in the form of thorough blueprints known as budgets.

The majority of budgets are created for the following fiscal year (the budget period), and they are typically divided into shorter time frames, most frequently four weeks or monthly. This makes it possible to exert financial control over the budget: actual outcomes can be compared to the budget, inconsistencies between the two can be looked into, and corrective action may be done as needed. A project's plan might become attainable by formalising objectives through a budget. Making decisions about what is required to produce the project deliverables and services and ensuring that everything is available when it is needed were simple.

Project evaluation

For a variety of reasons, project evaluation is an important endeavour [19], improving the knowledge of projects and project management is one such reason. Ex-post project evaluation can be used to document project work after a project has been completed, interim project evaluation can be used to correct, adjust, or align project work while a project is ongoing, and ex-ante project evaluation can be used to prioritise between competing projects before one or more projects are launched [20].

The goal of an evaluation may be summative or formative [21]. Evaluations can be theoretically oriented or practically oriented, depending on whether it's managers who want to monitor their projects and project performance or scholars who want to refine their understanding of projects and project performance.

Evaluating project socio-economic impact

To ascertain the socioeconomic effects of industrial projects, an assessment or evaluation of the project's socioeconomic impact is carried out in advance. The project's affected individuals are the main emphasis. The most comprehensive set of data is gathered from academic institutions and census statistics. Also, locals and their administrative leaders are personally interviewed. The project's pre-execution, execution, and operating stages are the three primary ones that are covered. The topics covered include the payment of compensations, the provision of jobs, and alternate plans for the individuals impacted by the projects. Following consideration of both the project's favourable and unfavourable socioeconomic effects, a judgement is made about its acceptability.

According to the various stages of the project's growth, the socio-economic effects of the project begin to vary. To meet the client's interest and demand, this aspect must be valued properly. This is because the following factors have been taken into account: awareness and perception of the proposed project; the short-term impacts (the immediate result of the specific technological project); the long-term impacts (caused by the area's general industrialization); and the challenges that they have previously encountered as a result of technological projects.

Finally, responses from diverse groups were compared for accuracy and the potential existence of biases. According to Ramanathan and Geetha [22], taking project stakeholders which often include project sponsors, are taken into account, the project frequently proceeds to fulfil its goals and, as a result, becomes appropriate for clients and consumers, also known as users of such projects.

Project success

Cost, time, and quality are crucial success indicators for projects, and this is a widely acknowledged truth [23]. In the subject of project management, project performance is highly regarded. By definition, the phrase project management refers to a variety of jobs in numerous industries. The ability to plan and deliver a variety of outcomes, as well as the willingness to be accountable for delivering them, are the main things that these positions have in common, even though project management is today considered a distinct discipline with its distinct field of study [24].

Over time, the style and pattern of thinking about project success and project performance have become a crucial component of project management as a discipline. Technical factors have received top priority in project management literature, as is evident. These three crucial factors, time, money, and quality that make up the well-known Iron Triangle of success and performance serve as the cornerstone of formal decision-making. Unfortunately, this strategy has come under heavy fire from numerous authors for being insufficient for a variety of reasons [24].

In this study, project performance is measured by how well project specifications were met and how satisfied customers were with the project. A project is successful when it meets all of its exacting specifications and pleases its customers or clients.

Project specifications fulfilment

The particular requirements that must be met by a project are known as project specifications. These specifications establish the project's scope, which establishes the project's boundaries [6]. Even if a project is completed on schedule and even on budget, if it does not adhere to the initial specification, it is still considered a failure. Effective execution in obtaining such deliverables is aided by choosing the tangible items that must be delivered and thoroughly documenting them. Although project requirements are intended to be built in a way that they revolve around the available resources, budgets impact deliverables and specifications. High project requirements without a corresponding budget are an impossibility; they will not only slow down the project's completion time but may also be the only factor in the project's failure as a whole.

CS as an indicator of project success

As it has been widely acknowledged, one of the key attributes of projects is that they are customer-oriented and as such should satisfy the clients to be deemed successful after completion and delivery [25]. Every organisation needs to understand that successful projects are those that only possess the capacity to satisfy the customer or client's requirements.

The success of any business organisation hinges on how happy its consumers are [26]. Customers always come first and are followed by profit whenever a business is just getting off the ground [27]. Companies that are successful in providing complete client satisfaction will continue to hold the top spots in a market [28]. The success of a business depends heavily on its ability to satisfy its customers, and doing so also helps to increase the market value of the company.

It is essential to note that customers are typically defined as people who purchase products and services from a market or company that satisfy their needs and desires [29]. Consumers buy things to fulfil their financial expectations. Hence, businesses should base their pricing decisions on the product's quality to draw in customers and keep them as long-term partners [30].

In all production sectors, the importance of consumer happiness has increased. The value of CS is stressed in construction as well due to tighter competition and more demanding clients. To satisfy the clients of such projects, a project's socio-economic effects must be properly evaluated. This is because both potential project-affecting and project-affecting elements will have been taken into account, and arrangements will have been made to deal with anomalies, which will ultimately help the project meet its objectives and ultimately please the clients.

3 | Conceptual Model

By the assessment of the literature on project analysis, project evaluation, project success, socioeconomic effects of projects, budget and BC, project specification, and client/CS. This study will look at how project analysis and evaluation affect the success of projects at UGI Technologies in Lagos. The foundation of the conceptual model for this study was the budget, BC, and socioeconomic effects of projects. In *Fig. 2* we shows the Conceptual of model.

