“Toward successful project implementation: Integration between project management processes and project risk management”

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TOWARD SUCCESSFUL PROJECT IMPLEMENTATION: INTEGRATION BETWEEN PROJECT MANAGEMENT PROCESSES AND PROJECT RISK MANAGEMENT

Abstract

This study aims to identify the primary aspects contributing to the project's successful implementation by considering project risk management as a mediating component. The paper uses the survey methodology to examine the impact of project management processes (project start-up, planning, execution, monitoring and control, and closing the project) on successful project implementation by the arts of project risk management as a mediating variable. The study population consists of project managers employed by the Jordan Engineers Association, Jordan Construction Contractors Association, and King Abdullah Design and Development Bureau in Jordan, with a sample size of 96 project managers. A questionnaire was divided into three categories. The primary data were analyzed using the Partial Least Squares (3.3.3) software. The result shows that the arts of project risk management mediate the impact of project start-up, planning, execution, monitoring and control, closing, and management processes on successful project implementation. The findings recommend that integrated project management processes with project risk management could enhance the chances of successful project implementation for Jordanian project managers.

Keywords project management processes, project risk management, successful project implementation

JEL Classification G32, M11, M12

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INTRODUCTION

Successful project implementation in project-driven activities is becoming a major goal for organizations looking to be successful in project implementation. The project's sustainability components are examined in a meeting at the project conclusion, according to Silvius (2021). The most noteworthy international project management development is sustainable project management, which originated from this sustainability perspective. Project management can assist in bridging the gap between the academic state-of-the-art and industrial open innovation practice (Guertler & Sick, 2021).

Regardless of how vital project participants are to project stakeholders, Barendsen et al. (2021) suggest that the lack of separation between project stakeholder management and project communication fevers external communication. Jiang et al. (2019) describe the enterprise system of project team support as the ability of enterprise teams to support and assist one another in completing tasks and overcoming problems. Furthermore, project management is the bedrock of any construction project.

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Furthermore, risk management has become a critical problem due to globalization and the never-ending pursuit of higher profits, according to Odimabo and Oduoza (2018). According to Rasnacis and Berzisa (2017), agile project management approaches improve the development process by allowing for fewer germs, faster delivery, effective communication, improved quality, and better risk analysis. However, firms must manage their operations and projects using experienced teams and project management methodologies to ensure business stability and risk management (Sousa et al., 2018). Wei et al. (2021) identify the most significant factors to consider in project management: IT integration, organizational coordination, risk management, and supply chain flexibility and complexity.

As a result, according to Gasik (2016), a strategic plan must include an evaluation of how to achieve these goals, for example, how to analyze the project's effectiveness. Furthermore, a lack of understanding of the concept of partnership in the construction sector, according to Bellini et al. (2016), is a barrier to successful project execution. In addition, Qi and Chen (2014) consider that the most significant areas for construction project management are planning, organizing, and controlling.

Therefore, the research problem centered on some factors contributing to project management failure, the most important factors are a lack of thorough project research, budget management flaws, poor leadership, lack of knowledge among the work team about the tasks expected of them, unclear project objectives, and hesitation before starting the project. This entails the creation of a clear and comprehensive strategy for managing these risks in the most efficient way feasible to accomplish the project goals.

1. LITERATURE REVIEW AND HYPOTHESES

1.1. Projects concept and administration

Organizations must grasp an appropriate project management idea based on their industry, size, or structure in order to succeed. At the organizational level, organizations must identify and measure the initiatives they have. A project that meets stated outputs while maintaining a budget, schedule, and quality constraints may not be good if the desired outcomes are not achieved (PMI, 2017). According to Gasik (2016), projects are defined as "implemented activities grouped into processes at predetermined intervals, checking project status and making critical decisions based on this information, particularly regarding their initiation, and checking for the reasonableness of continuing to implement the project during its implementation." Nevstad et al. (2021) defined project collaboration as a partnership technique in which a project owner incorporates contractors and other key contributors within the project.

Organizations from many industries use either a modified project life cycle or unique project governance in project management (PMI, 2017). Top management views project management as an execution-oriented discipline that has been fully separated from strategy formulation and implementation procedures, according to Musawir et al. (2020). Therefore, one of the most critical components in guaranteeing good project execution and benefits realization is project management.

1.2. Project management in the construction industry

Distinct types of projects necessitate different procedural models in order to be completed successfully. A procedural model organizes project management methodologies and technologies into defined project phases or procedures (Thesing et al., 2021). The construction business operates in an uncertain, constantly evolving environment, necessitating meticulous planning and control of each operation. Mesa et al. (2019) divide a project into three parts based on these processes and project management framework: definition, design, and construction. During the defining stage, the project team creates a plan to meet customer needs, analyzes project feasibility, and decides on project funding, scope, and performance indicators. Surprisingly, the approach is refined through-

out the design phase and implemented during construction. The construction phase employs technology to improve project site operational proficiency and provide real-time tracking and control in order to enhance productivity and prevent rework (Mesa et al., 2019).

