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FACTORS AFFECTING SUCCESS OR FAILURE IN SOFTWARE PROJECTS IN THE KINGDOM OF SAUDI ARABIA

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ABSTRACT This study aimed to identify factors affecting the success or failure of software projects in the Kingdom of Saudi Arabia. The study used the descriptive method as a study approach and employed the questionnaire as a study tool. The study included (111) employees in some software projects in administrative, medical, educational, military and commercial facilities of the public and private sectors in the Kingdom of Saudi Arabia. The study findings indicated that administrative projects were the most common type of project, with government projects having a higher percentage. Teams with one to ten members were the most typical size, and most projects were completed within six months to a year. Project success depended on an appropriate timeline, teamwork, and thorough task schedules. Project failures were often caused by delays, lack of teamwork, and legal permission requirements. Public opinion on project success was not significantly impacted by project type or team size. The study recommended the need to analyze and estimate the project, identify potential risks, conduct training for team members, develop a clear task schedule, and focus on selecting team members to achieve project objectives and ensure adaptability and collaboration.

INDEX TERMS Factors Affecting, Software Projects Kingdom of Saudi Arabia.I.

INTRODUCTION

The software sector in the Kingdom of Saudi Arabia has grown significantly in the last several years. Software initiatives in the kingdom, like those in any other nation, may run across a variety of issues that could make them successful or unsuccessful. Organizations and stakeholders engaged in the development and implementation process must comprehend the variables influencing software project outcomes. In this way, the success or failure of software projects is significantly influenced by efficient project management. Project failure can be caused by unclear project objectives, inadequate planning, impractical deadlines, and a lack of team member collaboration and communication. Furthermore, these issues and difficulties may be exacerbated by inexperienced project managers or teams with insufficient knowledge and expertise. Furthermore, the successful completion of a software project depends on the precise collection and analysis of requirements. User expectations and software product mismatch might result from inadequate requirements collection. Project failures and delays can be caused by various factors, including unclear or incomplete requirements, low stakeholder participation, or requirements that change as the project progresses. Software initiatives may also face technological difficulties that have an impact on their success. These difficulties include insufficient technology or tools, insufficient infrastructure, problems integrating new and old systems, scalability limitations, and security flaws. Project failure might result from a lack of technical know-how, inadequate testing, and poor code quality. In this case, the project's success depends on the effective distribution and management of resources, including time, money, and human resources. The project's quality and progress may be hampered by understaffing, a shortage of qualified workers, high employee turnover, inadequate resource planning, or financial limitations. Inadequate professional development and training opportunities can also affect how well

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project teams function. Moreover, good stakeholder management and participation are essential to the project's success. Conflicting interests, poor communication, a lack of support or involvement from stakeholders, and reluctance to change can all impede the project's advancement and ultimately lead to failure. Throughout the project lifecycle, the involvement of important stakeholders—including end users—enhances understanding of their demands. Further, the results of the software projects are influenced by cultural characteristics specific to the Kingdom of Saudi Arabia. Cultural norms, communication styles, and work practices have impacts on decision-making processes, teamwork, and the project's overall effectiveness. Thus, successful software project management and cultural context adaption can lead to successful software projects. Thus, several factors affect software initiatives' success in the kingdom. To accomplish project goals, it is important to address issues about requirements collection, technical difficulties, resource management, stakeholder engagement, cultural variables, and external pressures. In the Kingdom of Saudi Arabia, software initiatives have a higher chance of success when success or failure reasons are identified and managed proactively.

II. Problem of the Study

Despite the use of the most up-to-date tools and techniques, numerous studies show that software projects still fail. The successful factors in completing software projects on time, within budget, and to the required level of quality are adequately covered in the literature, but the factors that cause the majority of software project delays are rarely identified (1). In addition to the lack of studies that deal with the effects of project delay on cost estimation. Software project cost estimation is a crucial management task. Despite research endeavours, the precision of estimation tools does not appear to be improved (2). To determine how much time and effort software projects will take, cost estimation of software projects is a crucial activity in the software development cycle. However, there are very few relevant studies evaluating software cost estimation in developing nations, especially in the Kingdom of Saudi Arabia. On one hand, Saudi Arabia is one of the nations that has used cost estimation techniques (3), which means that the current investigation into the causes of inaccurate cost estimations of projects in this country's software development companies is spurred by this issue. On the other hand, information and communication technology (ICT) projects, especially software projects still have high failure rates in the Kingdom of Saudi Arabia (4). Thus, this study explores factors affecting the success or failure of software projects in the Kingdom of Saudi Arabia. The purpose of this study is to improve knowledge about the Kingdom of Saudi Arabia's software project success and failure factors. Organizations and project managers in the Kingdom of Saudi Arabia will benefit from the findings as they work to identify and solve the critical elements influencing the success of their software projects. Furthermore, the study will highlight the organizational and cultural characteristics unique to the Saudi Arabian setting, which will aid in the creation of customized project management techniques. The study's recommendations will help increase software project success rates, which would eventually boost the Kingdom of Saudi Arabia organizations' expansion and competitiveness.III. Objectives of the Study

1. Identify critical success factors affecting the software projects.
2. Identify critical failure factors affecting the software projects.
3. Detect the statistically significant differences in the responses of the study sample regarding critical success factors affecting the software projects attributed to the study variables, including type of project, project implementation period, and number of project team members.
4. Detect the statistically significant differences in the responses of the study sample regarding critical failure factors affecting the software projects attributed to the study variables, including type of project, project implementation period, and number of project team members.

IV. Questions of the Study

1. What are the critical success factors affecting the software projects?
2. What are the critical failure factors affecting the software projects?
3. Are there any statistically significant differences in the responses of the study sample regarding the critical success factors affecting the software projects attributed to the study variables, including type of project, project implementation period, and number of project team members?

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4. Are there any statistically significant differences in the responses of the study sample regarding the critical failure factors affecting the software projects attributed to the study variables, including type of project, project implementation period, and number of project team members?

V Study Significance

Researching factors influencing software project success in Saudi Arabia is crucial for organizations to improve their chances of success. This research can help firms make informed decisions and streamline their software development procedures, enhancing project performance. This study examines factors contributing to software project failure in Saudi Arabia, aiming to identify potential hazards and obstacles. It suggests proactively addressing these risks and customizing project management approaches to improve outcomes and reduce the chance of failure. It aims to improve project outcomes by understanding organizational structures, communication styles, decision-making procedures, and cultural norms. By analyzing these variables, project managers can better align their strategies with local culture and organizational dynamics, thereby reducing project failure rates. This research aims to understand the factors influencing software project success in the Kingdom of Saudi Arabia, enabling organizations to improve project success rates, reduce failure risks, customize management techniques, influence policy, and contribute knowledge on software project management. By examining organizational structures, communication styles, decision-making procedures, and cultural norms, project managers can enhance project success. The findings of this study will enrich the results of previous studies that discuss the critical success and failure factors affecting software projects and result in enhancing the knowledge about the factors that contribute to the success of software projects in the Kingdom of Saudi Arabia.