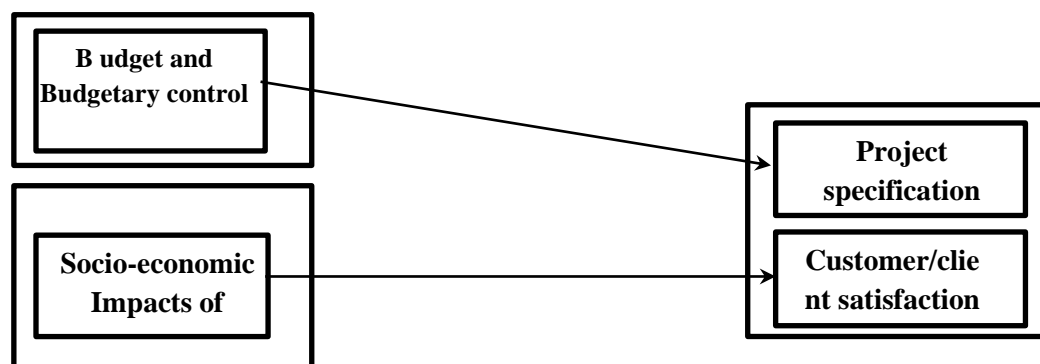


Fig. 2. Conceptual model.

4 | Theoretical Framework

Project evaluation and analysis

Evaluation is a crucial concept in daily life, it is frequently regarded as the act of rating or valuing something. Project evaluation research covers a wide range of topics, including community development initiatives, educational reform, the implementation of public policies, and the practices used by commercial and industrial

corporations to evaluate employee training and promotion processes [16]. For the evaluation of a project to be useful, it must be specified and constrained [31].

According to Rossi et al. cited by Markus et al. [16], evaluation research and programme evaluation have advanced as their discipline with evaluation societies, evaluation journals, and beyond, but appear to be largely disconnected from project studies and project management research despite recent research integrating the two disciplines and further referring to it as evaluation of projects [31].

According to Markus et al. [16], project evaluation is a crucial component of the literature on project studies and project management. Nonetheless, we adopt a systems-based approach to project assessment. There are diverse theories that can serve as a bedrock as far as project analysis, project evaluation, BC, socio-economic impact of project, project specification fulfilment and customer/client satisfaction are concerned. The highlighted theories are the important ones to this study and its variables.

Logical Framework Approach

The LFA is a way to manage projects that uses a logical framework to plan and define projects [8]. The LFA is based on the idea that planning and managing a project should be done in a logical and organised way. There are four steps to it:

- I. Problem analysis: this involves figuring out what the problem is, what causes it, and what effects it has.
- II. Objective analysis: figuring out what the project's goals and results are.
- III. Strategy analysis: figuring out what tasks and resources are needed to reach the goals.
- IV. Implementation, monitoring, and evaluation: putting the plan into action, keeping track of progress, and figuring out how well the project went.

The logical framework is a tool that helps connect the project's goals, strategies, activities, and resources. It gives a structure for planning, keeping track of, and judging the project. Usually, the logical framework has four levels:

- I. Goal: the main reason why the project is being done.
- II. Objectives: the specific, measurable, achievable, relevant, and time-bound goals that the project wants to reach.
- III. Outputs are the products or services that the project delivers, both those that can be seen and those that can't.
- IV. Activities: the tasks and actions that need to be done to make the outputs.

By following the LFA, project managers can make sure that the project is in line with its goals, objectives, and outcomes, and that it is being done logically and systematically.

The LFA is a way to plan and define projects using a logical framework. It is a project management method. The United States Agency for International Development (USAID) came up with the LFA in the 1960s. Since then, it has been used in many development projects around the world.

Bisson and Van Slyke [32] proposed that the LFA methodology has four steps: 1) analysing the problem, 2) analysing the goals, 3) analysing the strategy, and 4) putting the strategy into action, keeping an eye on it, and evaluating it. The logical framework is a tool that connects the goals, strategies, activities, and resources of a project.

The LFA is for making sure that the project fits with the organisation's or stakeholders' goals and objectives [33]. They say that the LFA helps to find possible risks and limitations and makes sure that the project is planned in a way that is clear and logical.

Fox and Miller [34] argued that the LFA should be used along with other tools and methods to make sure that the project is carried out well. They said that the LFA is especially helpful for making sure that projects have clear goals and that those goals can be measured.

Resource Based Management theory

Resource Based Management (RBM) is a strategic management theory that focuses on how important a company's resources and skills are to gaining and keeping a competitive edge. This theory says that a firm's resources and skills can give it a sustainable competitive advantage if they are valuable, rare, hard to copy (inimitable), and can't be replaced by other things (non-substitutable) (VRIN).

Zott and Amit [35], for example, have added to the RBM theory by stressing the importance of a company's dynamic capabilities, or its ability to change and adapt its resources and capabilities over time.

Overall, RBM is a well-known strategic management theory that focuses on the importance of a company's resources and skills in gaining a competitive advantage that lasts.

Project performance and success

Scholars usually figure out how well a project did over time by looking at how successful it was and what made it so. When it comes to the performance of a project, the terms success criteria and success factors are still used interchangeably [36].

According to Nguyen and Watanabe [23], scholars have written about the performance of projects and pointed out some important problems. Some of these important problems are going over budget, missing deadlines, and having unhappy clients. A lot of systematic ways to measure project performance have been made, and these methods have had a big impact on the performance of many project-based businesses and project stakeholders. Nguyen and Watanabe [23] noted that two major models were made to track the performance of a project. These models are the Key Performance Indicators (KPIs) and the integrated performance index. Cost, time, and quality are still seen as important performance indicators for construction projects, no matter what models are made [23].

Achievement of measurable benefits shouldn't be the only way to measure performance. Instead, it should be combined with the ability of project managers (contractors) to keep improving their performance in ways like making money, learning from mistakes, and getting more work done in less time [23].

Social Return on Investment theory

The SROI theory is a theory that treats the issue of project success extensively. SROI is a method for measuring the social, environmental, and economic outcomes of a project or intervention. The SROI technique seeks to provide a thorough evaluation of the value provided by a project, not only in terms of monetary benefits but also in terms of social and environmental benefits.