In such a process of project management, Sánchez et al. (2013) identified seven activities related to project management:

- Directing a project: this procedure is only for high management.
- Starting a project: a quick pre-project procedure for gathering information needed to begin the project.
- Starting a project: this step evaluates the project's reasoning and begins the project documentation, including the project plan.
- Taking charge of a stage: daily tracking and control duties that need the project manager to spend most of their time on the project.
- Taking care of a performance space, one can complete a strategy for the following phase in a controlled manner by using a boundary.
- Product delivery management: this is the process of providing things, and it is where members of the team supply specialized items that customers will use.
- Finally, when completing a project, one keeps the following in mind: the project manager prepares the project closing during this step, which validates product delivery.

In another model by Loiro et al. (2019), it is noted that the project management processes draw on five processes explicitly:

1. Analysis of requirements: projects, goals, and objectives are developed following client requirements and company objectives.
2. Planning: tasks are being distributed, and a responsive team is formed. The first needs are discussed and written down.
3. Design: a sophisticated team works daily to meet the project's needs, providing ongoing feedback on their gain.
4. Implementation development: the nimble team and confirming cast discuss the work to be accomplished, product grade testing, development documentation, and the iteration's maximum release for production.
5. Process and/or supervision: the product is given to the customer, and continual after-sales support is supplied. Customer feedback is valued and will continue to be valued in continual advancement.

Furthermore, significant attempts are being made to improve the project management process in order to ensure project success. For example, Keshta (2022) developed a four-stage project management consideration model, which included:

- The stage of planning. A project manager uses managerial and interpersonal abilities throughout the planning stage to ensure that the required personnel is not overburdened. For example, the defined scope statement and user construction essential documents are available; regulations for creating the work product are clear; previous data developments and business policies are available. Managers use their administrative and interpersonal skills to ensure that the necessary resources (including subject matter experts such as architects and field specialists) are not trapped during the planning stage.
- The second stage is the most important. This step focuses on defining the project life cycle methodology and stages. This stage is finished collaborating with the project manager, team (including key workers like leaders and business analysts), and subject matter experts. This procedure is divided into four steps: find the greatest match for the current project, compare the dimensions and demands to similar projects, administrative rules, and current life cycle models. The next phase in project execution is to choose a life cycle model or a combination of life cycle models. Customers are an essential part of the project; thus, they have a

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role in the process design. When a consumer is dissatisfied with a method, project management must either explain why or provide alternatives. Project management then tailors the specified life cycle stages to the specific demands of the current project. The actual language or processes may or may not apply to a particular project. Project management may be required to justify why a specific project phase is included or excluded in certain situations.

- The third stage is the review meeting, during which the review team discusses the suggested life cycle model's process-adapting timeline, as well as the rationale for selecting it and the customization of the individual phases. Any process phase inclusion or exclusion that violates the organization's standards or does not follow widely accepted norms may require change.

- The fourth phase is to rework the update. This is the last stage of the process, during which project management makes any necessary changes to the project process, such as altering worksheets based on agreed-upon review comments and rechecks. It is vital to guarantee that no input is overlooked and that, following the incorporation of feedback, the procedures remain in line with the client's requirements.

In every challenging circumstance, project management can be incorporated into the notion of change management. Additionally, project management must look for the most effective and direct manner to execute a project (Vrchota et al., 2021). Starting, planning, executing, tracking and controlling, and closing are the five process groups that most projects require. The PMBOK (Project Management Body of Knowledge) process groups are used (PMI, 2017). Project management can be viewed as a collection of five procedures that are linked together:

- To begin, refer to the section on initiating processes. For example, recognizing and starting a new project are both examples of initiating.

- Second, planning methods allude to project planning's primary goal of guiding execution.

- Finally, execution processes necessitate the most excellent resources to accomplish. Project managers must use their leadership skills to deal with the multiple challenges that emerge during project execution.

- Fourth, tracking and controlling processes relate to tracking project progress, keeping note of deviations from the plan, and taking corrective action as needed.

- Finally, getting stakeholder and consumer acceptance of the completed products and services is part of the closure process.

1.3. Project risk management

According to Alhawari et al. (2012), risk includes all events, incidents, and actions that may obstruct the organization's objectives, plans, and goals. Risk exists in both personal and professional lives, and it is defined as the possibility of a problem developing. Risk measures can be performed based on the four common risk responses: risk avoidance, decreased risk, risk sharing, and risk appetite (Ayudhya & Kunishima, 2019). Risk management in real estate is similar to risk management in other businesses in terms of development, appraisal, and treatment of hazards. Risk management is part of general management operations in a small real estate management organization managed by a few individuals. It is unlikely to be delegated to a specific individual (Ayudhya & Kunishima, 2019). Furthermore, risk management has advanced rapidly in recent decades and now includes risk management planning, identification, analysis, reactions, and project tracking and management (PMBOK, 2004).

