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Project Information Overload & Role of PMIS in Managerial Decision-Making: A Study in Construction Companies of Oman

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ABSTRACT

Most projects fail due to information overload. However, the project management information system (PMIS) and other technological support help the project managers (PM) make better decisions. This study looks at the issues of overloaded project information in Omani construction companies that the project managers must deal with. The study was based on quantitative data. The data is based on a survey through a structured questionnaire adopted from previous studies. The target population was the project managers (PMs) leading different construction companies in Oman, and about 296 PMs were approached. Two-stage sampling approach was adopted to collect the data and use SPSS software to analyse the data. The findings indicated that project managers can benefit from using a project management information system (PMIS), and project information overload had no adverse effects. The information system for project management favourably influences decisions. This research benefits project managers, especially those handling complex construction projects. Multiple factors affect the decision-making process in construction companies; therefore, the research recommends exploring the contextual factors regarding the construction industry in Oman and assessing their impact on decision-making processes and project performance.

Keywords: Construction Management; Project Management Information System (PMIS); Information Overload; Decision Making; Resource-based View

1. INTRODUCTION

Project performance is crucial for the success of construction projects during the project's execution. Numerous academics in the field of project management (PM) have examined critical success factors (CSFs) in construction projects (Tripathi & Jha, 2018; Maghsoodi & Khalilzadeh, 2018). However, the idea of project performance remains to be seen, owing to the disparate expectations for project success across stakeholders in PM. Companies encounter several difficulties due to their involvement in multiple construction projects concurrently. Project managers have unique challenges while managing various construction projects with diverse scopes, complexity, and timelines due to conflict between capital and transportation delays.

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Inadequate resource results in additional strain on organizations, resulting in low-quality information and longer project lead times.

Therefore, research proclaims that there is a gap in all essential aspects affecting the Performance of construction projects when project stakeholders' perceptions of success are taken into account (Tripathi & Jha, 2018; Maghsoodi & Khalilzadeh, 2018; Khalid et al., 2018). To enable successful project management, among many others, an information system (IS) is critical to complete the project well on time. To guarantee the success of a project, its resources, particularly those involved in construction, can be effectively managed via the integration of project management information systems (PMIS) abilities (Newton, 2018; Halou et al., 2019). Finding the CSFs that contribute to performance measurement for building projects is the main objective of this study. The study's primary contribution is identifying project success determinants and measuring their influence on project performance across all construction projects. Theoretically, the effect of the PMIS on the output of decision-making in the construction industry is to the extent of the researcher's understanding. For theoretical contribution, is study will use Resource-based View (RBV) and Causal Decision Theory? Projects and PMs in construction companies make a significant contribution to the economy. Thus, project managers play crucial roles, and decision-making is essential to avoid losses.

PMIS has developed significantly over the past few decades and is a complete system that can manage complicated projects over their entire life cycles (Ahlemann, 2009). As long as all users can keep track of individual tasks and better understand how the project is doing, the purpose of PMIS is to increase efficiency by making the development process more transparent. Making it more straightforward for project managers and team members to communicate information clearly and concisely is a crucial development. They find that this greatly aids in keeping individuals informed and on target. For a supply chain to be considered "agile," it must be able to react fast to changes in design, supply, production, and delivery (Ahmad et al., 2019).

Applications for distributed, cooperative multi-project planning that can help level resources are replacing single-project management systems in PMIS (Tsurkan et al., 2019). According to surveys, only 20% of the installations currently on the market reference multi-project schemes. Recent trends demonstrate that PMIS is used by workers across a wide range of businesses to manage various project management responsibilities. PMIS can assist professionals in identifying issues before they arise, meeting deadlines, and collaborating more effectively (Eroshkin et al., 2017).

