

The Impact of Internal Control on Project Management in Construction Site Among Small and Medium Enterprises in Iraq

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Abstract

The present study investigates the relationship between internal control and project management among Iraq construction SMEs. The current research is focused on internal control as multi-dimensional by using its four main components, which are control environment, control activities, self-assessment, and information & communication, while project management was taken as unidimensional. Data were gathered from the employees who are working in construction SMEs in Iraq, either consultants, developers, or contractors. 251 questionnaires were received and analyzed by using SPSS and smart PLS-SEM to measure the research model fit and examine the hypothesis, whether accepted or not within the study context. The model measurement and structural equation model test indicated that all four main hypotheses were accepted, which means that internal control has a positive impact on the four main components of project management in SMEs in the construction sectors in Iraq. Also, the theoretical and managerial implications of this research were then discussed at the end of this article.

Keywords: internal control, project management, construction SMEs, Iraq, control environment, control activities, self-assessment, information & communication.

INTRODUCTION

The construction industry is essential to the growth of every nation, and Iraq is no different. According to the World Bank [1], the building industry in Iraq has experienced various challenges due to the country's low economic position, corruption, and low individual income. In addition, the country's continuing civil war and other conflicts have worsened the difficulties encountered by the construction industry [2]. Therefore, efficient project management is essential for the successful completion of construction projects in Iraq.

There are several projects underway around us in our day-to-day lives, and these go hand in hand with the progress that the project management field has undergone. There is an intense desire in society and the community to bring about successful projects steering clear of failure [3]. Therefore, project managers face the pressure of mitigating such failure. According to the [4], successful projects are gauged based on time, quality, scope, and customer satisfaction.

It is clear that project management is a field of study that has garnered significant attention from researchers due to its importance in a wide range of industries and contexts. project management is widely recognized as an important factor in achieving project success [5].

Project management is the process of planning, coordinating, and controlling resources to achieve particular objectives and goals. It entails the proper management of several aspects, including scope, time, cost, quality, and stakeholder expectations [4].

Project management is extremely crucial in the construction business since it ensures that projects are finished on schedule, within budget, and to the appropriate quality standards [6]. By using project management techniques and tools, organizations can improve the efficiency and effectiveness of their projects and increase the likelihood of achieving their project objectives [7]. Project management is crucial for the development of organizational strategies and the application of a benefits management process on the pre-identified critical success factors promoted better project management practices and ensured an effective impact on a project success [8].

In recent years, most organizations have focused on internal control to avoid or minimize the risk that firms face, thus control in business failure. Internal control indicates the systematic and practical method that attempts to holistically understand, measure, evaluate and manage entire risks faced by the company [9]. Though the topic of internal control is an important issue among higher-level corporate executives, due to the conceptual complexity of internal control, the area has not been explored enough. There are very few empirical studies that have studied the relationship between company performance and total internal control, mostly depending on companies listed on very advanced and highly developed stock markets [10].

Internal control is a crucial part of successful projects in the construction sector. Internal control, on the other hand, refers to the policies and processes a company implements to maintain the integrity and dependability of financial and operational information, protect assets, and encourage compliance with laws [11]. Essential to the proper management of any project, it involves a variety of procedures such as separation of roles, documentation, and management review [12]. In the context of construction projects, internal control is crucial to

ensure that the project is completed on time, within budget, and without deviating from the original design [10].

Salvi and Kerkar [13] discovered that internal control is essential for effective project management and construction. Quality Assurance and Quality Control can reduce the cost of construction and protect investments. A successful internal control system will help streamline the processes and improve the quality of services [14]. Patraini, Dewi [15] showed that Internal control, accounting information systems, and work motivation influence the performance of construction company employees. Sarunova, Burlutkin [16] showed that Internal control in construction organizations is a necessity to ensure the quality of projects. Xian-fu and Oil [17] showed that the application of internal control theory in China oil refining project was successful and achieved excellent control results.

Setting up a system of internal control is a fundamental step to meeting valuable benefits such as reducing risks for occupational fraud and error, ensuring accurate financial reporting and increasing operating efficiencies [18]. In other words, a strong internal control system is a mechanism that is well-integrated with policies, procedures, flowcharts and job descriptions [19]. Therefore, department managers are responsible for establishing and maintaining a controlled environment, and all employees need to be aware of the purpose of the internal controls [20].

Numerous research studies have been conducted on the influence of internal control on project management in the construction sector, with many emphasizing the significance of good internal control systems for successful project completion. Atout [21] discovered project monitoring and control are essential in the construction section for collecting the necessary information to help project managers review progress regularly and take corrective action to avoid delays. Similarly, Wang and Yu [6] discovered that Internal control quality of engineering projects has a significant positive correlation with companies' sustainability, performance, greater customer satisfaction and current market value. Nabilah, Puspita [22] showed that the absence of internal control causes the vendors in telecommunication construction projects to fail to meet specifications.

On the other hand, opportunities for fraud, waste, and abuse increase significantly in a weak internal control environment. Therefore, a clear understanding of an effective internal control system is key to opening the door to the organization's success [23]. In the context of Iraq, the previous study indicated that even though the importance of small and medium constructions in Iraq, there are a lot of challenges faced by the project management in small and medium constructions in Iraq [24].

Projects often experience cost overruns, delayed scheduling, failure, and sometimes abandonment on a project, and all attributed that to the absence of the process to manage the risk [2, 25]. A lack of adequate project management and internal control mechanisms has been cited as a significant factor in the failure of several construction projects in Iraq [26].

In Iraq, where poor economic status, corruption, and low individual income create a very complicated operational environment, the significance of internal control in project management is especially obvious. Without effective internal control systems, projects face the

danger of failing to accomplish their objectives, resulting in schedule and budget overruns and, eventually, project failure [27].

This report aims to investigate the impact of internal control on project management in the Iraqi construction sector. This study attempts to identify the issues encountered by the construction sector in Iraq and the role that internal control may play in resolving these challenges through a review of the relevant literature and empirical evidence.

The results of this study will contribute to the current body of information about the function of internal control in project management within the construction sector, with a particular emphasis on Iraq. It is believed that the findings of this study would assist practitioners and policymakers in the Iraqi construction sector with insights and suggestions and contribute to the effective completion of building projects in the country.

LITERATURE REVIEW

Project Management

The changing business environment of the twenty-first century increases the range of activities coming under the periphery of project management techniques, and the way projects are managed. Projects are open systems because they exist in an open environment and have to respond to the ever-changing dynamics of situations requiring them to become much more adaptive than ever [28]. Project management techniques help to complete projects on time, within budget, and to project specifications. At the same time, they help achieve the other goals of the organization, such as productivity, quality, and cost-effectiveness. The objective of project management is to ensure the completion of projects and to meet agreed goals of time, cost, and scope [29].

Project management (PM) is defined as “the application of methods, tools, techniques, and competencies to a project. Also, Al-Zubaidi, Ariffin [30] have pointed out that PM is a temporary organization that is needed to produce a unique and predefined outcome or result in a pre-specified time using predetermined resources. On the other hand, Project Management Institute PMI [4], stated that project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Furthermore, Tkach, Shmorgun [31] defined a project as “a time and cost-constrained operation to realize a set of defined deliverables up to quality standards and requirements.”

In other words, project management is the planning, execution, and monitoring of project activities to meet project objectives, achieved by effectively controlling and balancing the constraints of scope, schedule, and budget [32]. The main purpose is to produce quality deliverables that meet or exceed the expectations of the project stakeholders. The temporary nature of projects contrasts with processes or operations, which are permanent or semi-permanent and considered as ongoing functional work to create an effective product or service.