From a risk perspective, a model for project risk management in the environment has been developed. Organizational ambidexterity, according to Scholz et al. (2020), refers to a company's ability to manage the tensions between exploration (creatively producing innovations) and exploitation (successfully adopting and enforcing them) to ensure its long-term survival. Exploitative activities focus on continuous improvement of operational operations, including exact planning, adherence to tight standards, risk minimization, and greater control and efficiency of highly repetitive procedures (Scholz et al., 2020). Furthermore, Diaz et al. (2020) feel that pro-

ject risk is commonly defined as exposure to graphic elements that jeopardize achieving intended results. Diaz et al. (2020) study the notion of project management practices as a digital portfolio, in which project leaders must determine variations in the level of support across the projects to optimize the mix's utility in moving the firm toward digitalization strategic goals. The term "project risk management" refers to finishing a project on time, on budget, and with high quality. In project management, when uncertainties are unavoidable, risk event management has become strategic. This way, ubiquitous computing principles like contexts, context histories, and mobile computing might help with proactive project management (Filippetto et al., 2021).

1.4. Successful project implementation

Risks can obstruct the correct implementation of projects and lead to project failure. As a result, project management success is defined as the project manager's ability to complete the project plan as set out by the project owner (Zwikael & Smyrk, 2015). However, one of the most critical aspects of project management is moving forward with the project while considering its risks; planning and scheduling can help decrease project risks (Rezae et al., 2020). In addition, organizations are increasingly relying on risk management to effectively finish projects.

Despite the increased emphasis in industries on successful project implementation, Rumeser and Emsley (2016) discovered that by identifying critical success factors in system dynamics implementation in project management and making system dynamics application in project management successful, more emphasis can be placed on managing people rather than managing model technicalities in order to successfully implement the process model in project management. Similar projects can also be used as a baseline and compared to the current project to evaluate infrastructure, such as human resources or money (Volker & Prostean, 2016). While Lill and Wald (2021) examine the impact of a robust project environment on the success of innovation projects, they also highlight a practical implication. Namely, it can force organizations to reevaluate their current approaches to designing organizational mechanisms for innovation activities.

1.5. Relationship between project management processes, project risk management, and project implementation

Organizations now consider project management techniques and risk management as assets and sources of prospective project implementation. Risk management, according to Buganová and Šimíčková (2019), is an integral aspect of project management. Because each project is different and has its own set of risks, all projects must be assessed individually in terms of potential dangers. Most research on the link between project management practices, risk management, and project implementation focuses on publicly traded organizations (Sohi et al., 2016).

The risk management tool is also a creative tool for improving understanding and implementing project risk management. Its originality stems from the simple but effective way in which users are presented with details, as well as the risk identification and management advice (Tsiga et al., 2017). Project implementation success is a broad phrase that encompasses a variety of project management techniques as well as the art of risk management. According to Shaqour (2022), the project management areas that have improved the most are project communication, risk, and stakeholder management. In contrast, procurement, finances, scope, and quality assurance have had the least influence using various apps.

At each point in the project life cycle, technology would be effective in project management based on numerous tools and methods. As a result, current tools and methods provide insights into risk management and its parts, but they are primarily focused on software products. They also do not devote enough attention to risk and its management in general projects (Tsiga et al., 2017). As a result, current tools and methods provide insight into risk management and its components. However, they are primarily focused on software development and do not give risk and its management sufficient attention in general projects (Tsiga et al., 2017). Project implementation success can be measured in various ways depending on the sector or stage of development; it explains why unexpected events occur at the strategic and opera-

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tional levels during the project execution process. As a result, even if organizations make significant efforts to conduct accurate risk assessments and produce well-designed project plans, the plans will never perform as planned. Projects will perish if the perversion grows. Under these circumstances, effective project implementation tactics that observe excitement in the face of uncertainty should be investigated (Wang et al., 2017).

Considering the above discussion, the following hypotheses have been formulated:

H01: Project management processes (project start-up, planning, execution, monitoring and control, and project close) have no direct impact on successful project implementation.

H01.1: There is no direct relationship between project start-up and successful implementation.

H01.2: There is no direct relationship between project planning and successful project implementation.

H01.3: Project execution has no direct influence on project implementation success.

H01.4: Project monitoring and control have no direct influence on project success.

H01.5: Project closure has no direct influence on project implementation success.

H02: Project management processes (project start-up, planning, execution, monitoring and control, and project close) have no direct impact on the arts of project risk management

H02.1: The arts of project risk management are unaffected by project start-up.

H02.2: Project planning has no direct influence on the arts of project risk management.

H02.3: Project execution has no direct influence on the arts of project risk management.

H02.4: The arts of project risk management are unaffected by project monitoring and control.

H02.5: The arts of project risk management are unaffected by project closure.

H03: The arts of project risk management have no direct impact on successful project implementation.

H04: The arts of project risk management do not mediate the impact of project management processes (project start-up, planning, execution, monitoring and control, and project close) and successful project implementation.

H04.1: The arts of project risk management do not mediate the impact of project start-up and successful project implementation.

H04.2: The arts of project risk management do not mediate the impact of project planning and successful project implementation.

H04.3: The arts of project risk management do not mediate the impact of project execution and successful project implementation.

H04.4: The arts of project risk management do not mediate the impact of project monitor and control and successful project implementation.

H04.5: The arts of project risk management do not mediate the impact of project close and successful project implementation.