SROI is a paradigm that aims to comprehend and manage the social, environmental, and economic outcomes of a programme or organisation [37]. The SROI approach comprises five fundamental steps: 1) determining the scope of the analysis, 2) mapping the results, 3) assigning a monetary value to the results, 4) determining the impact, and 5) auditing the results.

Jackson and Hodge [38] stressed the significance of stakeholder participation in the SROI technique, stating that incorporating stakeholders in the process may ensure that the analysis reflects the values and objectives of people affected by the project.

SROI has been widely used in the non-profit and social entrepreneurship sectors, as well as governmental and commercial sector projects. According to Murlis and Shirley [39], the SROI technique is beneficial for evaluating projects with complex social and environmental projects or implications.

Relevance of theories to the study

The combined application of the three theories earlier mentioned in this section can significantly influence project success at UGI Technologies. By employing the LFA, the firm ensures that projects are well-planned, monitored, and evaluated, leading to increased efficiency and effectiveness. RBM theory enables the firm to allocate resources strategically, maximising their utilisation and optimising project outcomes. SROI analysis allows the firm to consider the broader impacts of projects, promoting social responsibility and sustainable practices.

Ultimately, these frameworks contribute to a comprehensive evaluation and analysis process of projects at UGI Technologies, enabling the firm to make informed decisions, mitigate risks, align projects with strategic goals, and enhance the overall success of projects. These three theories/frameworks will form the theoretical bedrock for this study.

5 | Empirical Review

Markus et al. [16] conducted a study that introduced a framework for analysing existing evaluations and structuring future evaluations by highlighting beneficial aspects and/or revealing hidden issues. The paper contributes to the theoretical and practical field of project management by inspiring project researchers and assisting project workers in their efforts to open the black box of projects and deliver relevant and valuable results. The study although comprehensive was largely qualitative, however, this study employed a quantitative approach.

Akewushola et al. [31] also researched the effects of project analysis and evaluation on the success of a project using a bank in Nigeria as a case study. The study revealed and concluded that project planning and evaluation, ranging from the introduction of smart cards to building projects to advertisement projects to information technology projects, etc., is ideal for banking organisations, particularly firms that execute projects concurrently. The study majored in the banking and finance industry. This study will test the same variables of project evaluation and analysis on project success in the technology industry.

Amoako-Gyampah and Meredith [40] examined how project evaluation and analysis affected project success. According to their research, a thorough project evaluation and analysis improves project planning, risk detection, and resource allocation. Planning a project, detecting risk and allocating resources are just part of the key phases towards achieving a successful project. Hence this study will push further to find out how successful projects are after proper evaluation and analysis, and not just how they contribute to the planning, risk detection and resource allocation of a project.

A study on project evaluation procedures and their effect on project success was carried out by Pinto and Slevin [41]. According to their research, formal project evaluation procedures including CBA and risk assessment dramatically increased project success rates. This study would, however, replace the CBA risk management analysis with budget control and socio-economic benefit evaluation of projects and test how they contribute to project success.

6 | Methods

Research design

This research seeks to use the quantitative approach in the form of Survey research design to evaluate the effect of project evaluation and project analysis on project success in UGI Technologies, Lagos, Nigeria.

Source of data

The data used in this study was obtained from the population through a primary source of data collection. This was done by applying appropriately structured questionnaires among the various staff of UGI Technologies, Lagos, Nigeria.

Population of the study

The population of the study includes staff of UGI Technologies, Lagos, Nigeria, currently working in the firm as project managers, product owners, procurement officers, developers etc. The study comprises 108 (one hundred and eight) workers.

Sample size determination and sampling technique

For selection, the simple random sampling technique was adopted. To reduce the sample size to a manageable size, Taro-Yamane's expression is applied as expressed below:

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

where N = Population, e = allowable error (%), 1 = a constant value.

Given that, $N = 108$ and e is assumed to be 5%, then sample size is

$$n = \frac{108}{1 + 108(0.05)^2}$$

$$n = \frac{108}{1 + 108(0.0025)}$$

$$n = \frac{108}{1.27}$$

$$n = 85.$$

The sample sizes were 85 employees of UGI Technologies, Lagos, Nigeria. The distribution of the sample is shown in *Table 1*.

Table 1. Sample distribution.

S/N	Category of Staff	Population	Percentage (%)	Sample
1	Product owners	15	14	11
2	Developers	8	7	6
3	Project Managers	9	8	8
4	Procurement Officers	18	17	14
5	Software Developers	10	9	8
6	Ux Designers	15	14	12
7	Data Scientists	12	11	10
8	Sales Engineers	15	14	12
9	Information Security Analyst	6	6	4
	Total	108	100	85

Research instrument

The research instrument that was used for this study is a questionnaire. The questionnaire is divided into two sections. The first section consists of the demographic details of the respondents, such as age, sex, educational background, length of service etc., while the second section consists of statements relevant to the research study. In this section, a Likert-type scale was used to measure the degree of agreement by the respondents. The Likert-type scale that is considered in the questionnaire had five (5) points which includes the following: 5- Strongly agree, 4- Agree, 3- Undecided, 2- Disagree, and 1- Strongly disagree.

Validity of research instrument

The study will consider face, content and construct validities. Face validity refers to whether a test appears to be valid or not i.e., from external appearance whether the items appear to measure the required aspect or not

[42]. If a test measures what the test author desires to measure, we say that the test has face validity. Thus, face validity refers not to what the test measures, but what the test ‘appears to measure [42]. The content of the test should not appear to be inappropriate, irrelevant [42]. Content validity refers to the degree or extent to which a test consists of items representing the behaviours that the test maker wants to measure [42]. The extent to which the items of a test are truly representative of the whole content and the objectives of the teaching is called the content validity of the test.

Reliability of research instrument

To check if the research instrument will continue to measure what it is designed to measure, the study will consider Cronbach's Alpha technique.