The moment an idea and its implementation are conceived, the first thing that comes to mind is how to execute the plan. To this end, numerous areas have to be addressed in project management, which are scope, schedule, cost, and quality. These aspects represented the constraints around which all new ventures and projects are built. According to Aljamee and Naeem [33], project constraints are restrictions imposed by stakeholders or environmental

factors that limit the project team's options. As mentioned above, the four main constraints for any project are scope, timeliness, benefits, and quality.

The scope of the project is that part that entails the determination and documentation of a list of certain goals, deliverables, features, tasks, functions, deadlines, and, eventually, costs. It is a list of what needs to be achieved and the activities that contribute to the project delivery [34]. While the timeliness of the project indicates the limited time available for ending project goals, and it includes the maximum time that should be ending before ending the limited time of the project [3]. Also, Mikes and Kaplan [35] have stated that project management refers to a product/service that is able to satisfactorily perform and is appropriate for the expected purpose of its existence. Whereas the benefits of the project are these are the benefits and gains that the project brings on, and they are referred to in business and early-stage project documents as a project charter, which may be traced to the objectives of the project and its course and duration [36]. There are four subcategories to project management, and they are as follows:

- a) Project Timeliness it means the limited time that is available for ending project goals and includes the maximum time that should end before ending the limited time of the project [3].
- b) Project Scope—the scope of the project is that part that entails the determination and documentation of a list of certain goals, deliverables, features, tasks, functions, deadlines, and, eventually, costs. It is a list of what must be achieved and the activities that contribute to the project delivery [37].
- c) Project Quality—it refers to a product/service that can satisfactorily perform and is appropriate for the expected purpose of its existence [35].
- d) Project Benefits—these are the benefits and gains that the project brings on, and they are referred to in business and early stage project documents as a project charter, which may be traced to the objectives of the project and its course and duration [38].

Internal Control

Internal controls are systems of policies and procedures that protect the assets of an organization, produce reliable financial reporting, promote compliance with laws and regulations, and achieve effective and efficient operations. It is related not only to accounting and reporting but also to the communication processes both internally and externally, staff management and error handling, and procedures for handling funds received and expanded by the organizations [39]. Internal control is a process effected by an entity's board of directors, management, and other personnel, designed to provide reasonable assurance regarding the achievement of objectives relating to operations, reporting, and compliance [40].

This definition is intentionally broad. It captures important concepts that are fundamental to how organizations design, implement, and conduct internal control, providing a basis for application across organizations that operate in different entity structures, industries, and geographic regions [40]. An effective system of internal control consists of all measures taken by an organization to provide management with reasonable assurance that everything is functioning as it should [41]. In recent years, most organizations have focused on internal control systems to minimize business failure and to protect shareholders' investment [42]. The existence of adequate internal controls indicates that their management committees take their

duty to safeguard public donations entrusted to them quite seriously, and it shows that they are improving their performance [43].

Here are many types of controlling in project management; first, controlling as an information system, where control provides updated information to the project managers to avoid risks and overcome obstacles [44]. Hence, information covers the need for an updated cost, time, and implementation status. Second, a mode of project management aims to provide managerial support through planning and control over project implementation. Controlling supervises the whole enterprise's performance and the project as well. Third, a coordinating system that controls the relationship between project management and resource management of the enterprise. Hence, the controlling role is resource optimization within the project and another related project. Therefore, it manages the interdependence between control and planning. Forth, a concept for guiding the financial results of enterprises and projects. This type of control prioritizes the targets of the enterprise over the single project targets to maximize the long-term benefits at the expense of the short-term benefits of the project [45].

Coordination indicates the main system of controlling activities: supplying information and planning a control system. There are differences between strategic control in the long-term and operative control, which is an ongoing process. Strategic control assesses the projects' strengths and weaknesses in association with the organization's current development strategy. It monitors the preliminary project's feasibility, cost-efficiency, and effectiveness according to the adopted guidelines. Additionally, it ranks projects and analyses their goals following the organizational strategic objectives [45].

Internal Control of Construction Smes' Innovative Projects

The innovation activities within construction projects are accompanied by a high degree of uncertainty [46]. Considering the stages of the innovation process and controlling processes to achieve the targeted goals, the main objective is to control uncertainty and the risk level of the innovation project. Forming an internal risk control system within the enterprise that incubates the innovative project represents a major objective for internal control. Accordingly, the innovation project stages should be accompanied by risk management rules and international internal control [47]. Babatunde and Dandago [48] standards argued that elements of internal control reflect the position of controls in the operations' management mode. Internal control requires enterprises to implement self-control adjustments according to the organizational structure and mechanisms of an effective business process [49].

Aspects of Internal Control

Control Environment:

The control environment is the set of standards, processes, and structures that provide the basis for carrying out internal control across the organization [50]. The board of directors and senior management establish the tone at the top regarding the importance of internal control, including expected standards of conduct [51]. Management reinforces expectations at the various levels of the organization. The control environment comprises the integrity and ethical values of the organization; the parameters enabling the board of directors to carry out its governance oversight responsibilities; the organizational structure and assignment of authority and responsibility; the process for attracting, developing, and retaining competent individuals; and the rigor around performance measures, incentives, and rewards to drive

accountability for performance. The control environment has a pervasive influence on all the decisions and activities of an organization [52]. Moreover, The resulting control environment has a pervasive impact on the overall system of internal control [40, 53].

Self-Assessment:

Control Self-Assessment (CSA) has been evolving in the United States since the early 1990s and is now being implemented by many companies worldwide [54]. Control Self-Assessment (CSA) was first suggested as a potential alternative internal audit methodology in 1990 [55]. Control self-assessment is an important aspect of Internal control and risk management procedures [56]. Self-assessment is a type of monitoring that involves the organization evaluating its own internal control systems to ensure that they are functioning effectively. This can be done through the use of internal audits, risk assessments, and other methods [57]. Internal auditors believe that risk assessment, information and communication, control activities, and monitoring contribute to an effective internal control system [58].

Control self-assessment (CSA) can improve company performance in terms of financial customer, internal process, growth, and learning perspectives and can help minimize business risks and improve operational and financial performance [59]. Control self-assessment (CSA) is a method that was developed to improve internal audit methods in order to meet the expectations of the management and stakeholders, as well as to reduce costs [60].

Control Activities:

Control activities are the actions established through policies and procedures that help ensure that management's directives to mitigate risks to achieve objectives are carried out. Control activities are performed at all entity levels, at various stages within business processes, and over the technology environment [61]. They may be preventive or detective in nature and may encompass a range of manual and automated activities such as authorizations and approvals, verifications, reconciliations, and business performance reviews [62]. Segregation of duties is typically built into the selection and development of control activities. Where segregation of duties is not practical, management selects and develops alternative control activities. [40, 48]. Duren [63] found that action and cultural control are positively and significantly associated with company performance. Danescu, Prozan [64] argued that internal control activities can help to reduce the risks associated with the administration of state revenues. Control activities were found to have a significant effect on financial performance [65].

Control activity is considered to be a very important characteristic of project management. It is used to measure the performance of a project, determine if it is on track or off track and make adjustments if needed. Control activities are part of any successful project management plan because they help you keep everything running smoothly [66].

Information and Communication:

Khodorovskii [67] defines information as "details about an entity's properties reflected in material processes and objects or in the response of systems with purposeful activity". Loose [68] communication as "information that enters a process and eventually leaves its inverse process". Communication is the continual, iterative process of providing, sharing, and obtaining the necessary information. Internal communication is the means by which information is disseminated throughout the organization, flowing up, down, and across the entity [40].