2. AIMS AND RESEARCH FRAMEWORK

The primary aim of the study is the development of a new framework that integrates the project management processes (project start-up, planning, execution, monitoring and control, and project close) and successful project implementation. The second aim is the emphasis of this study on the importance of these project management processes (project start-up, planning, execution, monitor and control, and project close) and arts of project risk management as a mediating variable in the Jordan Engineers Association, Jordan Construction Contractors

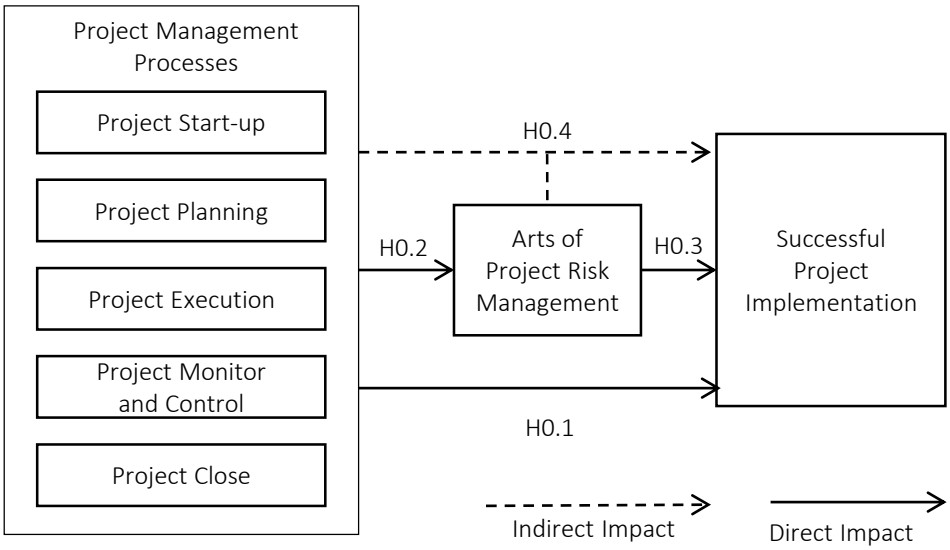

Figure 1. Research model

Association, and King Abdullah Design and Development Bureau. However, the literature review shows no studies that address project risk management as a mediating variable to link the concept of project management procedures to successful project implementation in companies. The focus of this conceptual frame is on this knowledge gap (Figure 1): what role does the notion of project management processes and project risk management have in an organization's successful project implementation?

3. METHODOLOGY

The study used the survey methodology to examine the impact of project management processes (project start-up, planning, execution, tracking and control, and closing the project) on successful project implementation by the arts of project risk management as a mediating variable. A questionnaire was distributed among the staff of the Jordan Engineers Association, Jordan Construction Contractors Association, and King Abdullah Design and Development Bureau.

The current study population consists of project managers employed by the Jordan Engineers Association, Jordan Construction Contractors Association, and King Abdullah Design and Development Bureau in Jordan, with a sample size of 96 project managers. The demographic information is described in Table 1.

Table 1. Demographic information

Description	Variable	Result	Percentage (Approximately)
Gender	Male	92	96%
	Female	4	4%
	Total	96	100%
Job title	Director of the department	25	26%
	Supervising engineer	18	19%
	Site engineer	3	3%
	Project manager	48	50%
	Technical person	2	2%
	Total	96	100%
Experience	Up to two years	1	1%
	From two years to nearly seven years	6	6%
	From eight years to less than thirteen years	9	9%
	More than 13 years	80	84%
	Total	96	100%
Age	Up to twenty-five years	1	1%
	From twenty-five years to less than thirteen years	5	5%
	From thirty-one years to less than thirty-five years	6	6%
	More than 35 years	84	88%
	Total	96	100%

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4. DATA ANALYSIS AND RESULTS

4.1. Measurement model

The data were analyzed using SEM and the Partial Least Squares (PLS 3.3.3) software to assess the direct impact of project management processes (project start-up, planning, execution, tracking and control, and project completion) on successful projects implementation using project risk management as a mediating variable.

Firstly, the path loadings for the proposed model are presented in Figure 2.

Factor loadings greater than 0.70 were reported as adequately significant in the suggested model (Hair et al., 2014). Table 2 displays the route loading findings for the suggested model.

Secondly, the reliability (Cronbach's alpha and composite reliability (CR)) and validity (average variance extracted (AVE) tests for the proposed model were conducted (Table 3).

According to Table 3, construct dependability can be acknowledged if a Cronbach's alpha value for each construct is more than 0.70 (Hair et al., 2014). In addition, CR and AVE analyses were also used to assess the convergent validity of all components in the proposed model (Hair et al., 2014). To accept convergent validity, the matter of CR for all necessary variables should be greater than 0.70, while the value of AVE essentials should be greater than 0.50. As a result, all items met the criteria for dependability and validity.

Thirdly, the outcomes of the path quantity method for the proposed model (without and with Arts of Project Risk Management) use the R-squared value (Table 4).