Methods of data analysis and technique

Quantitative data collected through the questionnaire was analysed such that the data of the study was analysed using a computer through an application package software (Statistical Package for Social Sciences (SPSS)) as follows:

- I. Section A which is the demographic information of the respondents was analysed and presented using descriptive statistics in the form of frequency and percentage.
- II. Descriptive statistics in the form of mean was used to range and present section B of the questionnaire.
- III. Since this study seeks to evaluate effect, the degree of relationship between the variables was measured using the regression analysis on the SPSS package.
- IV. The 5-point Likert-type scale indicated under the research instrument above was used to analyse the scoring of questions.

7 | Data Presentation, Analysis, Interpretation and Discussion

Data presentation

Table 2. Response rate.

Response Rate	Frequency	Percent
Returned	85	100%
Unreturned	0	0%
Total	85	100%

The response rate of respondents on the distributed questionnaire is shown in *Table 2*. The table shows that all copies of the questionnaires distributed were collected back successfully. This indicates a 100% response rate.

Descriptive statistics of respondents bio-data

Table 3. Descriptive statistics of respondent's bio-data.

		Frequency	Percentage
Gender	Male	50	59.0%
	Female	35	41.0%
Age	Below 25	35	41.0%
	26 – 30	13	15.0%
	31 – 40	24	28.0%
	41 and above	13	16.0%
Marital status	Single	45	53.0%
	Married	40	47.0%

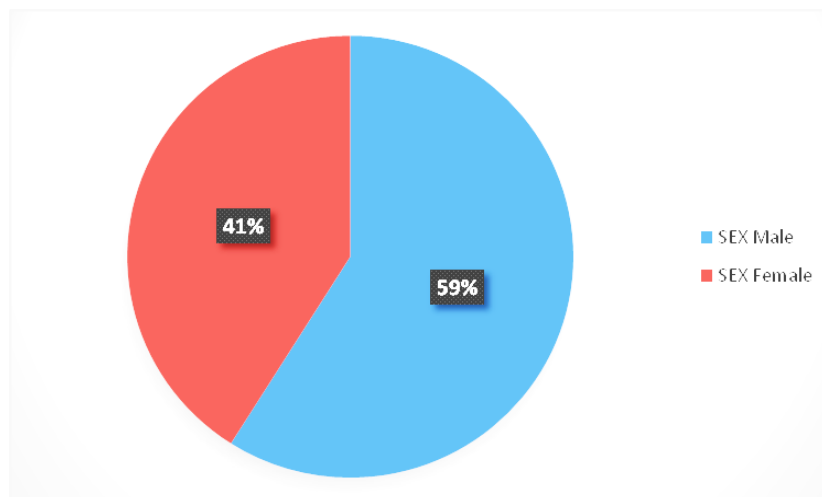
Table 3. Continued.

		Frequency	Percentage
Highest academic qualification	WASSCE/NECO	0	0.0%
	OND/NCE	18	21.0%
	HND/BSc	40	47.0%
	MSc/MBA	27	32.0%
Professional qualification	CAPM	4	4.0%
	PMP	10	12.0%
	Prince 2	36	42.0%
	Others	15	18.0%
	None	20	24.0%
Management level	Top	34	40.0%
	Middle	25	30.0%
	Low	26	30.0%

Table 3 shows that fifty (50) (i.e. 59%) of the one hundred (100) respondents are male while the remaining thirty-five (35) are female. It also shows from Table 3 that thirty-five (35) of the respondents are below the age of 25 years, thirteen (13) are between 26 to 30 years, twenty-four (24) are between 31 years and 40 years, while the remaining thirteen (13) are above the age of 40 years.

From Table 3, 4% of the respondents have a professional qualification in CAPM, 12% have a professional qualification in PMP, the majority of the respondents 42% have a professional qualification in PRINCE2, 18% of them (respondents) have other professional qualification and the remaining 24% doesn't possess any professional qualification.

It can be noted that of the 100 respondents, 21% are OND/NCE holders, and 47% of them are HND/B.Sc. Degree holders while the remaining 32% are MSc/MBA degree holders. It is also noted from the table that the majority of respondents are members of the top management 40%, 30% are members of the middle management and the remaining 30% are members of the low management. It can also be seen from the table that 53% of the respondents are single while the remaining 47% are married.

**Fig. 1. Sex distribution of respondents.**

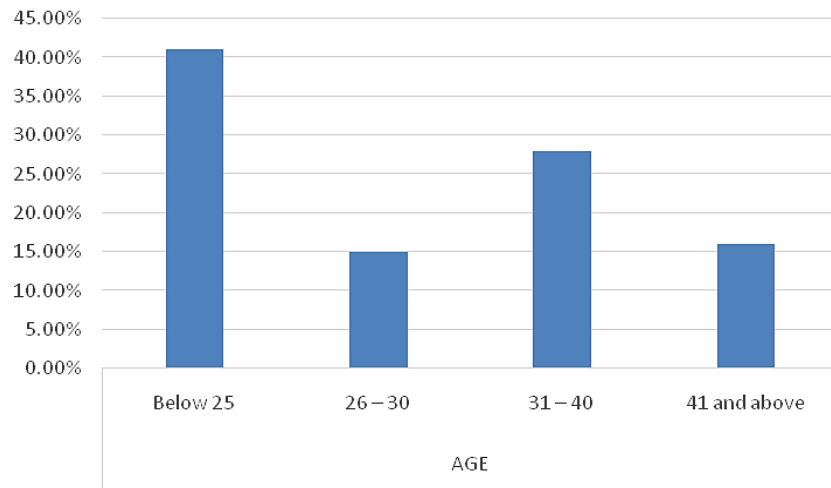


Fig. 2. Age distribution of respondents.