Information is necessary for the entity to carry out internal control responsibilities to support the achievement of its objectives [69]. Management obtains or generates and uses relevant and quality information from both internal and external sources to support the functioning of other components of internal control. It enables personnel to receive a clear message from senior management that control responsibilities must be taken seriously. External communication is twofold: it enables inbound communication of relevant external information, and it provides information to external parties in response to requirements and expectations [40].

On the other hand, the perceived communication abilities of managers have an impact on internal control information and communication. If managers are viewed as having poor communication abilities, information and communication will not be controlled effectively [70]. Lack of exposure to information communication technology and continued reliance on paper and manual processes will prevent information communication from being effectively controlled and having an impact on project outcomes [71]. Addition, Internal control problems in SMEs are caused by a lack of managerial skills, lack of monitoring, lack of technology and information, and a lack of an established accounting information system [72].

Internal Control with Project Management:

Internal control is among the cross-cutting processes in the project life cycle. It is included in the project scope, planning, implementation, and work completion. Internal control-related issues are gaining increasing importance in project management. This is because of the increasing pressure for using information collection on project implementation that goes beyond financial aspects to include resources, scope, and schedule to meet stakeholders' expectations. Despite its importance, the internal control relationship with project management is not clear [73], given the complexity of documenting internal control activities within project implementation. Moreover, internal control might not coincide with the project or enterprise processes [47].

Internal control activities are applied within enterprises to describe the coordination of the set of activities and techniques that support project management processes by providing information at every phase in project management, including the definition of project scope, planning, implementation, and project finalization. The application of internal control activities within the project's domain, controlling provides updated information to reduce cost and time. Controlling is applied to projects in common areas of costs, budget, and financial liquidity; work duration and time schedule; work scope, either planned or actual; project rationale; resource availability and resource-work intensity; risk management at the implementation stage; change management; and product quality in the semi-finished and end products [47].

Therefore, by utilizing a different environment that hasn't been examined, this empirical study aims to contribute to the literature. As a result, the following hypothesis could be true:

H1: Internal control has a significant and positive impact on Project Management among construction SMEs in Iraq.

H2: Control Environment has a significant and positive impact on Project Management among construction SMEs in Iraq.

H3: Control Activities has a significant and positive impact on Project Management among construction SMEs in Iraq.

H4: Self-Assessment has a significant and positive impact on Project Management among construction SMEs in Iraq.

H5: Information & Communication has a significant and positive impact on Project Management among construction SMEs in Iraq.

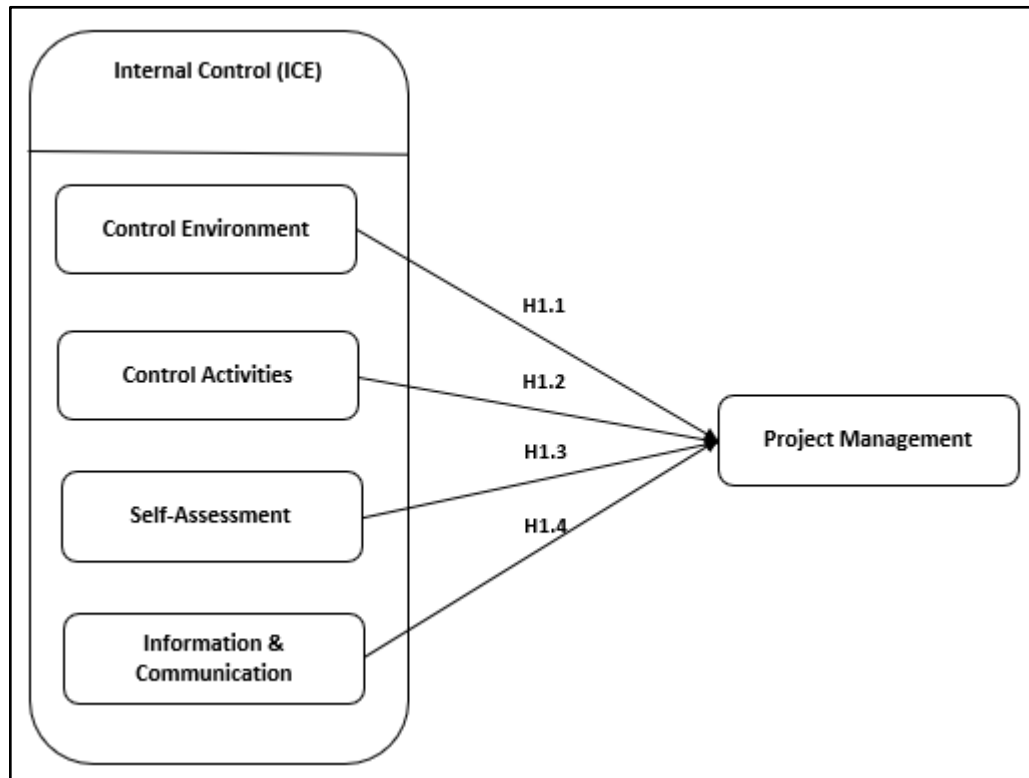


Figure 1: Research Framework

RESEARCH METHODOLOGY

The relationship between internal control and project management was examined in the present study. The quantitative research was conducted by using the survey method and distributing the questionnaire among employees of the SMEs' project management department. Close-ended questions with a 5-point Likert scale were used for all variables. The probability sampling technique, which is sample random sampling, was used in this study.

Moreover, the measurement of variables was adapted from prior studies to be more appropriate for this study. The questionnaire of this research was translated into the Arabic language by two bilingual experts in the marketing area to check on clarity, relevance, and back-translation. This way is part of the validity to make sure that both English and Arabic versions carry the same meaning and measure what the researcher wants to measure [33].

The pilot study was applied by distributing the questionnaire among 50 employees within the target population of this study to test the validity and reliability of the study. Furthermore, through the actual data collection stage, 330 questionnaires were distributed among SMEs in the construction sectors, either consultants, developers, or contractors, and 251 questionnaires were received. Thus, the data were analyzed utilizing SPSS and smart PLS-SEM to measure the

research model fit and examine the hypothesis, whether accepted or not within the study context.

ANALYSIS AND FINDINGS

Descriptive Analysis

As displayed in table 1, Information & Communication has gotten the lowest score, 3.1584, which is pointed out the respondents somewhat disagree with the measurement. On the other hand, the project management mean score was the highest at 3.2789, which means that the respondents neither agreed nor disagreed. Subsequently, the variability accepted as the standard deviation ranged between 0.84835 and 1.17625. Therefore, the respondents have various opinions about the studied variables.

Table 1: Descriptive Statistics for Study Variables (Mean and S.D)

Variable	Minimum	Maximum	Mean	S.D	Skewness	Kurtosis
Internal control	1.06	4.81	3.2483	0.87120	-0.499	-0.779
Control environment	1.00	5.00	3.2908	0.96932	-0.267	-0.594
Control activities	1.00	5.00	3.2968	1.06257	-0.435	-0.872
Self-assessment	1.00	5.00	3.2470	1.12661	-0.419	-1.074
Information & Communication	1.00	5.00	3.1584	1.17625	-0.220	-1.327
Project Management	1.13	5.00	3.2789	0.84835	-0.163	-0.742

The Measurement Model Evaluation

The output of the measurement model's assessment boosts a measurement scales' psychometric properties. In other words, the result has emphasized the reliability and validity of the measuring instrument (Table 2). The Cronbach's alpha for all variables is higher than 0.70. Thus, it will be accepted and considered reliable. The Cronbach's alpha ranged between 0.783 (project scope) and 0.885 (Information & Communication), which exceeded the suggested scale of 0.70 [74]. In conclusion, there is an internal consistency for the variables, and no items have been omitted where AVE and items' factor values exceeded 0.50 [75, 76]. While the value of Composite Reliability and Cronbach Alpha, which explains the reliability of measuring tools, were also higher than 0.70, which consider the lowest value required [76].