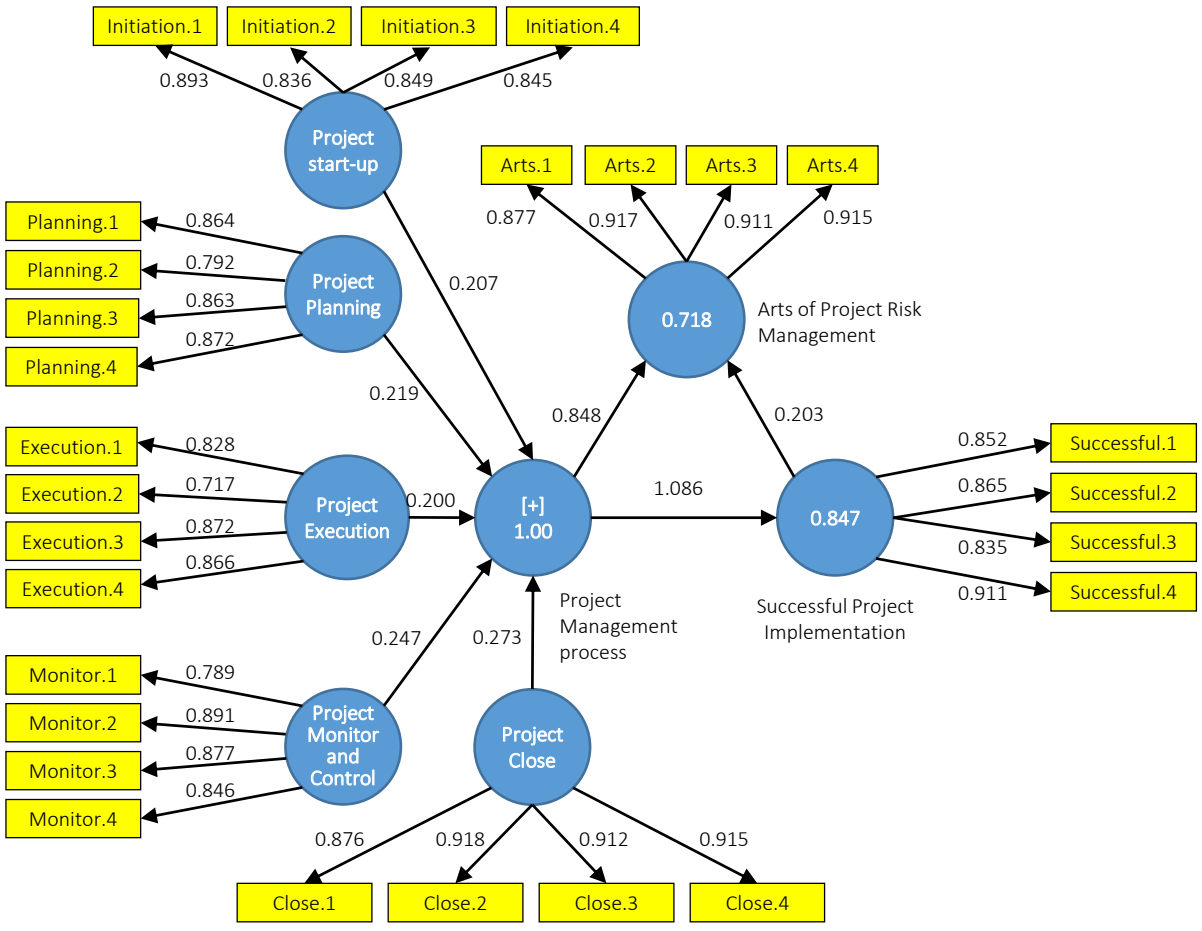

Figure 2. Factor analysis results

Table 2. Factor loadings of the model

Variables	Item	Factor loading	Result
Project Start-up	Initiation.1	0.893	Accept
	Initiation.2	0.836	Accept
	Initiation.3	0.849	Accept
	Initiation.4	0.845	Accept
Project Planning	Planning.1	0.846	Accept
	Planning.2	0.792	Accept
	Planning.3	0.863	Accept
	Planning.4	0.872	Accept
Project Execution	Execution.1	0.828	Accept
	Execution.2	0.717	Accept
	Execution.3	0.872	Accept
	Execution.4	0.866	Accept
Project Monitor and Control	Monitor.1	0.789	Accept
	Monitor.2	0.891	Accept
	Monitor.3	0.877	Accept
	Monitor.4	0.864	Accept
Project Close	Close.1	0.876	Accept
	Close.2	0.918	Accept
	Close.3	0.912	Accept
	Close.4	0.915	Accept
Arts of Project Risk Management	Arts.1	0.877	Accept
	Arts.2	0.917	Accept
	Arts.3	0.911	Accept
	Arts.4	0.915	Accept
Successful Project Implementation	Successful.1	0.852	Accept
	Successful.2	0.865	Accept
	Successful.3	0.835	Accept
	Successful.4	0.911	Accept

Table 3. Reliability and validity tests

Variables	Cronbach's alpha	CR	AVE
Project Start-up	0.879	0.917	0.733
Project Planning	0.865	0.870	0.712
Project Execution	0.838	0.893	0.677
Project Monitor and Control	0.878	0.916	0.733
Project Close	0.926	0.948	0.819
Arts of Project Risk Management	0.927	0.949	0.820
Successful Project Implementation	0.889	0.923	0.750

Table 4. R-squared value

Factor	R (square)
Impact of project management processes (PMP) (project start-up, planning, execution, monitoring and control, and close of the project) to successful project implementation without arts of project risk management as a mediating variable.	0.718
Impact of PMP (project start-up, planning, execution, monitoring and control, and close of the project) to successful project implementation with arts of project risk management as a mediating variable.	0.847

According to Table 4, the R-squared value for the variable (SPI) without the mediation of PRM arts is 0.718. Furthermore, the R-squared evaluation for the variable (SPI) with PRM arts mediation is 0.847. Once the arts of PRM are used as a mediation variable in the relationship between PMP (project start-up, planning, execution, monitoring and control, and close of the project), the measurement growth in the R-squared value is 12.9% (from 0.71.8 percent to 0.84.7 percent). As a result, the high R-squared value verifies the recommended model's predictive validity based on the orientation of the data (Hair et al., 2014).