■ Marital Status Single ■ Marital Status Married

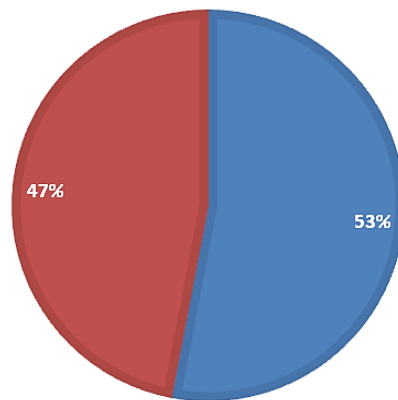


Fig. 3. Marital status of respondents.

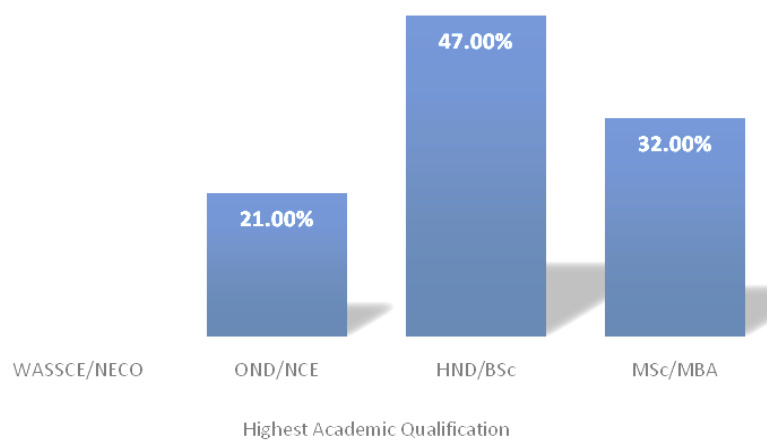


Fig. 4. Educational distribution of respondents.

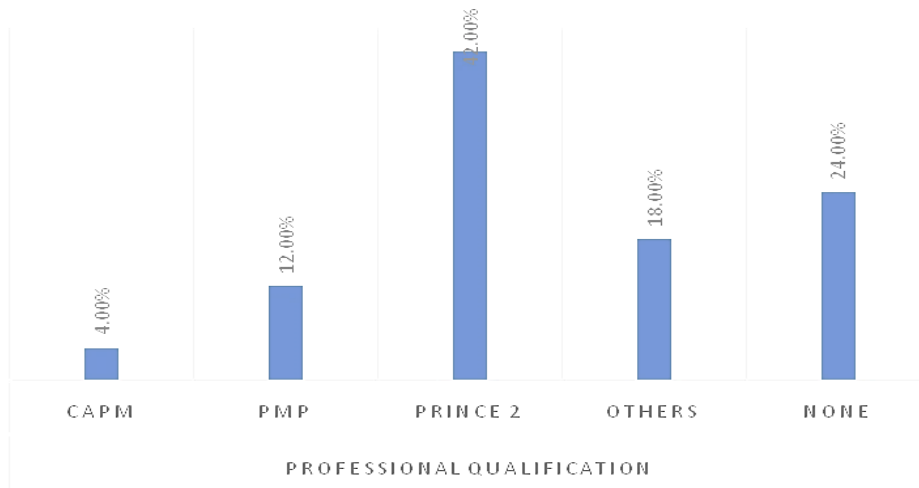


Fig. 5. Professional qualification distribution of respondents.

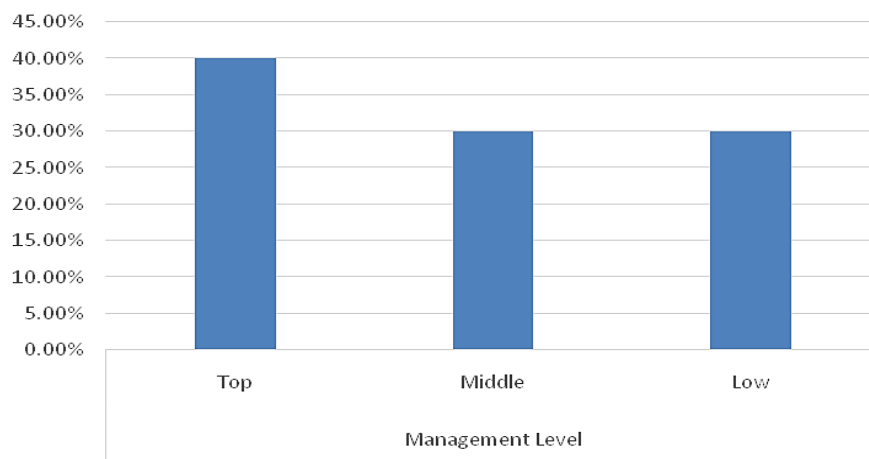


Fig. 6. Management level distribution of respondents.

Descriptive statistics of study variable

The descriptive analysis of the respondents’ opinions is done in this part first by dealing with the independent factors, followed by the dependent variables. The replies were based on a five-point Likert scale tagged with numerical values for convenience of analysis (see *Table 4*). 5 represented Strongly Agreed (SA), 4 Agreed (A), 3 Uncertain (UN), 2 Disagreed (D), and 1 Strongly Disagreed (SD) were the given values. Descriptive statistics including percentages, means, and standard deviation were used to interpret the results.

The following interpretation was made of the mean of the replies considering the breadth of the class interval: 3.50–4.49 implied agreed, 2.50–3.49 implied undecided, 1.50–2.49 implied disagreed, and 0.50–1.49 indicated strongly disagreed were the inferred strongly agreed, disagreed, and undecided responses. If there is less than one standard deviation, there is consensus on the replies received; if it is greater than one, the responses are widely scattered or there is no consensus. The grand mean of 4.03 for the budget and BC shows that most of the statements related to the budget and BC were agreed upon by respondents on a high scale. The overall standard deviation of 0.865 suggests that the responses are distributed around the mean.

Table 4. Descriptive statistics of budget and BC.