Table 2: Items loading, Cronbach's alpha, Composite Reliability (CR) and AVE

Main- Dimension	Sub- Dimension	Code	Loading	Cronbach's alpha	CR	AVE
Internal control	Control environment	CE		0.811	0.876	0.640
		CE1	0.714			
		CE2	0.781			
		CE3	0.834			
		CE4	0.864			
	Control activities	CA		0.847	0.897	0.686
		CA1	0.830			
		CA2	0.836			
		CA3	0.858			
		CA4	0.787			
	Self-assessment	SA		0.810	0.875	0.636
		SA1	0.836			
		SA2	0.833			
		SA3	0.776			
		SA4	0.741			
	Information & Communication	IC		0.885	0.921	0.744
		IC1	0.830			
		IC2	0.834			
		IC3	0.886			
		IC4	0.897			
Project Management (PM)	Project Timeline	PT		0.865	0.908	0.711
		PT1	0.810			
		PT2	0.856			
		PT3	0.864			
		PT4	0.842			
	Project Scope	PS		0.783	0.860	0.606
		PS1	0.765			
		PS2	0.763			
		PS3	0.790			
		PS4	0.796			
	Project Quality	PQ		0.832	0.889	0.667
		PQ1	0.746			
		PQ2	0.864			
		PQ3	0.809			
		PQ4	0.841			
	Project Benefits	PB		0.806	0.873	0.633
		PB1	0.811			
		PB2	0.802			
		PB3	0.809			
		PB4	0.760			

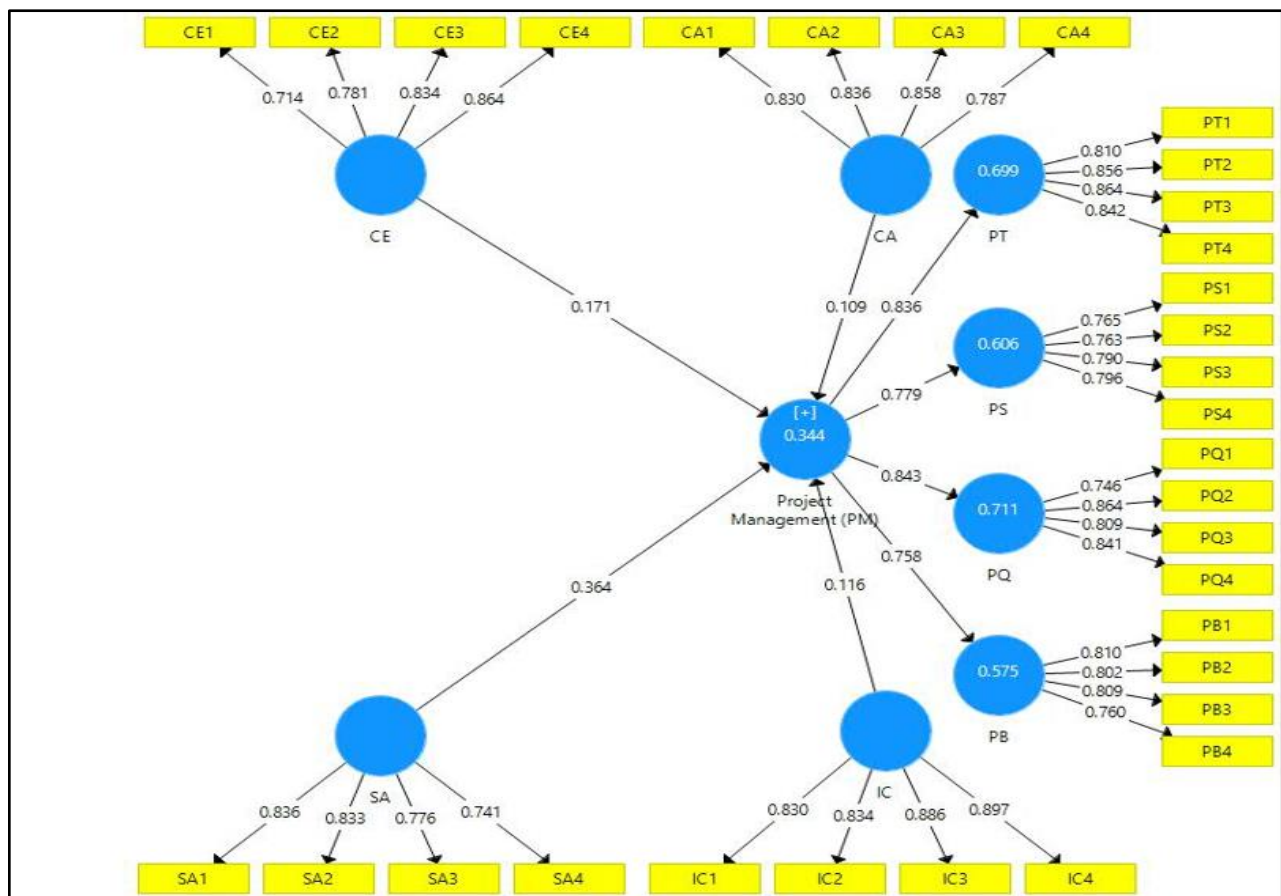


Figure 2: Results of a measurement model (R^2)

The present study used Fornell and Larcker approaches for assessing the validity of discriminant for the model of study (Table 3). The square root for all AVE is not smaller than the correlations among constructs (Table 2). which means all elements achieve the criterion that [77, 78] have suggested. Thus, outcomes of the Fornell and Larcker approach, which is used in the present study, emphasizes that the discriminant validity of the study model.

Table 3: Discriminant Validity (Fornell and Larcker, 1981) for Latent Variables

	AVE	CA	CE	IC	PB	PQ	PS	PT	SA
CA	0.686	0.828							
CE	0.640	0.500	0.800						
IC	0.744	0.504	0.519	0.862					
PB	0.633	0.197	0.322	0.235	0.795				
PQ	0.667	0.314	0.350	0.309	0.538	0.816			
PS	0.606	0.309	0.399	0.368	0.483	0.522	0.778		
PT	0.711	0.331	0.342	0.329	0.472	0.623	0.542	0.843	
SA	0.636	0.298	0.417	0.347	0.367	0.426	0.439	0.406	0.798

Note: CA: control activities, CE: control environment, IC: information & communication, PB: project benefits, PQ: project quality, PS: project Scope, PT: project Timeline, SA: self-assessment.

The Structural Model Evaluation

Once the goodness of the measurement model has been evaluated, the subsequence stages are to examine the hypothesized association between variables by utilizing the PLS Algorithm and assess the model's predictive power through the estimation of the (R^2) values. In PLS-SEM, a bootstrapping technique was applied to test the degree of significance for all paths. Specifically, the bootstrapping result showed that the relationship between internal control toward project management is significant ($H1: \beta=0.545, t=12.143$); thus, H1 was supported. On the other hand, the control environment shows a significant positive relationship with Project management ($H1.1: \beta=0.171, t=2.352$), and H1.1 was supported. Moreover, control activities were found to have no relationship toward project management ($H1.2: \beta=0.109, t=1.752$), and H1.2 is not supported. Subsequently, self-assessment is a significant relationship towards project management ($H1.3: \beta=0.364, t=5.746$), and H1.3 is accepted. Moreover, information & communication has no relationship with project management ($H1.4: \beta=0.116, t=1.735$) H1.4 was not supported by Figure 2&3, and Table 4 shows the results of path coefficients.