VI. Study Terminologies

A. Critical Success Factors

(5) referred to critical success factors as the design features that meet client criteria. The concept of CSF has had a significant impact on strategic planning across various industries. The goal of the CSF is to give executives vital information based on the identified areas that need to be attended to. Executives may run their companies effectively and efficiently with the reduced variety of information that comes from the key sectors. In addition, (6) described CSFs as the areas that offer a precise, unambiguous, and mutually understood picture of the business environment, the organization's performance areas, and the steps required to fulfil the organization's objective. In this sense, the researcher, procedurally, defined project critical success factors as important areas or components that are essential to a project's successful completion. These elements are seen to be crucial for project management in its entirety as well as for project planning and execution. To ensure project success, CSFs are usually determined at the planning or project start phase and are utilized as standards or benchmarks throughout the project lifecycle.

B. Critical Failure Factors

(7) defined critical failure factors, impediments, and barriers as the variables that may negatively affect the execution of certain measures and the achievable performance. In a related context, (8) described critical failure factors as those that make it difficult to put any framework or strategy into practice. These obstacles prevent any organization's resources from being aligned to achieve the intended outcomes. Therefore, identifying and reducing these issues is essential to any project's success.

Thus, the researcher, procedurally, defined critical failure factors as crucial elements that can significantly contribute to a project's failure if not managed properly. Project managers must recognize and understand these elements to proactively address risks and increase project success.

C. Software Project

(9) defined a software project as an assembly of procedures and activities that must be finished in a certain amount of time and money to produce a specific piece of software, such as virtual reality, social media, operating systems, mobile applications, text editors, web browsers, video games, accounting systems, simulators, databases, photo and video editors, cloud services, and other online platforms. In addition, (10) described a software project as a collection of tasks having a start date, precise objectives, clearly defined roles, a budget, planning, a definite completion date, and numerous parties participating.

Therefore, the researcher, procedurally, defined a software project as an effort to create, implement, or improve a software system or product. It involves requirements gathering, design, coding, testing,

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deployment, and maintenance. Projects can be small-scale or large-scale and can be in-house, contracted out, or started by individual developers or teams.

VII. Literature Review

Researchers have long been interested in determining the project success rate and the variables that contribute to project success (11, 12). It is common knowledge that a project is considered successful when it is completed on time. Unfortunately, a lot of projects do not satisfy this requirement for a variety of reasons, which results in project delays (13). The software business is subject to the same rule. A software project is effective if its quality, schedule, effort, and cost requirements are met (14). For software developers, completing tasks on time has always been very difficult. Project managers claim that they failed to meet their objectives despite careful preparation and the use of advanced tools and modern techniques because of delay factors (1).

A software project typically needs several different procedures to be done. Usually, a rough deadline should be assigned to each operation in the project. Since this affects the overall progress of a project, project managers must ensure that as many tasks as feasible are finished on time. However, due to uncertainty, a project will never actually go as intended, and this poses many risks to software projects, The elevated risk of cost and schedule overruns in software projects has long been a cause of worry for the community of software engineers (15). Accordingly, more accurate time and expense estimates for software projects need to be provided by project managers and leaders (16). Worthy here to mention is that forecasting the total costs of a software project is extremely challenging due to the rapid rate of software change (17). In addition to the lack of accuracy associated with this process.

Over the years, it has become increasingly difficult to determine with accuracy how much money will be required to complete a given project. Accurate time, effort, and cost estimation are crucial issues for a software project's success (18). Prediction of a software project's development effort, timeline, and cost is the goal of estimation (19, 20, 21). Many researchers confirm that accurate cost estimation is one of the most important components of smart management choices and is the foundation of successful software projects (3).

In addition, the study of (22) proposed a conceptual framework to empirically assess the impact of domain creep on the success of the software project and identify the factors of domain creep to evaluate the proposed conceptual framework. The results of the study help practitioners understand the dynamics of factors that undermine scale creep in small and medium-sized software and help them develop effective control and mitigation strategies and thus increase the project success rate.

(23) study showed that the size, quantity of hardware, lines of source code, number of users, volumes of data, and variety of services and applications offered by large-scale software systems (LSS) make them complex. The key success factors (CSFs) of large-scale software systems are several criteria that contribute to the successful deployment of LSS. The study examined three CSFs—Data Accuracy, Top Management Support, and Project Management—and demonstrated how they affect the implementation of large-scale software systems. It also provided a framework for quantifying these essential success factors. It also unveiled CSF-Live! as a novel approach for measuring and tracking CSFs that could impact large-scale software deployment. The method was based on the Goal/Question/Metric Paradigm (GQM), which provided a flexible framework to measure the other 15 known CSFs. Ultimately, the research produced formulas for each of the three CSFs that were the subject of the study, gathered information, and produced a case study that examined and clarified the findings.

The study of (24) aimed to use survey data to explore critical success factors for software development projects using quantitative methods. The study used data collected from 109 Agile projects from a variety of organizations of different sizes, industries, and geographic locations with sufficient empirical information for statistical analysis to reach several conclusions.

Based on the above mentioned, factors that lead to the success or failure may include: The volume of previous data available and the extent of the project’s similarity to previous projects that were implemented, although this is difficult in reality because each project differs in complexity and circumstances from others, in addition to the use of unified measurement tools in all projects, and this is not available in most cases, and therefore reliance on learning techniques. Automation is not useful in actual implementation, and therefore many studies seek to support their results by using them with models and diagrams. The availability of experts and specialists in the project, in many cases, makes it difficult to reach several individuals who have previously worked on similar projects, and the evaluation also depends on the amount of experience and the availability of complete information, which is a difficult

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option to implement and its cost is high, whether in specialists' wages or disrupting their work. The use of models and charts is considered the most available option that can be applied, but there are no clear models and charts specialized in calculating and evaluating delays, and their results are inaccurate in large projects and are considered the best results in small projects.