Finally, the discriminant validity outcomes by consuming the Fornell-Larcker criterion are presented in Table 5.

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Table 5. Results of discriminant validity by the Fornell-Larcker criterion

Factors	Project Start-up	Project Planning	Project Execution	Project Monitor and Control	Project Close
Project Start-up	0.846	–	–	–	–
Project Planning	0.734	0.844	–	–	–
Project Execution	0.720	0.744	0.823	–	–
Project Monitor and Control	0.679	0.791	0.573	0.846	–
Project Close	0.627	0.637	0.657	0.707	0.805

Based on Table 5, the correlation amongst exogenous constructs is less than 0.85 (Hair et al., 2014). Therefore, the discriminant validity of complete constructs is satisfied.

4.2. Hypotheses testing

The study uses bootstrapping with Partial Least Squares (PLS 3.3.3) software to examine all hypotheses to find the T-value. The T-value for the proposed model is shown in Figure 3.

According to Figure 3, the statistical test findings revealed that the T-value results obtained to test the factor of arts of project risk management is mediating the relationship between the impact of project management processes (project start-up, planning, execution, monitoring and control, and close the project) on successful project implementation. Table 6 demonstrates this.

Based on Table 6, the T-value of Project Start-up = 16.958, Project Planning = 18.717, Project