Table 4: Summary of Structural Model for Main Hypotheses Results

H	Exog.	→	Endo.	Original Sample (β)	Standard Deviation (STDEV)	t-value (C.R)	p-value	Result
H1	ICE	→	PM	0.545	0.045	12.143	**0.000	Supported
H1.1	CE	→	PM	0.171	0.073	2.352	*0.019	Supported
H1.2	CA	→	PM	0.109	0.062	1.752	0.080	Not Supported
H1.3	SA	→	PM	0.364	0.063	5.746	**0.000	Supported
H1.4	IC	→	PM	0.116	0.067	1.735	0.083	Not Supported

**Significant at $p<0.01$, *Significant at Bootstrapping $p<0.05$

Note: ICE: internal control, CA: control activities, CE: control environment, IC: information & communication, SA: self-assessment.

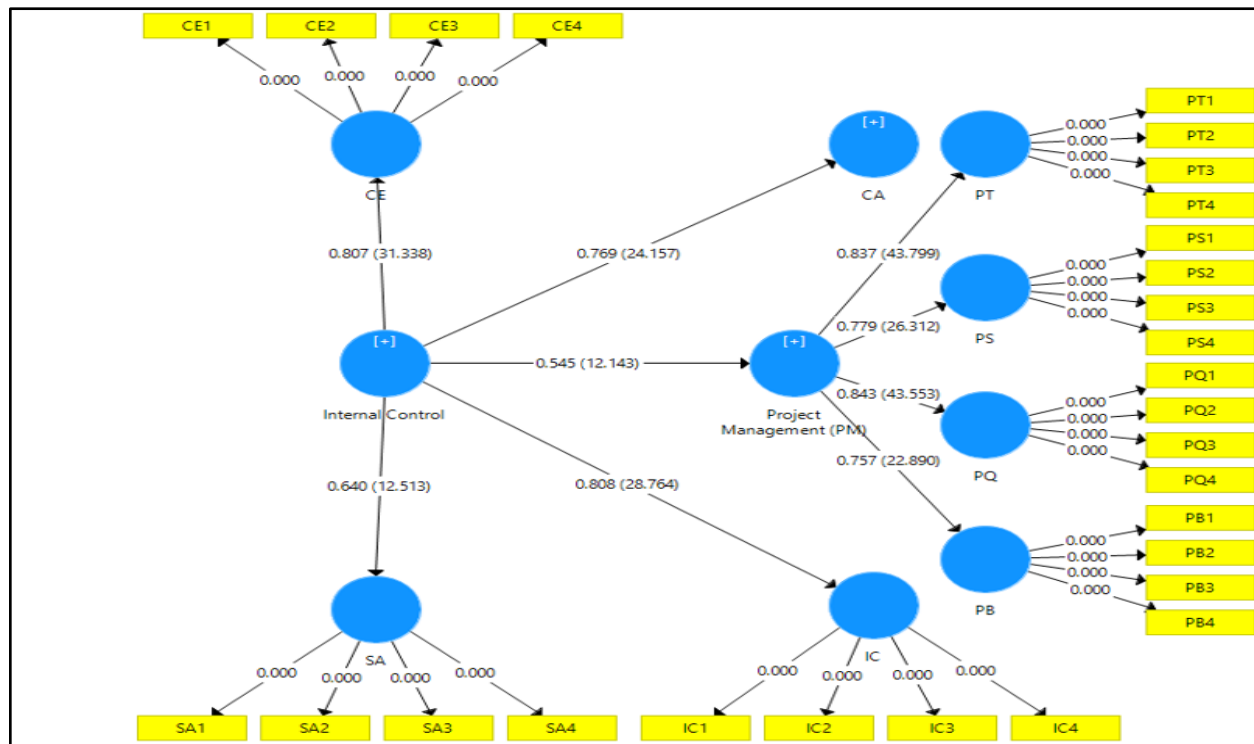


Figure 3: Results of main-variable path coefficients

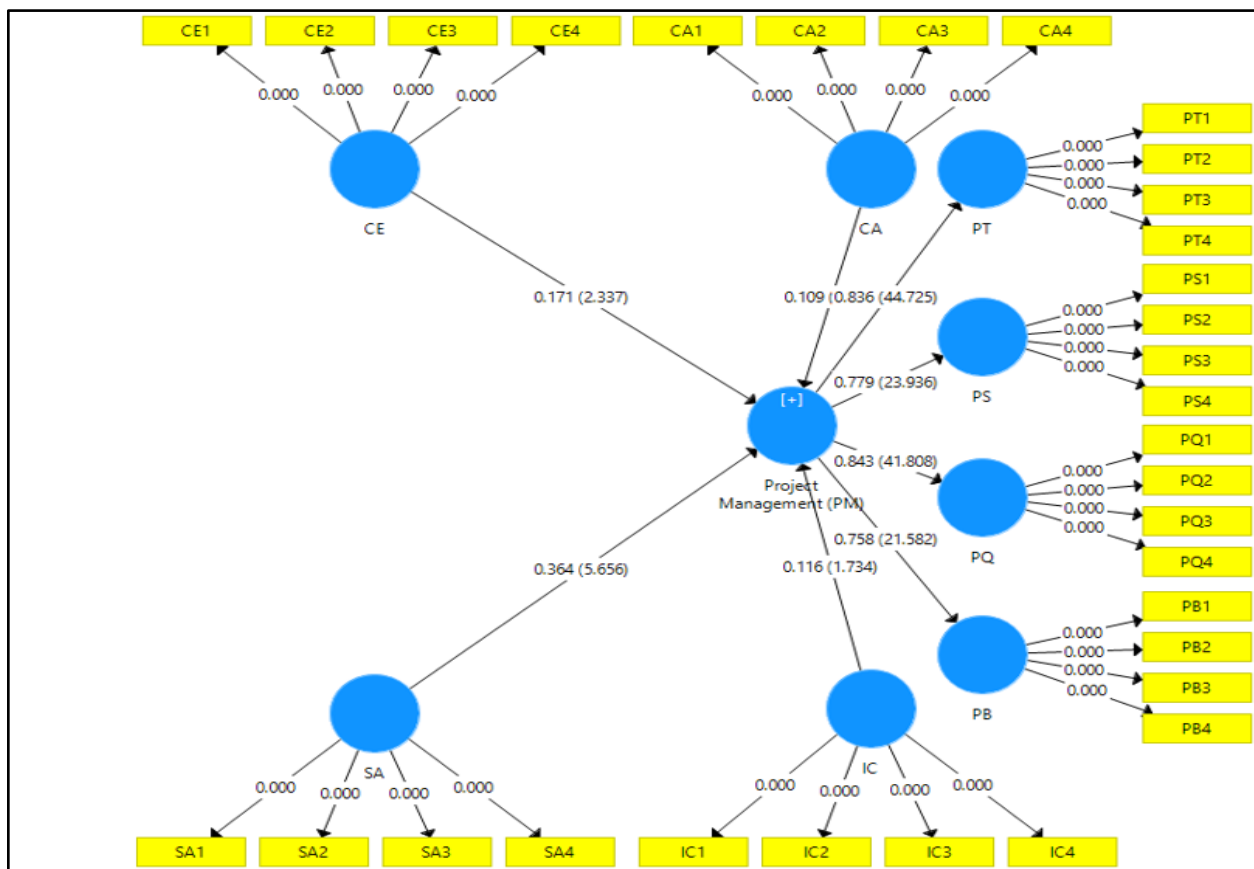


Figure 4: Results of sub-variables path coefficients

Coefficient of Determination: R^2 value

The R^2 value indicates the amount of variance of dependent variables, which is explained by the independent variables [74, 76, 77]. As Chin [79] suggested, the R^2 values can be deemed weak, moderate, and strong if the output of R^2 in SPL-SEM is 0.19, 0.33, and 0.67, respectively. The result of R^2 for organizational Performance (endogenous latent variable) is shown in Table 5 & Figure 2.