To follow best practices for successful project completion, the software industry must prioritize software project management (SPM). Even though there is a wealth of SPM literature available, 70% of projects worldwide fail to be completed successfully each year. Software failure affects the software industry's revenue, development teams' stress levels and motivation levels, the general public's employment levels, and the nation's exports (25).

Various essential success factors related to software project success have been offered by software engineering over the years. Important success factors for software projects include the team's familiarity with the software development processes, task mastery, and project monitoring and control (26). The critical success factors affecting the software project include factors relating to people including a project manager's ability to manage a project effectively, top management's support, user and client involvement, a trained and sufficient workforce, strong leadership, a dedicated and motivated team, and good performance from vendors, contractors, and consultants. Clear requirements and specifications, a clear objective, goal, and scope; a realistic schedule; effective communication and feedback; a realistic budget; frozen requirements; proper planning; appropriate development processes/methodologies (process); current progress reports; efficient monitoring and control; sufficient resources; risk management; good quality management; allocation of roles and responsibilities; and end-user training are factors related to processes. Technical factors include knowing the technology and development process, as well as the complexity, size, duration, and number of organizations involved in the project. They also include having appropriate infrastructure and supporting tools (27). Moreover, critical success factors affecting the software project include organizational factors, including support from upper management, organizational culture, project planning expertise, leadership, vision, and mission, as well as monitoring and control and change management abilities. Project team commitment, internal communication, empowerment, and composition are all considered team factors. Other factors include the team's general expertise, lack of development team skills, and experience with software development methodologies. User involvement, user support, customer education and training, customer experience, and lack of end-user experience are all considered consumer factors. Technological uncertainty, development approaches, project complexity, urgency, relative project size, specification modifications, and project criticality are some of the elements that affect projects (28).

However, a piece of software for businesses might be developed by the software development team. Every day, mobile phone users must download fresh upgrades to their devices to resolve faults and boost functionality. Because they use the software or apps regularly, end users, also known as software users, are only aware of the finished product. Once the software has been successfully installed, clients are not notified of the latest version of the program. Clients will not be informed if the software fails for any reason, and the same will happen if the software application fails at a particular stage of development (29). On the other hand, critical failure factors affecting the software project include inaccurate time and cost estimates, scope creep, insufficient human resources and risk management, communication problems, poor planning, low user involvement, irrational expectations, a lack of executive support, a shortage of resources, a lack of technological literacy, and employees who are not rewarded for their trust and knowledge sharing (25). Additionally, critical failure factors affecting the software project include technological factors, including weak infrastructure, low service quality, computer literacy, system selection, and problems with security, privacy, and trust. Poor leadership, organizational culture, conflicts of interest, organizational trust, instability in top management, lack of support from upper management, legal and regulatory concerns, lack of cooperation and collaboration, and business process reengineering are all examples of managerial variables. Lack of training, inadequate vendor support, inadequate user support, and incompetent consultants are end-user-related factors. Project management office unavailability, change management, imprecise requirements and scope, ill-defined risks and stakeholders, inadequate communication, subpar project planning, problems with project execution, inadequate resource management, and subpar people management are other factors that are linked to project management (30). Reliability is used to describe the overall consistency of a measure. A measure is said to have high reliability if it produces similar results under consistent conditions. The reliability coefficient is a measure of the accuracy of a test or measuring instrument obtained by measuring the same individuals

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twice and computing the correlation of the two sets of measures, it measures from zero to one (one being the most reliable), we measure the reliability coefficient by Cronbach's alpha. As mentioned before, its value lies between 0 and 1. As much as the value comes closer to 1 as much as we get a better reliability. The following table reflects the reliability based on the value of Cronbach's alpha: management, legal and regulatory concerns, lack of cooperation and collaboration, and business process reengineering are all examples of managerial variables. Lack of training, inadequate vendor support, inadequate user support, and incompetent consultants are end-user-related factors. Project management office unavailability, change management, imprecise requirements and scope, ill-defined risks and stakeholders, inadequate communication, subpar project planning, problems with project execution, inadequate resource management, and subpar people management are other factors that are linked to project management (30).

VIII. Research Methodology

This study will depend on the descriptive method as an approach. In this sense, (31) indicated that this method offers a thorough understanding of an issue that starts with an original concept and ends with an original solution via an original policy. One statistical technique that explains phenomena based on review and some information as an induction procedure to conclude is the descriptive approach. Moreover, (32) indicated that this method clarifies circumstances or phenomena that are connected to what is seen. Thus, circumstances and events that take place in the field are related to design. In addition, it is related to records, transcripts, or even written materials.

Additionally, the study will employ the questionnaire as a study tool. In this context, (33) revealed that the questionnaire is the most popular and extensively used method among researchers. It is described as "a tool that includes several dimensions, axes, and paragraphs used to obtain opinions or data by a group of respondents who respond using the written format".

IX Results and Discussion

A total of 111 valid responses were included in this study. The purpose of this study is to identify factors affecting the success or failure of software projects in the Kingdom of Saudi Arabia. To prepare the data for analysis, the raw data were transformed into a form that can be easily processed statistically to help verify the research hypotheses and meet the research objectives. This was done by coding and entry. IBM SPSS Statistics Ver 26 was used to analyse the data. The data were analyzed using descriptive and inferential statistics (i.e. Likert scale and testing for significance, using appropriate t-test, and analysis of variance).

A. Data Analysis

The data analysis is based on Cronbach's Alpha test to check for the reliability and internal consistency of the study variables before or after the adjustment. Its value lies between 0 and 1. As much as the value comes closer to 1 as much as we get a better reliability. When the reliability scores are acceptable and satisfactory, the rest of the analysis process is confirmed. Also, descriptive statistics are used to identify the demographic characteristics of study participants. Inferential statistics (i.e. Likert scale and testing for significance, using appropriate t-test, Analysis of variance) were also used.