	Level of Agreement					Average	
	SA	A	U	D	SD	Mean	Std Dev
BC1	37.0%	51.0%	7.0%	5.0%	0.0%	4.20	.778
BC2	39.0%	51.0%	5.0%	5.0%	0.0%	4.24	.767
BC3	29.0%	29.0%	26.0%	16.0%	0.0%	3.71	.957
BC4	26.0%	37.0%	28.0%	7.0%	2.0%	3.78	.980
BC5	40.0%	47.0%	6.0%	7.0%	0.0%	4.20	.841
Grand Average						4.03	0.865

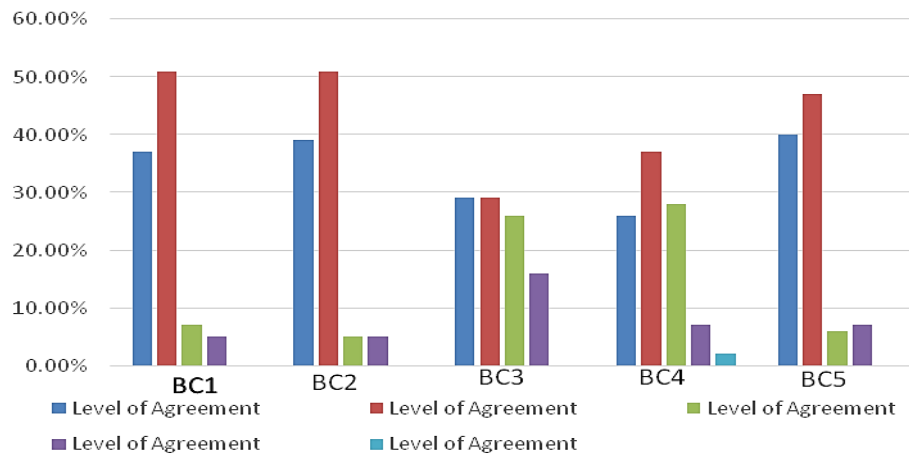


Fig. 7. Frequency distribution of budget and BC.

Table 5. Descriptive statistics of the socio-economic impact of projects.

	Level of Agreement					Average	
	SA	A	U	D	SD	Mean	Std Dev
SE1	31.0%	42.0%	16.0%	11.0%	0.0%	3.93	.956
SE2	35.0%	51.0%	11.0%	3.0%	0.0%	4.18	.744
SE3	29.0%	47.0%	17.0%	6.0%	1.0%	3.97	.893
SE4	40.0%	46.0%	12.0%	2.0%	0.0%	4.24	.740
SE5	33.0%	50.0%	11.0%	6.0%	0.0%	4.10	.823
Grand Average						4.08	0.831

The overall standard deviation of 0.831 suggests that the responses are distributed around the mean, and the grand mean for the socioeconomic impact of projects is 4.08, meaning that most of the statements were agreed upon by respondents on a high scale (see *Table 5*).

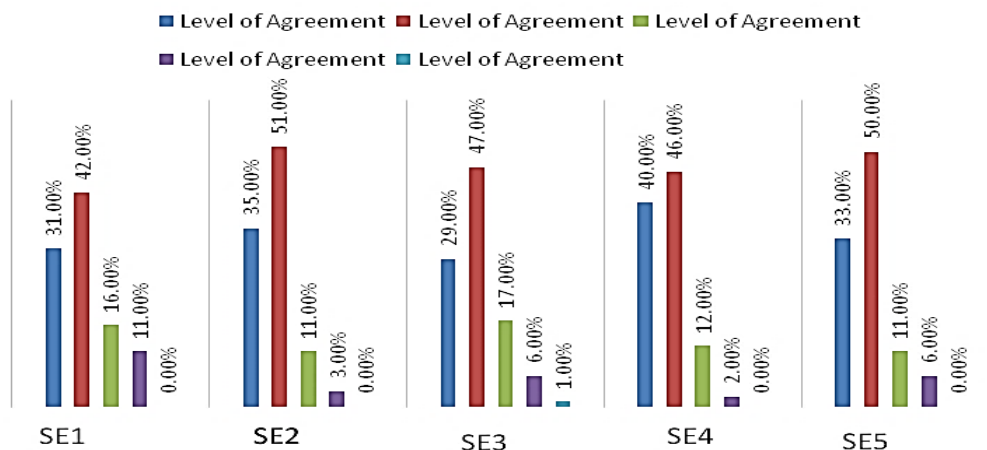


Fig. 8. Frequency distribution of socio-economic impact of projects.

Table 6. Descriptive statistics of project specifications.

	Level of Agreement					Average	
	SA	A	U	D	SD	Mean	Std Dev
PS1	43.0%	45.0%	6.0%	6.0%	0.0%	4.25	.821
PS2	37.0%	51.0%	9.0%	1.0%	2.0%	4.20	.804
PS3	46.0%	44.0%	9.0%	1.0%	0.0%	4.35	.687
PS4	42.0%	41.0%	8.0%	7.0%	2.0%	4.14	.975
PS5	55.0%	33.0%	6.0%	4.0%	2.0%	4.35	.914
Grand average						4.26	0.840

With an overall standard deviation of 0.840, meaning that the responses are distributed around the mean, the grand mean for the project specification is 4.26, meaning that most of the assertions related to the project specification were agreed upon by respondents on a high scale (see *Table 6*).