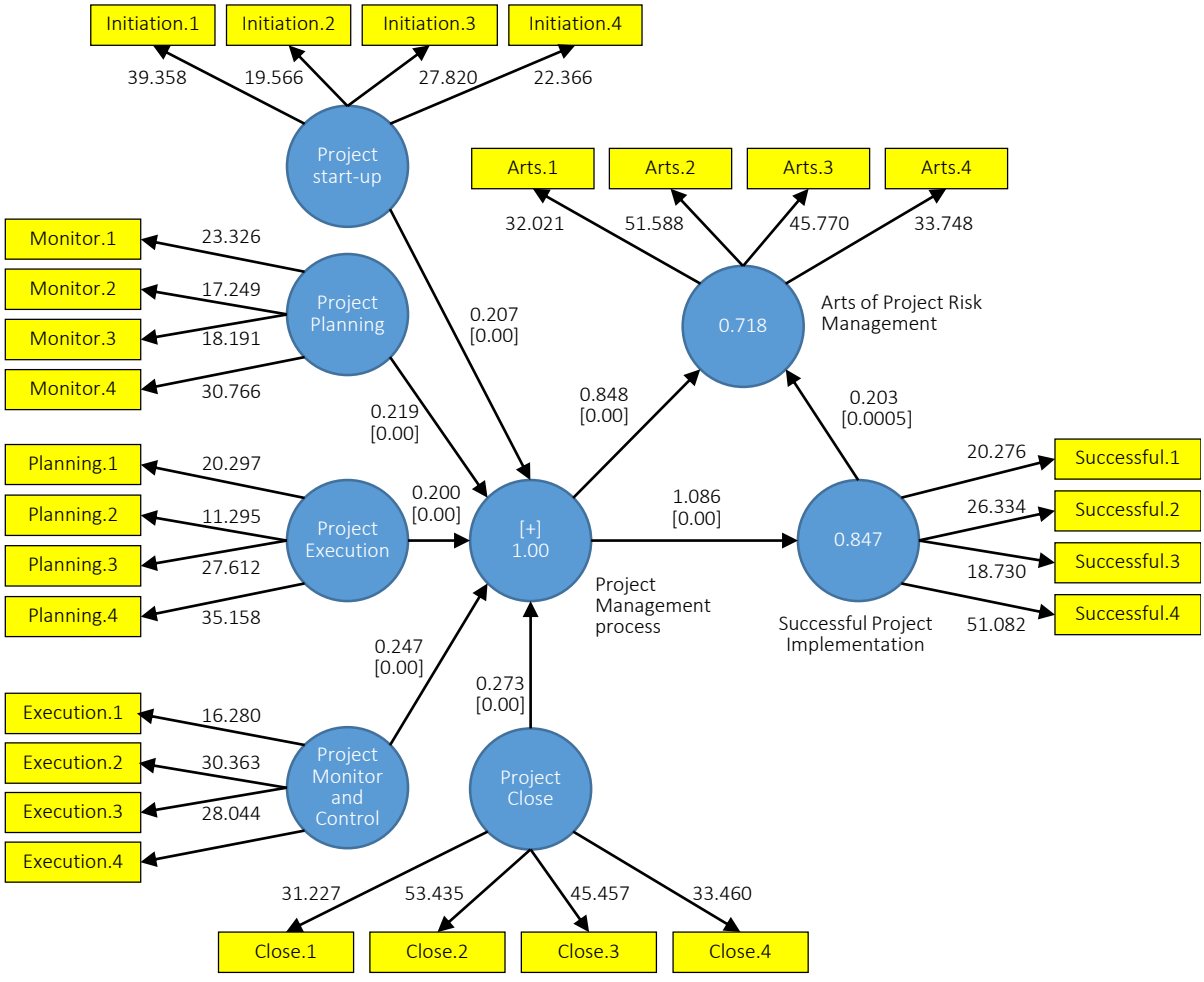

Figure 3. Bootstrapping results

Table 6. Test results for all hypotheses

Relation (direct impact) Hypothetical path	Beta path coefficient	T-value	Interpretation
Project Start-up → Successful Project Implementation	0.189	16.958	Supported
Project Planning → Successful Project Implementation	0.185	18.717	Supported
Project Execution → Successful Project Implementation	0.182	13.887	Supported
Project Monitor and Control → Successful Project Implementation	0.226	15.306	Supported
Project Close → Successful Project Implementation	0.249	20.738	Supported
Project Management Processes → Successful Project Implementation	0.172	2.877	Supported
Project Start-up → Arts of Project Risk Management	0.176	14.961	Supported
Project Planning → Arts of Project Risk Management	0.185	18.175	Supported
Project Execution → Arts of Project Risk Management	0.169	12.933	Supported
Project Monitor and Control → Arts of Project Risk Management	0.210	17.478	Supported
Project Close → Arts of Project Risk Management	0.231	16.328	Supported
Project Management Processes → Arts of Project Risk Management	0.848	23.337	Supported
Arts of Project Risk Management → Successful Project Implementation	0.203	2.809	Supported
Relation (Indirect impact) Hypothetical path	**Beta path coefficient**	**T-value**	**Interpretation**
Project Start-up → Arts of Project Risk Management → Successful Project Implementation	0.036	2.733	Supported and partially mediating
Project Planning → Arts of Project Risk Management → Successful Project Implementation	0.038	2.889	Supported and partially mediating
Project Execution → Arts of Project Risk Management → Successful Project Implementation	0.034	2.770	Supported and partially mediating
Project Monitor and Control → Arts of Project Risk Management → Successful Project Implementation	0.043	2.844	Supported and partially mediating
Project Close → Arts of Project Risk Management → Successful Project Implementation	0.47	2.824	Supported and partially mediating
Project Management Processes → Arts of Project Risk Management → Successful Project Implementation	0.035	2.877	Supported and partially mediating

Execution = 13.887, Project Monitor and Control = 17.478, Project Close = 20.738, and Project Management Processes = 2.877 and Successful Project Implementation exceeds 1.95 (Hair et al., 2014). As a result, it is significant at 0.05. Furthermore, according to Table 6, the value of beta for Project Start-up = 0.189, Project Planning = 0.185, Project Execution = 0.182, Project Monitor and Control = 0.226, Project Close = 0.249, and Project Management Processes = 0.172. This specifies that changing one part of project start-up, project planning, project execution, project monitoring, project close, and project management processes will yield 0.189, 0.185, and 0.182. These outcomes do not back up the hypotheses *H01*, *H01.1*, *H01.2*, *H01.3*, *H01.4*, and *H01.5*, respectively.

According to Table 6, the T-value for Project Start-up = 14.961, Project Planning = 18.175, Project Execution = 12.933, Project Monitor and Control = 17.478, Project Close = 16.328, and Project Management Processes = 23.337, and the Art of Project Risk Management exceeds 1.95 (Hair et al., 2014). Therefore, it is considered an effective method where the T-value is tested at 0.05. Further, according to Table 6, the value of beta for Project start-up = 0.176, Project Planning = 0.185, Project Execution = 0.169, Project Monitor and Control = 0.210, Project Close = 0.231, and Project Management Processes = 0.848. This specifies that modifying one part of project start-up, project planning, project execution, project monitor and control, project close, and project management processes will yield 0.176, 0.185, and 0.169. These outcomes do not back up the hypotheses *H02*, *H02.1*, *H02.2*, *H02.3*, *H04.4*, and *H02.5*, respectively.

According to Table 6, the T-value for project risk management (Arts of PRM = 2.809) and effective project execution is more than 1.95 (Hair et al., 2014). As a result, it is significant at 0.05. Furthermore, based on Table 6, the result of beta (Arts of Project Risk Management = 0.203) states that changing one component in Arts of Project Risk Management will result in a 0.203 change in Successful Project Implementation. These findings contradict *H03*.

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Moreover, in Table 6, the T-value between project start-up, project planning, project execution, project monitoring and control, project close, and project management processes and the art of project risk management exceeds 1.95 (Hair et al., 2014). Therefore, it is significant at 0.05. In addition, the T-value among project risk management and successful project implementation arts exceeds 1.95 (Hair et al., 2014). Therefore, it is considered an effective method where the T-value is tested at 0.05.