B. Reliability analysis

Reliability is used to describe the overall consistency of a measure. A measure is said to have high reliability if it produces similar results under consistent conditions. The reliability coefficient is a measure of the accuracy of a test or measuring instrument obtained by measuring the same individuals twice and computing the correlation of the two sets of measures, it measures from zero to one (one being the most reliable), we measure the reliability coefficient by Cronbach's alpha. As mentioned before, its value lies between 0 and 1. As much as the value comes closer to 1 as much as we get a better reliability. The following table reflects the reliability based on the value of Cronbach's alpha:

TABLE 1
AMOUNT OF RELIABILITY BASED ON THE VALUE OF CRONBACH'S ALPHA

Value of Cronbach's alpha	Amount of reliability
Less than 0.50	Un-acceptable
From 0.50 to less than 0.60	Weak

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From 0.60 to less than 0.70	Acceptable
From 0.70 to less than 0.80	Good
From 0.80 to less than 0.90	Very good
0.90 or more	Excellent
Value of Cronbach's alpha	Amount of reliability

TABLE 2
CRONBACH'S ALPHA

Factor	No. of statements	Cronbach's alpha
Total statements	38	0.849

C. Likert's five-point scale:

The statements rated in our study are rated according to Likert's five-point scale based on the following scale:

TABLE 3
LIKERT'S FIVE-POINT ATTITUDE LEVEL

Weighted Mean Range	Attitude
1.00 - 1.79	Strongly agree
1.80 – 2.59	Agree
2.60 – 3.39	Neutral
3.40 – 4.19	Disagree
4.20 – 5.00	Strongly disagree

D. P-Value significance:

The statistical significance of a result is an estimated measure of the degree to which it is "true" (in the sense of "representative of the population"). More technically, the value of the p-value represents a decreasing index of the reliability of a result. The higher the p-value, the less we can believe that the observed relation between variables in the sample is a reliable indicator of the relation between the respective variables in the population. Specifically, the p-value represents the probability of error that is involved in accepting our observed result as valid "representative of the population". In many sciences, results that yield $p \leq .05$ are considered borderline statistically significant. Results that are significant at the $p \leq .01$ level are commonly considered statistically significant, and $p \leq .005$ or $p \leq .001$ levels are often called "highly" significant.

E. The t-test for Independent Samples

The t-test is the most commonly used method to evaluate the differences in means between two groups. We assume that the data are a random sample from a normal population; in the population, the two cell variances are the same. The p-value reported with a t-test represents the probability of error involved in accepting our research hypothesis about the existence of a difference. Technically speaking, this is the probability of error associated with rejecting the hypothesis of no difference between the two categories of observations (e.g. Gender) in the population when, in fact, the hypothesis is true.

F. Analysis of variance, or ANOVA,

is a method of testing the null hypothesis that several group means are equal in the population by comparing the sample variance estimated from the group means to that estimated within the groups. We assume that the data are a random sample from a normal population; in the population, all cell variances are the same. The One-Way ANOVA procedure produces a one-way analysis of variance for a quantitative dependent variable by a single factor (independent) variable. Analysis of variance is used to test the hypothesis that several means are equal. This technique is an extension of the two-sample t-test.

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G. Results

Based on Table 4, the reliability scores were very good, which supports us to continue with the further analysis.

Descriptive Statistics:

In this part, we will describe the demographic characteristics of the study respondents:

The first variable: Type of Project

TABLE 4
TYPE OF PROJECT

Type of project	n	%
Administrative Project	35	31.5
Medical Project	29	26.1
Educational Project	16	14.4
Military Project	6	5.4
Commercial Project	25	22.5
Total	111	100

From the previous table, it is clear that the most common type of project was administrative projects with about 31.5%, followed by medical projects with about 26.1%, and then commercial projects with about 22.5%. The educational projects represent 14.4%, while the minimal percentage was for the military projects with about 5.4% only. The following bar chart represents the percentages of the type of the project:

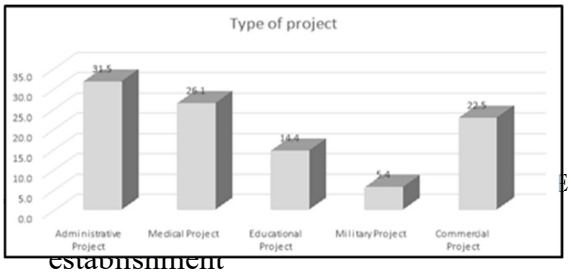

TABLE 5
E OF ESTABLISHMENT

establishment		
Government	75	67.6
Private	36	32.4
Total	111	100

From the previous table, it is clear that the government projects were the highest projects with about 67.6%, while the private projects represent about 5.4% only. The following pie chart represents the percentages of the type of the establishment:

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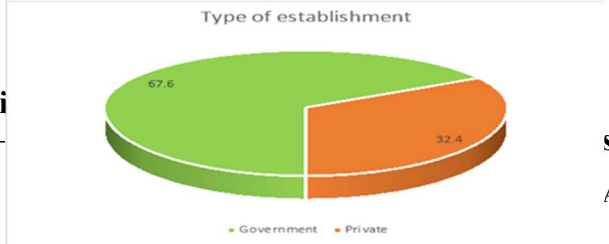

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NO. OF PROJECT TEAM MEMBERS

No. of the project team	n	%
1 to 10	45	40.5
11 to 25	18	16.2
26 to 50	29	26.1
More than 50	19	17.1
Total	111	100

From the previous table, it is clear that the highest number of project team members was from 1 to 10 with about 40.5%, followed by 26 to 50 with about 26.1%, and then more than 50 with about 17.1%. The minimum number of project team members was from 11 to 25 about 16.2% only. The following bar chart represents the percentages of the number of project team members:

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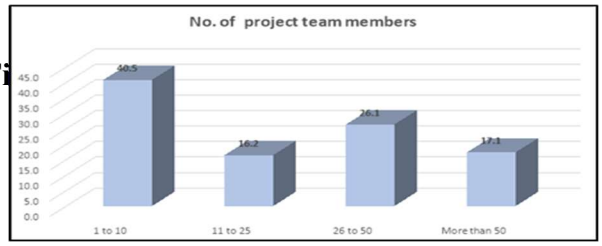

TABLE 7
PROJECT IMPLEMENTATION PERIOD

Project implementation period	n	%
1 to 6 month	42	37.8
6 month to 1 year	49	44.1
More than 1 year	20	18.0
Total	111	100

From the previous table, it is clear that the most common project implementation period was from 6 months to 1 year with about 44.1%, followed by the project implementation period from 1 to 6 months. The minimum project implementation period is 1 year or more, with about 18% only. The following figure represents the percentages of the project implementation period

Fig. IV Project implementation period

The distribution of opinions for each of the 39 statements:

The following table shows the distribution of opinions for each of the 39 statements and the overall:

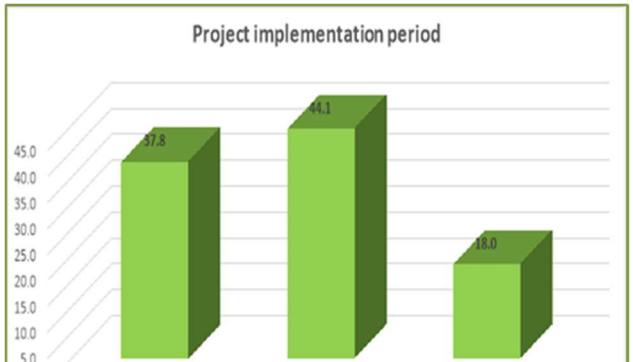

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TABLE 8
STATEMENTS ATTITUDE

Statement	Strongly agree		Agree		Neutral		Disagree		Strongly disagree		Weighted mean	SD	Attitude
	n	%	n	%	n	%	n	%	n	%			
There is a suitable timetable for the project.	22	19.8	57	51.4	16	14.4	15	13.5	1	0.9	2.24	0.96	Agree
There is a task schedule that includes all phases of the project in detail.	21	18.9	54	48.6	13	11.7	22	19.8	1	0.9	2.35	1.03	Agree
There is a clear task schedule directed to all project members.	20	18.0	53	47.7	14	12.6	23	20.7	1	0.9	2.39	1.04	Agree
There are tools and KPIs to monitor any project delays.	22	19.8	44	39.6	9	8.1	30	27.0	6	5.4	2.59	1.23	Agree
There is flexibility in the work schedule that allows you to overcome obstacles.	16	14.4	52	46.8	9	8.1	28	25.2	6	5.4	2.60	1.17	Agree
There are reasons for project delays in the period specified for the implementation of the project, they are, however, few and not in line with the implementation.	16	14.4	62	55.9	25	22.5	7	6.3	1	0.9	2.23	0.81	Agree
There are reasons for the delay in the period granted to the project, These delays are sizable and hold on the project awaiting implementation.	11	9.9	67	60.4	22	19.8	9	8.1	2	1.8	2.32	0.83	Agree
There is a management action plan that does not correspond to the actual project plan.	10	9.0	42	37.8	25	22.5	32	28.8	2	1.8	2.77	1.03	Neutral
The project allowed for	7	6.3	4	41.	2	22.	3	2	3	2.	2.78	1.0	Neut

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Statement	Strongly agree		Agree		Neutral		Disagree		Strongly disagree		Weighted mean	SD	Attitude
	n	%	n	%	n	%	n	%	n	%			
tasks to be executed concurrently.			6	4	5	5	0	7.0		7		0	ral
There were obstacles in sticking to the correct order of task execution.	10	9.0	55	49.5	16	14.4	28	25.2	2	1.8	2.61	1.02	Neutral
There are difficulties in recruiting capable project members.	12	10.8	47	42.3	15	13.5	31	27.9	6	5.4	2.75	1.14	Neutral
Project delay happens because of specific team members.	6	5.4	36	32.4	21	18.9	41	36.9	7	6.3	3.06	1.08	Neutral
Each project phase was executed by phase specialists.	10	9.0	43	38.7	16	14.4	38	34.2	4	3.6	2.85	1.11	Neutral
Team members have past experience on similar projects.	9	8.1	53	47.7	21	18.9	27	24.3	1	0.9	2.62	0.97	Neutral
Project execution was collaborative work.	15	13.5	72	64.9	9	8.1	14	12.6	1	0.9	2.23	0.87	Agree
Team members can easily communicate.	15	13.5	67	60.4	14	12.6	14	12.6	1	0.9	2.27	0.88	Agree
There is one place to work for all team members.	16	14.4	68	61.3	14	12.6	11	9.9	2	1.8	2.23	0.88	Agree
There are external factors that caused the stopping of the project.	11	9.9	75	67.6	13	11.7	9	8.1	3	2.7	2.26	0.85	Agree
Project delay happens because some team member(s) withdraw from the project.	8	7.2	37	33.3	13	11.7	47	42.3	6	5.4	3.05	1.13	Neutral
There have been continuing replacements for project team members.	9	8.1	37	33.3	13	11.7	45	40.5	7	6.3	3.04	1.15	Neutral
During vacation times, project tasks are assigned to competent substitutes.	12	10.8	24	21.6	17	15.3	48	43.2	10	9.0	3.18	1.19	Neutral
The size of the project management team is more than what the project really needs.	9	8.1	41	36.9	28	25.2	26	23.4	7	6.3	2.83	1.08	Neutral

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Statement	Strongly agree		Agree		Neutral		Disagree		Strongly disagree		Weighted mean	SD	Attitude
	n	%	n	%	n	%	n	%	n	%			
There is an alternative management plan when the project is stopped and delayed.	13	11.7	37	33.3	16	14.4	38	34.2	7	6.3	2.90	1.18	Neutral
The project manager has a clear method or a tool from which tasks can be assigned to task members.	16	14.4	51	45.9	16	14.4	25	22.5	3	2.7	2.53	1.08	Agree
There is a mechanism for distributing responsibilities to work on the project.	18	16.2	45	40.5	20	18.0	26	23.4	2	1.8	2.54	1.08	Agree
The project manager does not make project decisions at the right time.	8	7.2	41	36.9	19	17.1	35	31.5	8	7.2	2.95	1.13	Neutral
There is a mechanism for clearly recording suggestions and conveying them to management.	20	18.0	44	39.6	15	13.5	31	27.9	1	0.9	2.54	1.11	Agree
There is an overlap of powers between the concerned departments.	9	8.1	40	36.0	30	27.0	26	23.4	6	5.4	2.82	1.05	Neutral
There is an internal conflict between the members of the management supervising the project.	11	9.9	30	27.0	24	21.6	40	36.0	6	5.4	3.00	1.12	Neutral
There is a lack of financial allocations for the project.	10	9.0	43	38.7	32	28.8	23	20.7	3	2.7	2.69	0.99	Neutral
Project support from external resources is needed.	12	10.8	62	55.9	27	24.3	10	9.0	0	0.0	2.32	0.79	Agree
There is a delay during the delivery of any external resources and services.	12	10.8	55	49.5	30	27.0	13	11.7	1	0.9	2.42	0.87	Agree
There is a delay in obtaining legal approvals before starting the project.	11	9.9	53	47.7	21	18.9	22	19.8	4	3.6	2.59	1.03	Agree
There is a delay in obtaining administrative approvals.	14	12.6	53	47.7	20	18.0	22	19.8	2	1.8	2.50	1.01	Agree
There are suitable computer equipment for the size of the project.	13	11.7	27	24.3	33	29.7	34	30.6	4	3.6	2.90	1.08	Neutral