The construction industry in Oman is one of the high-growth businesses prioritised in the country's five-year development plan (2016 to 2020) partly because the government is trying to make Oman more economically diverse (Ali et al., 2017; Malik & Mitchell, 2018). Construction projects in Oman have been pushed back because of poor planning and scheduling, substandard construction, design changes, variances, claims, and material shortages (Alnuaimi & Mohsin, 2013; Muhammad, 2022).

The construction sector in the Sultanate of Oman needs to overcome several challenges and obstacles that adversely influence its production owing to a lack of knowledge and awareness about project management (Dombrowski et al., 2019). Indeed, faults, reconstruction, failures, delays, accidents, and deaths are all examples of these issues. Accidents occurring during construction might also result in human injuries, lowering the customer satisfaction rating (Alfahad et al., 2022; Ahmad et al., 2022).

As construction projects grow in size and complexity, customers require more facilities, standards, and quality for completion impacts not just quality but also productivity, staff happiness, and customer satisfaction in Oman (Ekrot et al., 2018; Ahmad et al., 2018; Wuyokwe et al., 2022). Saleh and Alalouch (2015) took a somewhat different approach to the difficulties confronting Oman's construction industry. In contrast to the traditional emphasis on building and construction, the study addresses that using integrated and automated PMIS can remain a critical success factor in construction projects. Construction companies in Oman desire to expand, but they encounter various roadblocks in the form of new technology installation and project management directly related to an organisation's cash flow improvement. To grow or extend their operations, Oman's construction companies want to outsource expertise and enter new markets (Al Shehhi & Azam, 2019). PMIS is helpful for construction organisations due to its supposed contribution to timely decision-making and project success (Gavshon & Gorur, 2022). Considering the study's goals, context, and objectives, the main research question was, "What is the impact of the PMIS on managerial decision-making in Oman". Therefore, the research Scope is to look at PMIS in the construction companies in Oman. This study was structured and composed of five major parts. The first part is composed of the introduction and objectives of the study. A thorough content analysis was conducted in the second portion, followed by methodological sections and result analysis. The study's discussion, conclusion, and recommendations are offered at the end for further investigation.

2. LITERATURE REVIEW

Managers ought to decide to control operational efficiency and company processes efficiently. Decisions must be taken regularly and timely to support the interests of internal and external stakeholders. To be willing to make decisions, managers require information to be made accessible to them that is suitable for the decision under review. This chapter continues with a philosophical change from knowing the information system for project management. Then the literature will continue to be essential to constructing the framework.

2.1 Information System (IS)

The word can be thought of or applied to technology related to emerging sciences in gathering, storing, processing, and disseminating information in which information, computation, and telecommunications intersect. Beckinsale and Ram (2006) described IS as 'any technology used to help the compilation, retrieval, dissemination and usage of information.' In more detail, information technology (IT) is to be understood as all forms of hardware and software for a wide range of software, electronics, telecommunications, and information processing techniques, applications, and devices used to create, manufacture, evaluate, handle, package, distribute, retrieve, store, and transfer or obtain information electronically in digital formats like computers, e-mail, the internet, blogs, and social networking (Chen, 2022). The realisation and development of IS started in the late 1970s and early 1980s, with the advent of the minicomputer and later the microcomputer (culminating in the personal computer). In the early years, computer technology was the most influential regarding economic creation and advancement. However, information technology (IT) expansion has generated substantial economic opportunities, holding it as a discreet field has not been economically wise and, as such, the value of growing networking technology, as well as information management technologies – a move from IT to IS –, has arisen (Newton, 2018; Galli, 2018). Today, IS shapes every part of our lives and, paradoxically, takes on an extraordinary layer where

communication platforms are the drivers of social transformation – taking the cyber and tangible realms together more than ever before in a more complex way. Given the rapid development of IS and government policies and plans in place, the future of information systems is promising in any conceivable sector and region.