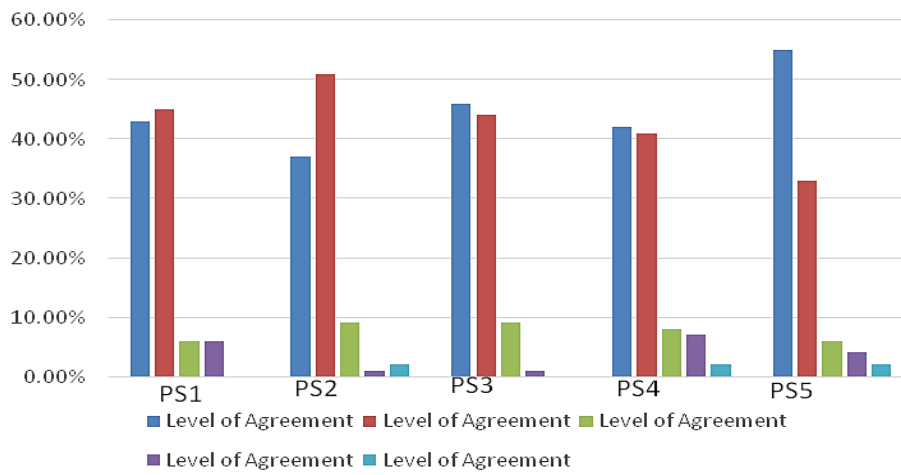


Fig. 9. Frequency distribution of project specification.

Table 7. Descriptive statistics of clients/CS.

	Level of Agreement					Average	
	SA	A	U	D	SD	Mean	Std Dev
CS1	49.0%	35.0%	7.0%	8.0%	1.0%	4.23	.962
CS2	42.0%	40.0%	13.0%	4.0%	1.0%	4.18	.881
CS3	54.0%	36.0%	6.0%	4.0%	0.0%	4.40	.778
CS4	61.0%	35.0%	2.0%	2.0%	0.0%	4.55	.642
CS5	38.0%	45.0%	9.0%	7.0%	1.0%	4.12	.913
Grand Average						4.30	0.835

The overall standard deviation of 0.835 suggests that the responses are distributed around the mean, and the grand mean for customers' satisfaction is 4.30, meaning that most of the statements were agreed upon by respondents on a high scale (see *Table 7*).

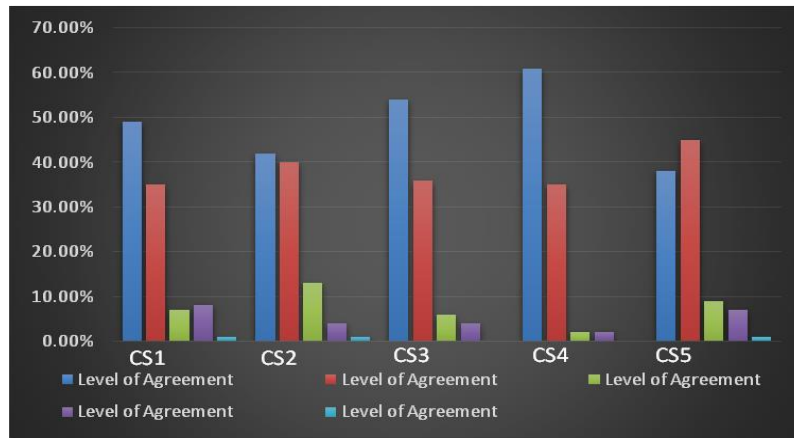


Fig. 10. Frequency distribution of customers' satisfaction.

Test of hypotheses

Analysis of the first hypothesis

H₀: budget and BC do not affect the specification of projects in UGI Technologies, Lagos.

The regression model's instructions for using linear regression analysis were followed to test the hypothesis. Project Specification (PS) was the dependent variable, while budget and BC was the independent variable. Table 8 displays the results of the regression test.

Table 8. Model summary of the effect of budget and BC on project specifications.

Model Summary						
Model	R	R square	Adjusted R square	Std. error of the estimate		
1	0.120 ^a	0.014	0.004	0.525		
a. Predictors: (Constant), Budget and BC						
Coefficients ^a						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	3.778	0.405		9.316	0.000
	Budget and BC	0.120	0.100	0.120	1.197	0.234
a. Dependent Variable: Project Specification						

The model summary table above demonstrates that the project specification of UGI Technologies, Lagos and BC have a weakly positive association (R = 0.120). The model also illustrates how the budget and BC alters UGI Technologies, Lagos' project specs. The budget and BC are responsible for 1.4% of the improvement in project specification quality at UGI Technologies, Lagos, according to the coefficient of determination (R² = 0.014). Because the result's p-value (0.000) is less than the study's 0.01 significance level, the result is statistically significant. Consequently, the study hypothesis was disproved. This suggests that UGI Technologies, Lagos' project specification is impacted by the budget and BC.

Additionally, the table above indicates that the budget and BC's unstandardized coefficient evaluation and corresponding p-value (β_{EF} = 0.120, p < 0.01) are statistically significant and can be used to predict UGI Technologies, Lagos project specifications. This further reveals that the research hypothesis is not supported, i.e., that the project specifications of UGI Technologies, Lagos are highly influenced by the budget and BC.

$$PS = 3.778 + 0.120BC.$$

Analysis of the second hypothesis

H₀: socioeconomic effects of projects do not affect clients or CS at UGI Technologies, Lagos.

The regression model's instructions for using linear regression analysis were followed to test the hypothesis. Customers' Satisfaction (CS) was the dependent variable, while socioeconomic impacts (SE) was the independent variable. *Table 9* displays the results of the regression test.

Table 9. Model summary of the effect of socio-economic effects of projects on customers' satisfaction.

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	0.556 ^a	0.309	0.302	0.412		
a. Predictors: (Constant), socio-economic effects of projects						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.963	0.355		5.528	0.000
	Socio-economic effects of projects	0.571	0.086	0.556	6.616	0.000
a. Dependent variable: customers' satisfaction						

The model summary table above demonstrates that at UGI Technologies, Lagos, there is a moderately favourable correlation ($R = 0.556$) between the socioeconomic consequences of projects and CS. The model also demonstrates how much the socioeconomic impacts account for UGI Technologies', Lagos's rise in CS. The socio-economic benefits of projects, according to the coefficient of determination ($R^2 = 0.309$), account for 30.9% of the gains in CS at UGI Technologies, Lagos. Because the result's p-value (0.000) is less than the study's 0.01 significance level, the result is statistically significant. Consequently, the study hypothesis was disproved. This suggests that customer happiness at UGI Technologies, Lagos, is impacted by the socioeconomic repercussions of initiatives.