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Statement	Strongly agree		Agree		Neutral		Disagree		Strongly disagree		Weighted mean	SD	Attitude
	n	%	n	%	n	%	n	%	n	%			
There are operating systems compatible with the requirements of the project.	15	13.5	24	21.6	37	33.3	34	30.6	1	0.9	2.84	1.04	Neutral
There are communication networks with high specifications appropriate to the size of the project.	10	9.0	25	22.5	38	34.2	34	30.6	4	3.6	2.97	1.02	Neutral
There are testing tools for the programs used for the project.	10	9.0	27	24.3	36	32.4	35	31.5	3	2.7	2.95	1.02	Neutral
There are programmers available in the labour market according to the language used in the project.	8	7.2	27	24.3	51	45.9	20	18.0	5	4.5	2.88	0.94	Neutral
Overall	497	11.5	1816	41.9	833	19.2	1043	24.1	140	3.2	2.66	0.40	Neutral

From the previous table, since the weighted means ranged from 2.23 to 3.18, and based on Table I, we can see that the attitudes are either agree or neutral. Also, we can see that, the attitudes are either agreed within 18 statements (46.2%) or neutral within 21 statements (53.8%). The following bar chart represents the percentages of the opinions:

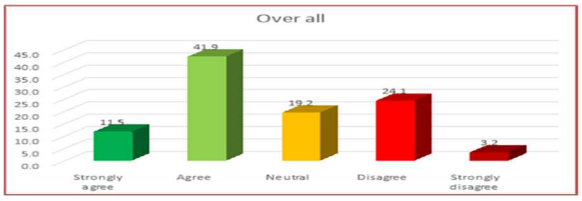

Figure V Bar chart for the overall

This indicates that one of the project's critical success factors was the availability of an appropriate project timeline, which is essential to any project's success. The timetable aids in the planning and coordination of the procedures and actions required to complete the tasks within the allotted time. It helps with deadline setting, resource planning, sequencing organization, progress evaluation, and improving team member cooperation and communication. Clarity for all project participants and the availability of an extensive task calendar for every project stage are also crucial. The task schedule's inclusivity facilitates thorough project planning by segmenting the project into stages and subtasks and outlining the precise tasks that must be completed in each step clearly and collaborate amongst members and helps them comprehend the project strategy as a whole. The task schedule's clarity helps the team communicate, coordinate, and work together more effectively to accomplish goals and focus efforts in one direction—toward success. In addition, the availability of appropriate computers for the project's size is another crucial success aspect. The capacity of project team members to use dependable, high-performing gadgets determines their efficacy and efficiency. Older computers that are incompatible with the project's current software could cause work to move slowly, lead to delivery delays, and

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generally provide lower productivity.

sequentially. This makes it easier for the team to coordinate Even with the aforementioned considerations, some team members' primary failure factors show up as project delays. Most of this is ascribed to deficiencies in personal capacity. A team member will take longer to finish tasks if he does not have the information or abilities needed to complete them effectively. Project delays can also be caused by team members' poor collaboration and communication. The project is also at risk from the absence of some team members or the frequent change of team members. When a team member leaves, the project forfeits the knowledge and expertise the individual has amassed throughout his work. He might know important details regarding certain assignments, technological specifications, or internal procedures. As a result, there is a chance that this knowledge and experience will be lost due to team member withdrawals, which could cause implementation delays or lower-quality output. Since teamwork and harmony are essential to the project's success, it upsets the dynamics and equilibrium within the group. The dynamics of the team as a whole are impacted when a team member leaves or is frequently replaced. It could take some time for new team members to get used to things and comprehend their tasks, which could result in a protracted period of instability and adjustment. The productivity of the project and the team are impacted by this. Moreover, delays in project implementation are caused by delays in acquiring outside resources and services. Project initiation or the execution of particular parts may be hampered if the project is delayed in acquiring the required legal approvals before beginning implementation on time. This could result in schedule delays and perhaps increase project expenses.

Statements with agreement sorted in descending order:

The following table shows the weighted means for each of the 18 agreed statements sorted in ascending order:

TABLE 9
AGREED STATEMENTS IN DESCENDING ORDER

	Statement	Weighted mean	SD	Attitude
15	Project execution was collaborative work.	2.23	0.87	Agree
6	There are reasons for project delays in the period specified for the implementation of the project, they are, however, few and not in line with the implementation period.	2.23	0.81	Agree
17	There is one place to work for all team members.	2.23	0.88	Agree
1	There is a suitable timetable for the project.	2.24	0.96	Agree
18	There are external factors that caused the stopping of the project.	2.26	0.85	Agree
16	Team members can easily communicate.	2.27	0.88	Agree
7	There are reasons for the delay in the period granted to the project, These delays are sizable and hold on the project awaiting implementation.	2.32	0.8	Agree

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31	Project support from external resources is needed.	2.32	30.79	Agree
2	There is a task schedule that includes all phases of the project in detail.	2.35	1.03	Agree
3	There is a clear task schedule directed to all project members.	2.39	1.04	Agree
32	There is a delay during the delivery of any external resources and services.	2.42	0.87	Agree
34	There is a delay in obtaining administrative approvals.	2.50	1.01	Agree
24	The project manager has a clear method or a tool from which tasks can be assigned to task members.	2.53	1.08	Agree
25	There is a mechanism for distributing responsibilities to work on the project.	2.54	1.08	Agree
27	There is a mechanism for clearly recording suggestions and conveying them to management.	2.54	1.11	Agree
4	There are tools and KPIs to monitor any project delays.	2.59	1.23	Agree
33	There is a delay in obtaining legal approvals before starting the project.	2.59	1.03	Agree
5	There is flexibility in the work schedule that allows you to overcome obstacles.	2.60	1.17	Agree

From the previous table, we can see that, the highest agreement between the whole statement was for the statement “Project execution was a collaborative work”, followed by the statement “There are reasons for project delays in the period specified for the implementation of the project, they are, however, few and not in line with the implementation period”, then the statement “There is one place to work for all team members”. The least agreed statement was “There is flexibility in the work schedule that allows one to overcome obstacles”.

This interpretation is possible: The cooperation and coordination of all stakeholders involved in project execution is a critical success factor that adds to the project's success. Achieving success requires the participation of a large number of people from various backgrounds and disciplines. Even if project delays do happen, they are frequently brought on by circumstances outside the project team's control. Furthermore, the organization of the manufacturing process is made possible by the presence of a reasonably well-defined organizational structure. Divergent views exist concerning the availability of adequate flexibility in the project timetable.