Table 5: Coefficient of determination result R^2

Exogenous Constructs	Endogenous Construct	R^2	Chin (1998)
Dimensions of Internal Control	Project Management	0.344	Moderate

Assessment of Effect Size (f^2)

The effect size (f^2) is estimated in this study, where it determines if the effect of an exogenous latent construct is significant, moderate, or slightly on an endogenous latent construct [79]. The effect size calculates by changing the value of R^2 [74, 76]. According to Cohen [80], the threshold of f^2 at "0.02 is small, 0.15 is medium and greater than 0.35 is large". As illustrated in Table 6, the effect sizes for (CA, CE, IC, and SA), were 0.009, 0.033, 0.021, and 0.121, respectively. In following Cohen [80] guidelines, the effect sizes of these four exogenous latent dimensions on sustainable development were small effect size.

Table 6: Effect Size of predictive Variables

Variable	Effect size (f_z)	
	Project Management	Rating
Internal Control (ICE)		
Control Activities (CA)	0.012	small
Control Environment (CE)	0.027	small
Information & Communication (IC)	0.013	Small
Self-Assessment (SA)	0.162	Medium

Assessment of Predictive Relevance (Q^2)

On the other side, the outcome of the blindfolding test points out that the Q^2 value is bigger than zero ($Q^2=0.142$), in agreement with the suggestion of [76] regarding the value of Q^2 that has to be higher than zero; thus the research model had predictive pertinence.

DISCUSSION & CONCLUSION

The primary purpose of this study is to clarify the relationship between internal control and project management in Iraq. The results of the current investigation suggested that all main direct hypotheses for internal control and its related three sub-hypotheses were supported, except the two hypothesis of control activities and information and communication were not supported.

The association between internal control and project management were the strongest and most significant ($\beta= 0.545$; $t =12.143$; $P =0.00$). The results of this study suggest that SMEs in construction site in Iraq can improve its project management performance by implementing

effective internal control practices. This conclusion shows the existence of adequate internal controls indicates that their management committees take their duty to safeguard public donations entrusted to them quite seriously, and it shows that they are improving their performance [43].

The association between control environment and project management at SMEs construction in Iraq was strongly associated with good and significant outcomes ($\beta=0.171$; $t = 2.352$; $P =0.019$). This conclusion shows the resulting control environment has a pervasive impact on project management practices in construction companies. Internal Control and Enterprise Risk Management for Transition to Proactive Management in Construction Companies 2019. [40, 53]. Moreover, which proposed that self-assessment would have a relationship with project management at SMEs at construction in Iraq, was also supported by the data ($\beta=-0.364$; $t =5.746$; $P =0.000$). This conclusion shows Control self-assessment (CSA) is a method that was developed to improve internal audit methods in order to meet the expectations of the management and stakeholders, as well as to reduce costs [60].

On the other hand, the relationship between control activities and project management was not supported by the data ($\beta=0.109$; $t = 1.752$; $P =0.080$). This finding is somewhat surprising, as previous research has often found a positive relationship between control activities and company performance and project management systems [63, 81, 82]. That may be due to characteristics of the board of directors, such as the size and composition of the board and the board's independence, which were not taken into consideration; thus, no apparent influence occurred on determining the effectiveness of control activity methods [83]. In addition, the proper implementation of control activity practice would be hampered by a lack of specialized personnel training [84]. Therefore, it is essential for organizations implementing internal control measures carefully consider how best they should be used so as not create further problems instead providing solutions.

On the other hand, which posited that information & communication would have a relationship with project management at SMEs at construction in Iraq, was not supported by the data ($\beta=-0.116$; $t = 1.735$; $P =0.083$). This conclusion is somewhat unexpected, given that prior studies have frequently discovered a favorable correlation between information and communication and company performance and project management [69]. These unexpected findings can be explained by the following studies. The perceived communication abilities of managers have an impact on internal control information and communication. If managers are viewed as having poor communication abilities, information and communication will not be controlled effectively [70]. Lack of exposure to information communication technology and continued reliance on paper and manual processes will prevent information communication from being effectively controlled and having an impact on project outcomes [71].

Future research can overcome this study's flaws. First off, this study only included Iraqi employees of SMEs engaged in construction. As a result, the results of this study do not accurately reflect the actions of other Iraqi sectors, such as the public, commercial, and industrial ones. Second, it's unlikely that the conclusions can be generalized because the employee characteristics in the firms under study could not be typical. More investigation including information from many organizations and businesses is required to corroborate or refute the conclusions. Longitudinal data are helpful for assessing the true causes because the

data in this study were gathered using a cross-sectional methodology, which suggests that they were done at a particular moment in time.

Although project management and internal control have generated important research interest in the literature, the majority of researchers have indicated that the impact of internal control on the aspects of project management, such as project scope, project quality, project timeline, and project benefits in developing countries, has not been studied. Therefore, the purpose of this study was to understand how internal control affects the many aspects of project management in Iraqi construction SMEs.

The current study put out the hypothesis that improving internal control in construction SMEs will enhance project management. Based on the investigation, the study discovered that internal control significantly affects all aspects of project management in SMEs engaged in building in Iraq. All aspects of project management are impacted by internal control; however, the effects vary depending on the aspect. In other words, construction SMEs in Iraq value internal control since it reduces costs to the company and delays in project execution.

Additionally, the lack of internal control is a problem for Iraqi construction SMEs. As a result, it affects both project quality and timeframes.

On the other hand, this research advances our knowledge of the significance of experts like project managers in the development of a more sustainable economy and society. Therefore, the focus of this study is on how internal control components have helped employees of SMEs engaged in the construction industry in Iraq to create, adopt, adapt, and complete projects successfully.

Moreover, policy-makers need to prepare a priority list of the of internal control influence on project management by construction SMEs in Iraq. Therefore, the government of Iraq should support internal control to move and reach project success in construction SMEs in Iraq.

Even though internal control and project management have created essential research interest in the literature, most researchers have indicated that the effect of internal control on the components of project management, namely project scope, project quality, project timeline, and project benefits in developing countries, has not been studied. Therefore, this research sought to comprehend the main role that internal control plays in impacting the components of project management in construction SMEs in Iraq.

Suggestions

According to the study's findings, management of the company should place a greater emphasis on informing all relevant employees of the organization's major goals and policies because employees need to know how to dedicate their efforts and how crucial their roles and responsibilities are to the success of the company. Management should establish a clear policy to deal with circumstances where a person does not reveal conflicting interests in order to resolve conflict of interest, which is one of the major difficulties in the construction industry. Additionally, management should promptly share all pertinent personnel with vital information that is necessary to the operation of the internal control system.

Management should also assess the effectiveness and efficiency of the internal controls in the company. All of these recommendations should be carried out under suitable supervision in order to approach the best performance, even though powerful internal control systems cannot completely exclude trouble results of their performance.