Finally, the result related to total effect, the T-values of Project start-up = 2.733, Project Planning = 2.889, Project Execution = 2.770, Project Monitor and Control = 2.844, Project Close = 2.824, and Project Management Processes = 2.877 and Successful Project Implementation supreme 1.95 (Hair et al., 2014). Thus, it got a significant improvement at 0.05. There are no back hypotheses for these findings (*H04*, *H04.1*, *H04.2*, *H04.3*, *H04.4*, and *H04.5*). Consequently, the arts of project risk management mediate the impact of project start-up, planning, execution, tracking and control, closing, and management processes on successful project implementation. Therefore, it partially mediates the effect of project start-up, project planning, project execution, project monitoring and control, project completion, and project management processes on successful project implementation in Jordanian project managers.

5. DISCUSSION

The project management body of knowledge asserts that a set of interrelated practices must be carried out in order to effectively meet project requirements. These practices are organized into process groups, such as planning, monitoring, and controlling, and knowledge areas, such as communication and project integration (Barbosa et al., 2021). Projects vary in many ways; nonetheless, a one-size-fits-all approach is no longer viable. Developing a tailored project life cycle that meets the peculiarities of custom solution projects is unavoidable when using a standard project life cycle (predictive, iterative, incremental, agile, and hybrid) (PMI, 2017). Risk management is critical to improving project risk management rates. "Risk is a significant unknown," for example because it has the potential to change the project's objectives.

On the other hand, uncertainty raises risks and stimulates project managers to research new possibilities and innovations (Huemann & Martinsuo, 2016). The fast digitization of business, often known as Industry 4.0, is a hot topic in project implementation. According to Rezae et al. (2020), various opportunities and risks emerge throughout a project's duration. As a result, Rasnacis and Berzisa (2017) proposed an approach for adapting and executing the agile project management methodology based on the project team's unique characteristics; the proposed method integrates best practices from the methodology adaptation and implementation stages for employee analysis. The idea stems from a shift in how people think about project execution. Modern lean techniques and procedures are being implemented in a variety of businesses through the use of the agile approach in the IT business. They improve interaction and flexibility, and prevent future changes to improve project implementation success rates due to the difficulties presented by traditional approaches (Lalmi et al., 2021).

Finally, project managers must ensure that the five success aspects of common project objectives and commitment, commitment trust, collaborative problem-solving, communication, and partnership success factors are available at all times, according to Nevstad et al. (2021). Building projects are subject to time cost and time overruns, according to Sohi et al. (2016). Poor job performance was identified as one of the reasons for poor performance. A combination of lean production and agile project management was proposed as a workable alternative to deal with project complexity. Aside from project administration, the scale, creativity, and complexity of each project are also important considerations. However, as Tsiga et al. (2017) demonstrate, risk management is an important aspect of project management. Proactive project risk management helps to increase project success rates while cutting costs. However, risk management can be challenging for inexperienced project managers.

Some research on project implementation, project management procedures, and project risk management has been conducted based on previous literature evaluations, such as Buganová and Šimíčková (2019), Sohi et al. (2016), Tsiga et al. (2017), Wang et al. (2017), Gorshkov and Roshchina (2016), and Hair and Sarstedt (2021). Significant theoretical links between project changing mechanisms and project risk management on project implementation have been reported in this paper. As a result, the impact of project management processes as an independent variable and project risk management as a mediating variable on successful project implementation as a dependent variable is investigated in this study. As a result, the successful project implementation model was used because it provides a more complete picture of how project management processes (project start-up, planning, execution, tracking and control, and project close) interact in successful project implementation, and thus is more complete in terms of project risk management.

CONCLUSION

Candidates have embraced the art of project risk management solutions to help them complete their projects successfully because successful project implementation necessitates both good project management processes. Therefore, the emphasis of this study was on the importance of these project management processes (project start-up, planning, execution, monitoring and control, and project close) and the arts of project risk management as a mediating variable. Furthermore, the study discovers that the positive impact of project management processes (i.e., project start-up, planning, execution, tracking and control, and project completion) on successful project implementation is partially mediated by the arts of project risk management. For this, the paper used extensive data from sample participants in recent Jordanian project managers working on a variety of projects at the Jordan Engineers Association, Jordan Construction Contractors Association, and King Abdullah Design and Development Bureau.

Furthermore, ensuring that the value of project management techniques and the art of project risk management is quantifiable is a powerful predictor of project success. Finally, because the methods and skills of project risk management must be integrated across several projects, the study has significant implications for practitioners and institutions implementing successful project implementation.

AUTHOR CONTRIBUTIONS

Conceptualization: Ikhlas Altarawneh.
Data curation: Baker Jarah, Ikhlas Altarawneh.
Formal analysis: Mufleh AL Jarrah, Baker Jarah.
Funding acquisition: Mufleh AL Jarrah.
Investigation: Mufleh AL Jarrah.
Methodology: Ikhlas Altarawneh.
Project administration: Baker Jarah.
Resources: Mufleh AL Jarrah, Baker Jarah.
Software: Ikhlas Altarawneh.
Supervision: Baker Jarah.
Validation: Mufleh AL Jarrah.
Writing – original draft: Baker Jarah.
Writing – review & editing: Mufleh AL Jarrah.

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