Comparisons based on the demographic variables:

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The following table shows the comparisons for the overall mean based on the demographic variables:

A. Comparison based on Type of Project

When testing the effect of the type of the project on the overall mean, we used the One-way Anova test and the results are summarized in the following table:

TABLE 10
TYPE OF THE PROJECT COMPARISON

Type of Project	N	Mean	SD	Min	Max	F	P-value
Administrative Project	35	2.62	0.43	1.36	3.26	1.074	0.373
Medical Project	29	2.62	0.42	1.54	3.59		
Educational Project	16	2.74	0.35	2.03	3.18		
Military Project	6	2.44	0.68	1.10	3.03		
Commercial Project	25	2.75	0.25	2.13	3.13		
Total	111	2.66	0.40	1.10	3.59		

Since the p-value was found to be greater than the level of significance of 0.05, we conclude that there is no significant difference in the overall opinion based on the type of the project.

This suggests that public opinion does not significantly alter depending on the kind of project. Rather than the nature of the project, the presence of a project team and a well-defined strategic vision determines whether the project succeeds or fails. It is contingent upon the degree of dedication and compliance with the established plan, together with the regular fulfilment of deadlines and schedules.

Comparison based on Type of Establishment

TABLE 11
THE TYPE OF ESTABLISHMENT COMPARISON

Type of establishment	N	Mean	SD	Min	Max	t	P-value
Government	75	2.61	0.42	1.10	3.59	1.800	0.075
Private	36	2.75	0.33	1.54	3.23		
Total	111	2.66	0.40	1.10	3.59		

Since the p-value was found to be greater than the level of significance of 0.05, we conclude that there is no significant difference in the overall opinion based on the type of establishment.

Regarding the success or failure of initiatives, the study sample's opinions are unaffected by the type of organization—private or public. Among the most crucial elements that have a big impact on handling issues or difficulties the project may encounter during execution, including managing project-related risks, are careful planning and effective leadership.

A comparison based on No. of Project Team Members

When testing the effect of the No. of project team members on the overall opinion, we used the One-way Anova test and the results are summarized in the following table:

TABLE 12
THE NO. OF PROJECT TEAM MEMBERS COMPARISON

No. of project team members	N	Mean	SD	Min	Max	F	P-value
1 to 10	45	2.61	0.40	1.36	3.59	1.318	0.272
11 to 25	18	2.58	0.46	1.54	3.23		
26 to 50	29	2.77	0.38	1.10	3.23		
More than 50	19	2.67	0.35	2.00	3.26		
Total	111	2.66	0.40	1.10	3.59		

Since the p-value was found to be greater than the level of significance of 0.05, we conclude that there is no significant difference in the overall opinion based on the No. of project team members.

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Project success or failure is influenced by a wide range of factors. The judgments of the sample participants, however, suggest that the number of project participants has no discernible effect. A few key elements that have a big impact on the project include good cooperation, planning, communication, and collaboration throughout the entire process.

A comparison based on the Project Implementation Period.

When testing the effect of the project implementation period on the overall opinion, we used the One-way ANOVA test and the results are summarized in the following table:

TABLE 13
THE PROJECT IMPLEMENTATION PERIOD COMPARISON

Project implementation period	N	Mean	SD	Min	Max	F	P-*value*
1 to 6 month	42	2.59	0.46	1.10	3.59	3.022	0.053
6 month to 1 year	49	2.76	0.35	1.54	3.23		
More than 1 year	20	2.54	0.31	2.03	3.26		
Total	111	2.66	0.40	1.10	3.59		

Since the p-value was found to be greater than the level of significance of 0.05, we conclude that there is no significant difference in the overall opinion based on the project implementation period.

Public opinion is unaffected by the project implementation duration. The length of the project's implementation has not an impact on how satisfied people are with it if there is an expectation that it will be successful. In the same way, if the project is seen negatively, no amount of timely implementation will make the views change. This suggests that there are a variety of things that may have an impact on public opinion in the study, rather than just the project implementation time.

Study Results

1. The findings indicate that administrative projects are the most common type of project and that the percentage of government projects is higher than that of private projects. Teams with one to ten members are the most typical size. Most of the projects were completed in between six months and a year.
2. The findings also show that several variables, such as having an appropriate project timeline that permits reaching the objectives, affect project success. Project completion and success through teamwork and participation among all project members also depend on maintaining a thorough task schedule for every project stage and allocating duties to each team member.
3. The most frequent causes of project failure include delays brought on by some team members, a lack of teamwork, and delays brought on by requirements for legal permission.
4. The findings also show that public opinion on project success or failure determinants is not greatly impacted by the type of project—whether medical, administrative, educational, military, or commercial projects. In a similar vein, public opinion is unaffected by the size of the project team.
5. There are no differences in the general opinion about the effect of members' size on the projects' teams.
6. The duration of project implementation also does not have a significant impact on public opinion.

Recommendations:

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1. It is necessary to analyze and estimate the project accurately before starting the implementation, including estimating project requirements, schedule, and required resources.
2. Identify potential risks that may affect project scheduling and cost.
3. Conduct more training courses for project team members before starting the implementation.
4. Develop a comprehensive and clear task schedule for project execution.
5. Pay great attention to the process of selecting team members to achieve project objectives and ensure their ability to adapt and collaborate in a team working environment.
6. Enhance effective communication among team members and create a work environment that encourages cooperation and coordination through regular meetings, reports, and collaborative tools.
7. Plan and coordinate to obtain external resources and necessary approvals in advance and within a suitable schedule.
8. Provide suitable tools and equipment for project implementation.
9. Allocate additional contingency time in the project schedule to deal with any unexpected delays.
10. Distribute work responsibilities in the project within a defined mechanism.
11. Conduct continuous auditing and review of project progress and costs.

Suggestions for future studies:

1. Investigate the impact of collaborative work on estimating the cost of software projects.
2. Develop a proposed framework for the success requirements of software projects based on cost estimation.

Discussion:

The results have shown that there were several factors contributing to the financing and implementation of projects. The majority of these projects were government projects, which explains the government's interest in investing in many projects compared to the private sector. The results have also indicated that the number of team members in a small project is the most interchangeable technique in projects. This can be explained by the fact that smaller team sizes facilitate flexibility and coordination among team members, unlike larger teams that may experience more bureaucracy and complexity.

Furthermore, the importance of a timeline in the project construction process can be interpreted. Having an appropriate timeline for each project helps ensure that tasks are completed on time. The success of the project also relies on teamwork and collaboration among all team members.

In addition, one of the key factors for project success is good project planning and establishing a suitable timeline. This enables the commitment and efficient execution of all tasks. The results have also indicated that the success or failure of a project is not significantly related to the type of project or its duration.