References

1. World Bank, *IRAQ - World Bank Documents*. world development indicators, 2010.
2. United Nations, *United States Securities and Exchange Commission*. Internal control over financial reporting. Washington, DC: United States Securities and Exchange Commission, 2017.
3. Zhang, Y., *Selecting risk response strategies considering project risk interdependence*. International Journal of Project Management, 2016. 34(5): p. 819-830.
4. PMI, *A Guide to the Project Management Body of Knowledge (PMBOK GUIDE)*. Project Management Institute (PMI), 2018. 11: p. 7-8.
5. Camilleri, E., *Project Success: Critical Factors and Behaviours*. Project Success: Critical Factors and Behaviours, 2016: p. 1-304.
6. Wang, Y. and X. Yu. *The Impact of internal control quality in engineering projects on the corporate value: An empirical study in construction industry*. in *Proceedings of the Ninth International Conference on Management Science and Engineering Management*. 2015. Springer.
7. Montes-Guerra, M.I., et al., *Project management in development cooperation. Non-governmental organizations*. Innovar, 2015. 25: p. 53-68.
8. Gomes, J. and M. Romão, *Improving Project Success: A Case Study Using Benefits and Project Management*. Procedia Computer Science, 2016. 100: p. 489-497.
9. Vasile, E., I. Croitoru, and D. Mitran, *Risk Management in the Financial and Accounting Activity*. Internal Auditing & Risk Management, 2012. 7(1): p. 13-25.
10. TEKESTE, M., *An assessment of internal control practice on success of construction projects*, 2017, St. Mary's University.
11. Annette Schandl and P.L. Foster, *CROWE-COSO-Internal-Control-Integrated-Framework*. 2017.
12. Bakhary, N.A., H. Adnan, and A. Ibrahim, *A Study of Construction Claim Management Problems in Malaysia*. Procedia Economics and Finance, 2015. 23: p. 63-70.
13. Salvi, M.S.S. and M.S.S. Kerkar, *Quality assurance and quality control for project effectiveness in construction and management*. International Journal of Engineering Research & Technology, 2020. 9(2): p. 26-29.
14. Baltaci, M. and S. Yilmaz, *Keeping an eye on subnational governments: Internal control and audit at local levels*. The International Bank for Reconstruction and Development/The World Bank, 2006: p. 31.
15. Patraini, F.S., F.G. Dewi, and D. Sukmasari, *Pengaruh Pengendalian Internal, Sistem Informasi Akuntansi, Motivasi Kerja Dan Kapasitas Sumber Daya Manusia Terhadap Kinerja Karyawan*. Jurnal Akuntansi dan Keuangan, 2021. 26(1): p. 12-21.
16. Sarunova, M.P., et al., *Methodological Approaches To the Organization of Internal Control in Construction Organizations*. Вестник Алтайской Академии Экономики И Права, 2020. 2: p. 322-328.
17. Xian-fu, F. and C. Oil, *Study on internal control for safety management of petrochemical construction projects*.

Journal of Safety Science and Technology, 2011.

18. Myllymäki, E.-R. and A. Jokipii, *The relationship between internal control effectiveness and operating performance*. Contributions to Accounting, Auditing and Internal Control, 2011: p. 131-147.
19. Janvrin, D.J., et al., *The updated COSO internal control-integrated framework: Recommendations and opportunities for future research*. Journal of Information Systems, 2012. 26: p. 189-213.
20. Siwangaza, L., et al., *The status of internal controls in fast moving small medium and micro consumer goods enterprises within the Cape Peninsula*. Mediterranean Journal of Social Sciences, 2014. 5: p. 163-175.
21. Atout, M.M. *Monitoring and Control Process of Construction Projects*. in *Creative Construction Conference 2019*. 2019. Budapest University of Technology and Economics.
22. Nabilah, F., I.A. Puspita, and W. Tripiawan. *The Quality Metric Design to Control Quality of Telecommunication Construction Project Using Internal Control Method*. in *2019 International Conference on Sustainable Engineering and Creative Computing (ICSECC)*. 2019. IEEE.
23. Zakaria, K.M., A. Nawawi, and A.S.A. Puteh Salin, *Internal controls and fraud-empirical evidence from oil and gas company*. Journal of Financial Crime, 2016. 23: p. 1154-1168.
24. Shibani, A., et al., *Adopting building information modelling in small and medium enterprises of Iraq's construction industry*. Proceedings of the International Conference on Industrial Engineering and Operations Management, 2020. 0: p. 457-470.
25. Taraziya, R.F. and R.S.A. Ali, *Survey on the most significant factors affecting the delivery process of construction activities during execution phase in Iraq*. International Review of Civil Engineering, 2020. 11: p. 114-120.
26. Amariza, M. and H. Mulya, *The Basic Aspects of the Failures Resulted in the Failure of the Construction*. Scholars Bulletin, 2019. 05: p. 648-657.
27. Bodiako, A.V., et al., *The goal setting of internal control in the system of project financing*. International Journal of Economics and Financial Issues, 2016. 6(4): p. 1945-1955.
28. Kim, S., S. Chang, and D. Castro-Lacouture, *Dynamic modeling for analyzing impacts of skilled labor shortage on construction project management*. Journal of Management in Engineering, 2020. 36(1): p. 04019035.
29. Xu, X.M., et al., *Effects of different BP management strategies on postoperative delirium in elderly patients undergoing hip replacement: A single center randomized controlled trial*. Journal of Clinical Anesthesia, 2020. 62.
30. Al-Zubaidi, R., et al., *The Effect of Self-efficacy on Sustainable Development: The PetroMasila in Yemen*. Advances in Social Sciences Research Journal, 2022. 9: p. 35-49.
31. Tkach, I., et al., *IMPLEMENTATION OF THE PROJECT APPROACH IN PUBLIC ADMINISTRATION*. International Journal of Management (IJM), 2020. 11(6): p. 1532-1549.
32. Al-Balushi, Z. and C.M. Durugbo, *Management strategies for supply risk dependencies: empirical evidence from the gulf region*. International Journal of Physical Distribution and Logistics Management, 2020. 50: p. 457-481.
33. Aljamee, H.K. and S.M. Naeem, *The benefits of applying project management methodology on project delay: A study in construction projects in Iraq*. IOP Conference Series: Materials Science and Engineering, 2020. 745.
34. Derenskaya, Y., *Project Scope Management Process*. Baltic Journal of Economic Studies, 2018. 4: p. 118-125.