The table above also indicates that the socio-economic effects of projects ($\beta_{CS} = 0.571, p < 0.01$) are statistically significant and can be used to predict CS at UGI Technologies, Lagos, based on an evaluation of the unstandardized coefficient of the socio-economic effects of projects in the coefficient table and its associated p-value. Thus, this further implies the rejection of the research hypothesis. This suggests that customer happiness at UGI Technologies, Lagos, is impacted by the socioeconomic repercussions of initiatives.

$$CS = 1.963 + 0.571SE.$$

8 | Discussion of Findings

The analysis finds a weak and positive correlation ($R = 0.120$) between the project specification of UGI Technologies, Lagos, and the budget and BC. According to the coefficient of determination ($R^2 = 0.014$), 1.4% of the variation in the project specification of UGI Technologies, Lagos, may be attributed to the budget and BC. Stated differently, budgets and BCs account for 1.4% of the variation in project operating specifications at UGI Technologies, Lagos. This hypothesis is supported by the results of Pinto and Slevin's [43] study on project assessment techniques and their impact on project success. These results confirm how important it is to make sure that the project specification stays within the allocated budget to prevent overspending and guarantee project success [44–46].

According to the study, there is a somewhat favourable correlation ($R = 0.556$) between the socioeconomic benefits of projects and CS at UGI Technologies, Lagos. The socio-economic benefits of projects, according to the coefficient of determination ($R^2 = 0.309$), account for 30.9% of the gains in CS at UGI Technologies, Lagos. This theory is supported by the research study conducted by Adeniran et al. [6], which used a Nigerian bank as a case study to examine the impact of project analysis and assessment on project success. These results support the idea that socioeconomic project factors should be understood and strategically addressed

[47–49]. Organizational management can use these insights to customize projects and business practices that will benefit the community and increase CS.

To have a beneficial influence on the community and CS, it is important to strategically analyze and address socio-economic variables in project development, as highlighted by the summary of findings connected to each study hypothesis. Related studies' insights highlight the significance of matching project analysis and assessment processes to overall project success and the necessity of a thorough approach to project management that takes socioeconomic factors and BC into account [45], [49].

9 | Conclusion

Project evaluation and analysis play a vital role in the success and performance of projects in UGI Technologies and project management as a whole. This study had done a thorough analysis of the effects of Project evaluation and analysis on project success at UGI Technologies, Lagos.

This study employed two different hypotheses in its analysis. The first tested hypothesis revealed a moderate positive relationship between budget BC and project specifications at UGI Technologies, Lagos. The test further indicates that budget and BC is responsible for a 1.4% increase in the quality project specifications at UGI Technologies. This implies that budget and BC significantly affect project specifications at UGI Technologies, Lagos.

The last tested hypothesis revealed that there is a moderate positive relationship between the socio-economic effect of projects and CS. It also revealed that the socio-economic effects of projects explain 30.9% of the increases in CS at UGI Technologies, Lagos. Both hypotheses ultimately indicate that project evaluation and project analysis have some significant degree of effect on project success in UGI technologies, Lagos.

As a project management professional, it is a thing of responsibility and not just a necessity, to ensure effective evaluation at every phase of the project to ascertain the overall success of the project. The insights from the findings of this study, highlight the multifaceted nature of project success, urging management to adopt a comprehensive approach that integrates BC, socio-economic considerations, and effective project analysis and evaluation procedures. The support from related studies further reinforces these conclusions, affirming the necessity for a holistic project management strategy that balances financial constraints with broader socio-economic impacts to foster success and satisfaction within the organization and in the wider community.

Based on the research findings the following recommendations are proposed to guide UGI Technologies' stakeholders, project managers, and decision-makers:

- I. Enhanced budget oversight: given the weak influence of budget and BC on project specification, management should implement more rigorous oversight mechanisms to ensure adherence to the budget. Continuous monitoring and proactive adjustments can mitigate the risk of cost overruns and contribute to better project outcomes.
- II. Holistic project planning: recognizing the moderate impact of socio-economic factors on CS, it is recommended that UGI Technologies incorporate a holistic approach to project planning. This involves integrating socio-economic considerations into the project design and execution to maximize positive community and customer impacts.
- III. Investment in stakeholder communication: to align project goals with community and CS, there should be an emphasis on effective communication with stakeholders. Keeping them informed about socio-economic benefits and budgetary considerations can foster understanding and support.

This study contributes to the understanding of project management dynamics at UGI Technologies by highlighting the nuanced relationships between BC, socio-economic effects, and project outcomes. The findings emphasize the need for a nuanced and multifaceted approach to project success that goes beyond budgetary constraints, recognizing the substantial impact of socio-economic factors on CS.

Building on the insights gained from this research, several avenues for further studies can be explored:

- I. Exploration of specific socio-economic factors: further research could delve into the specific socioeconomic factors that most significantly influence CS. This could provide a more granular understanding of the elements which contribute to positive project outcomes.
- II. Comparative analysis across industries: a comparative study across different industries could reveal industry-specific patterns in the relationship between BC, socio-economic effects, and project success. Understanding industry nuances can guide tailored project management strategies.

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Author Contribution

GIU: "Conceptualization, Methodology, Software, Validation, formal analysis, investigation, resources, data maintenance, writing-creating the initial design, writing-reviewing and editing, visualization, monitoring, project management. All authors have read and agreed to the published version of the manuscript.

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Data Availability

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request, but cannot be made publicly available in order not to go against the declaration of confidentiality made to the participants.

Conflicts of Interest

The authors declare no conflict of interest.

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