References

Basic format for journals (when available online):

[1] Mohabuth AQ. A Study of the Identification of the Factors that Lead to Time Delays in Software Development. International Journal of Computer (IJC. 2017;25(1):141–8.

[3]Gumaei A, Almaslukh B, Tagoug N. An empirical study of software cost estimation in Saudi Arabia software industry. International Journal of Soft Computing and Engineering (IJSCE), ISSN. 2015:2231-307.

ISSN:1624-1940
DOI 10.6084/m9.figshare.26115085
http://magellanes.com/

[7]Marolla G, Rosa A, Giuliani F. Addressing critical failure factors and barriers in implementing Lean Six Sigma in Italian public hospitals. International Journal of Lean Six Sigma. 2022;13(3):733–64.
[9]Khalifeh A, Al-Adwan AS, Alrousan MK, Yaseen H, Mathani B, Wahsheh FR. Exploring the Nexus of Sustainability and Project Success: A Proposed Framework for the Software Sector. Sustainability. 2023;15(22):1–18.
[11] Muhammad S, Alasan II, Afridi FK. Impact of Success Factors on Project Success: Empirical Evidence from Khyber Pakhtunkhwa. International Journal Of Special Education. 2022;37(3):1379– 92.
[15] Choetkiertikul M, Dam HK, Tran T, Ghose A. Predicting delays in software projects using networked classification. Conference: SCIT Trade Show and Research Showcase; 2015 2015.
[17] Briciu C, Filip I, Indries I, editors. Methods for cost estimation in software project management. IOP Conference Series: Materials Science and Engineering; 2016: IOP Publishing.
[18] Chirra SMR, Reza H. A Survey on Software Cost Estimation Techniques. Journal of Software Engineering and Applications. 2019;12:226–48.
[19] Laqrichi S, Gourc D, Marmier F. Toward an effort estimation model for software projects integrating risk. arXiv preprint arXiv:150900602. 2015.
[22] Kula E, Greuter E, Deursen A, Gousios G. Factors affecting on-time delivery in large-scale agile software development. IEEE Transactions on Software Engineering. 2021;48(9):3573–92.
[23] Khamis S, Aljedaibi W. A framework for measuring critical success factors of large-scale software systems. International Journal of Computer Engineering and Technology. 2016;7(6):71–82.
[24] Chow T, Cao DB. A survey study of critical success factors in agile software projects. Journal of systems and software. 2008;81(6):961–71.
[25] Hamid FM, Ahmad A, Aimeur E. Factors contributing in failures of software projects. International Journal of Computer Science and Network Security. 2019;19(5):62–77.
[26] Garousi V, Tarhan A, Pfahl D, Coşkunçay A, Demirörs O. Correlation of critical success factors with success of software projects: an empirical investigation. Software Quality Journal. 2019;27:429–93.
[27] Nasir MHN, Sahibuddin S. Critical success factors for software projects: A comparative study. Scientific research and essays. 2011;6(10):2174–86.
[28] Griffiths M. Critical Success Factors in Software Projects. 2022.
[29] Bogopa ME, Marnewick C. Critical success factors in software development projects. South African Computer Journal. 2022;34(1):1–34.
[30] Ebad SA. Influencing Factors for IT Software Project Failures in Developing Countries-A Critical Literature Survey. J Softw. 2016;11(11):1145–53.
[31] Nursikuwagus A, Sagala C. Impact of Electronic Commerce Technology for Students. Proceedings of the 1st International Conference on Informatics, Engineering, Science and Technology, INCITEST 2019; 2019/10. Bandung, Indonesia2019.
[32] Ghafur HH, Asty H, Sevrika H. Teacher's Gestures In Teaching English At Junior High School. EduCurio: Education Curiosity. 2023;1(3):1008–12.
[33] Al Najjar MT, Al Shobaki MJ, El Talla SA. Supporting Senior Management and the Readiness of the Organizational Structure in Palestinian Charitable Institutions to Adopt

ISSN:1624-1940
DOI 10.6084/m9.figshare.26115085
http://magellanes.com/

and Implement Cloud Computing. International Journal of Academic Information Systems Research (IJAISR. 2022;6(3):1–17.

Basic format for papers presented at conferences (unpublished):

[5] Tuan NT. Identifying critical success factors through Interactive Management. MATEC Web of Conferences; 20202020. p. 1–8.

[6]Ziemba E, Papaj T, Jadamus-Hacura M. Critical success factors for adopting state and local e-government polish insights. Proceedings of the 13th International Conference on e-Society 2015, International Association for Development of the Information Society; 20152015. p. 95–102.

Basic format for conference proceedings (published):

[2] Magazinius A, Feldt R. Confirming Distortional Behaviors in Software Cost Estimation Practice. 37th EUROMICRO Conference on Software Engineering and Advanced Applications; 20112011.

[16] Zadeh MT, Kashef R. The Impact of IT Projects' Complexity on Cost Overruns and Schedule Delays. ArXiv. 2022:1–6.

Basic format for periodicals

[4]Ebad SA. An exploratory study of ICT projects failure in emerging markets. Journal Of Global Information Technology Management. 2018;21(2):139–60.

[8]Mundra N, Mishra RP. Development of a model of critical failure factors for integrated LSS–AM practices in Indian manufacturing industries: a fuzzy TISM approach. International Journal of System Assurance Engineering and Management. 2023:1–13.

[10] Al-Saati NA, Alabajee MAA. Selecting best software reliability growth models: a social spider algorithm based approach. 2020.

[12] Shamim MI. Exploring the Success Factors of Project Management. American Journal of Economics and Business Management. 2022;5(7):64–72.

[13] Timilsina SP, Ojha SK, Dhungana BR. Causes of Delay in Construction of Motorable Bridges under "Design and Build Model" of Bridge Project, Department of Roads, Nepal. Modern Economy. 2020;11:1451–62.

[14] Ibraigheeth M, Fadzli SA. Core factors for software projects success. JOIV: International Journal on Informatics Visualization. 2019;3(1):69-74.

[20] Leung H, Fan Z. Software Cost Estimation. Handbook of Software Engineering and Knowledge Engineering. USA: University of Pittsburgh Publishing; 2005.

[21] Mahboob T, Gull S, Ehsan S, Sikandar B. Predictive Approach towards Software Effort Estimation using Evolutionary Support Vector Machine. IJACSA) International Journal of Advanced Computer Science and Applications. 2017;8(5):446–54.

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