35. Mikes, A. and R. Kaplan, *Towards a Contingency Theory of Enterprise Risk Management Anette Mikes Harvard Business School*. Journal of Harvard Business School, 2013: p. 1-43.
36. Marcelino-Sádaba, S., et al., *Project risk management methodology for small firms*. International journal of project management, 2014. 32(2): p. 327-340.
37. Bowers, J. and A. Khorakian, *Integrating risk management in the innovation project*. European Journal of Innovation Management, 2014. 17: p. 25-40.
38. Jadidoleslami, S., et al., *Benefits of Using Constructability, Operability, and Maintainability in Infrastructure Projects: A Meta-Synthesis*. In Proceedings of the 21st International Symposium on Advancement of Construction Management and Real Estate, 2018: p. 347-363.
39. Krishnan, J., J. Krishnan, and S. Liang, *Internal control and financial reporting quality of small firms: A comparative analysis of regulatory regimes*. Review of Accounting and Finance, 2020. 19: p. 221-246.
40. Coso, *Internal Control — Integrated Framework Executive Summary*. Coso, 2013: p. 1-20.
41. Duncan, J.B., D.L. Flesher, and M.H. Stocks, *Internal control systems in US churches: An examination of the effects of church size and denomination on systems of internal control*. Accounting, Auditing & Accountability Journal, 1999. 12: p. 142-164.
42. Akwaa-Sekyi, E.K. and J.M. Gené, *Effect of internal controls on credit risk among listed Spanish banks*. Intangible Capital, 2016. 12: p. 357-389.
43. Wali, S. and S.M. Masmoudi, *Internal control and real earnings management in the French context*. Journal of Financial Reporting Accounting, 2020. 18(2): p. 363-387.
44. Gui, A., et al., *The Influence of Internal Control, Leadership Style, and Teamwork to Information System Project Success*. KnE Social Sciences, 2019.
45. Bukłaha, E., *The Origin and Types of Controlling in Project Management*. Journal of Management Financial Sciences, 2018(32): p. 27-37.
46. Sundström, P. and A. Zika-Viktorsson, *Organizing for innovation in a product development project. Combining innovative and result oriented ways of working - A case study*. International Journal of Project Management, 2009. 27: p. 745-753.
47. Bukłaha, E., *The Origin and Types of Controlling in Project Management*. Journal of Management and Financial Sciences, 2019: p. 27-37.
48. Babatunde, S.A. and K.I. Dandago, *Internal Control System Deficiency and Capital Project Mis-management in the Nigerian Public Sector*. Procedia - Social and Behavioral Sciences, 2014. 164: p. 208-221.
49. Dibete, K.J. and O.C. Potokri, *The functionality of finance committees in no-fee schools of Limpopo province, South Africa*. National Accounting Review, 2021. 3: p. 256-271.
50. Koutoupis, A. and E. Pappa, *Corporate governance and internal controls: a case study from Greece*. Journal of Governance and Regulation, 2018. 7: p. 91-99.
51. Negash, T., *Assessing the Effectiveness of the Internal Control System in the Commercial Banks of Ethiopia: A Case of Hawassa City*. International Journal of Science and Research, 2018. 8: p. 414-418.
52. Mahadeen, B., et al., *Examining the Effect of the Organization's Internal Control System on Organizational Effectiveness: A Jordanian Empirical Study*. International Journal of Business Administration, 2016. 7(6).

53. Purnaratman, H. and R. Hendrawan, *The effect of the control environment to effectiveness internal control system*. In *Proceeding of International Seminar & Conference on Learning Organization*, 2018.
54. Graves, S. and S.F. Austin, *the Real Story on Control Self-Assessment*. *Academy of Accounting and Financial Studies Journal*, 2003. 7.
55. Melville, R., *Control Self Assessment in the 1990s: The UK Perspective*. *International Journal of Auditing*, 2003. 3: p. 191-206.
56. Dickson, E., *Importance Of Control Self-Assessment (CSA) To Organisations*. 2018.
57. Mitrovic, S. and V.P. Suits, *A methodology for applying modern information technologies in the economic analysis of organization's risks*. *Economic Analysis: Theory and Practice*, 2020. 19: p. 268-285.
58. Fourie, H. and C. Ackermann, *The impact of COSO control components on internal control effectiveness: An internal audit perspective*. *Journal of Economic and Financial Sciences*, 2013. 6: p. 495-518.
59. Harahap, V. and N. Novita., *Control Self Assessment (CSA) In Improving Company Performance*. *Jurnal Akuntansi, Keuangan, Dan Manajemen*, 2022. 3(3): p. 207–223.
60. Mährlein, R., *Control Self Assessment (CSA) / Self-Audit to support the internal audit function*. FURTWANGEN UNIVERSITY., 2015.
61. Latuha, O.A., *Improving internal quality control system within a healthcare setting on the basis of project management*. *Novosibirsk State Pedagogical University Bulletin*, 2017. 7: p. 225-240.
62. Lill, P.A., A. Wald, and R. Gleich, *Agility and the role of project—Internal control systems for innovation project performance*. *International Journal of Innovation Management*, 2020. 24(7): p. 1-29.
63. Duren, T., *Efektivitas Implementasi Tools of Control pada Kinerja Perusahaan BUMN*. *Jurnal Riset dan Aplikasi: Akuntansi dan Manajemen*, 2020. 4(3).
64. Danescu, T., M. Prozan, and A.C. Danescu, *Internal Control Activities: Cause And Effect Of A Good Governance Of Accounting Reportings And Fiscal Declarations*. *Annales Universitatis Apulensis Series Oeconomica*, 2011. 2(13): p. 339-349.
65. Katusiime, A., et al., *Effect of Control Environment and Control Activities on Financial Performance of Kampala International University*. *International Journal of Research*, 2018. 5(20): p. 131-137.
66. Stoyanov, E., *Some Characteristics of Project Control Activity*. *New knowledge Journal of science*, 2017. 6(2): p. 21-28.
67. Khodorovskii, L.A., *Information and Information Communication*. *Scientific and Technical Information Processing*, 2018. 45(3): p. 135-154.
68. Loose, R., *Communication Defined as Complementary Informative Processes*. *Journal of Information, Communication and Library Science*, 1999. 5(3): p. 1-15.
69. D'Aquila, J., *COSO ' s Internal control - integrated framework: updating the original concepts for today's environment*. *The CPA Journal*, 2013. 83: p. 22.
70. Yalcin, I. and M. Seker, *Examination Of Interaction And Statistical Differences Between Information And Communication Within Internal Control And Managers' Perceived Communication Skills*. *European Scientific Journal, ESJ*, 2016. 12(8): p. 240.
71. Ion, C., *the Impact of Information and Communication Technologies on the Effectiveness of Internal Control*

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- System in Banks*. In Development through research and innovation, 2020: p. 38-46.
72. Putra, S. and Y. Hidayah, *Detecting Internal Control Problems Based on COSO and Islamic Perspective: Case on SMEs*. Tazkia Islamic Finance and Business Review, 2014. 8(1): p. 25-44.
 73. Paulo Sergio Scoleze Ferrer, G.D.A.G.a.a., *Tensions between compliance*. International Journal of Managing, 2020.
 74. Hair, J.F., C.M. Ringle, and M. Sarstedt, *Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance*. Long Range Planning, 2013. 46: p. 1-12.
 75. Abdulsamad, A., et al., *The Importance of Entrepreneurial Orientation's Dimensions in Influencing the Organizational Performance of Food and Beverage SMEs*. Advances in Social Sciences Research Journal, 2020. 7: p. 81-99.
 76. Hair Jr., J.F., et al., *PLS-SEM or CB-SEM: updated guidelines on which method to use*. International Journal of Multivariate Data Analysis, 2017. 1: p. 107.
 77. Fornell, C. and D.F. Larcker, *Evaluating Structural Equation Models with Unobservable Variables and Measurement Error*. Journal of Marketing Research, 1981. 18: p. 39.
 78. Abdulsamad, A., et al., *Impact of Market Orientation Components on Organizational Performance of SMEs. The single-industry approach " Food and Beverage Sector"*. Advances in Social Sciences Research Journal, 2021. 8: p. 504-516.
 79. Chin, W.W., *Issues and opinion on structural equation modeling*. MIS Quarterly: Management Information Systems, 1998. 22: p. 7-16.
 80. Cohen, J., *Statistical Power Analysis for the Behavioral Sciences*. Statistical Power Analysis for the Behavioral Sciences, 2013.
 81. Muraleetharan, P., *Control Activities and Performance of Organizations (special Reference in Jaffna District)*. International Journal of Marketing, Financial Services and Management Research, 2013. 2(4): p. 10-16.
 82. Al-Tmeemy, S. and B. Al Bassam, *An empirical analysis of the relationship between cost of control activities and project management success*. MATEC Web of Conferences, 2018. 162: p. 02036.
 83. Shi, X. *The Influence of Board Characteristics on the Effectiveness of Internal Control*. in *Conference on Economics and Management (CEAM2020)*. 2020.
 84. Mitrović, G., G. Vitomir, and T. Davidov, *Application of internal control within the making of management decisions of top management considered as a new way of company operation in the Republic of Serbia*. Megatrend revija, 2021. 18(4): p. 113-128.