2.2 Project Management (PM)

Historically, the PM responded to the need to build high-complex civil and development activities. Project management gained more popularity in the 1950s as preparation and control principles were extended to even more complicated programs such as those of the US Navy and, eventually, NASA space projects. Over the past several decades, PM has evolved as a broad-based enterprise process method in the corporate sector (Jovanovic & Beric, 2018). Owing to the growing complexities of the corporate environment, organisations have begun to look at PM as a study and concentrate on developing discipline. The transition from military to industry is mainly evident after the Second World War when the dwindling surplus of wartime labour required new organisational frameworks. Introducing network diagrams, or PERT diagrams, and the critical path approach gave administrators more significant influence overcomplicated programs. Furthermore, the available technologies permitted the management of multinational, cross-industrial, and large-scale projects. This and the strain on today's businesses to produce success soon contributed to the turn of PM into the modern industry (Mbiru et al., 2020; Joyce, 2016).

PM is a specialised type of management of organisations today, analogous to most functional methods, utilised to fulfil a set of company priorities, strategies, and activities within a well-defined timeline and budget. The essence of PM is to help the application of the competitive approach of the company to achieve the intended result (Kubíčková & Hodžić, 2020; Sane, 2019). In recent years, the scholarly community has significantly developed information on PM tools and techniques. However, the effect of technologies on the Performance of the ventures conducted leaves a void for study (Kubíčková & Hodžić, 2020; Sane, 2019).

2.3 Critical Success Factors (CSFs) for Construction Project Management

Many studies have tried to figure out what makes the construction industry successful. According to research, because different people have different ideas about what makes a project good or bad, it is hard to classify a project as good or bad. A literature review was done to understand how different researchers thought about the same thing. Researchers did a lot of different studies to get CSFs. Tripathi and Jha (2018) examined and ranked the characteristics of success patterns in the construction industry using factor analysis and fuzzy techniques. Maghsoodi and Khalilzadeh (2018) surveyed how much it costs, how long it takes, how safe it is, and how good it is to check CSFs. Liu et al. (2016) used different statistical methods to rank 20 CSFs in the Chinese construction industry. An extensive list of CSFs was made after much research. It shows the types of CSFs in construction management, as shown in Table 1 below.

Table 1: Categories of CSFs

Authors	Sub Factors
Ali et al., (2017); Ahmadi Eftekhari et al., (2022)	Project Manager Experience; Delegates Authority
Alnuaimi et al., (2013)	Skills
Tsurkan et al., (2019); Xia et al., (2022)	Coordination

Danesh et al., (2018); Luong et al., (2021)	Project Quality, Cost and Time
Mbiru et al. (2020)	Continued involvement
Liu et al. (2018)	Changes in the project plan
Ekrot et al., (2018); Herrera et al., (2020)	Project overrun situations
Swar et al. (2017); Bawden & Robinson (2020)	Overload information

2.4 Project Management Information Systems (PMIS)

PMIS has become a "comprehensive system that supports the entire life cycle of projects, project programs, and project portfolios" (Eroshkin et al., 2017; Beckinsale & Ram, 2006). In addition to analysing and reporting, they would assist project managers with planning, scheduling, tracking, reporting, and decision-making processes. According to studies, several key elements make it possible for project managers to adopt PMIS. First, whether or not project managers should use PMIS depends heavily on the quality of the details provided by the PMIS. Second, project managers are more willing to utilise the information system if they have the requisite clarification as to their specifications. Thirdly, the knowledge produced must be confident, easy to comprehend, and accessible for project management to share with team members. Fourth, the PMIS enables ongoing innovation monitoring (Tsurkan et al., 2019). Successful PMIS can have individual impacts from the view of happy consumers and successful usage. Effective PMIS, however, can also have operational implications or effects on how well the project performs regarding budget, schedule, and requirements. Nevertheless, project managers in all industries are increasingly using PMIS. The higher impact the PMIS has on the project's progress is associated with the more considerable influence the PMIS has on the project manager (Obeidat & Aldulaimi, 2016; Buckley & Casson, 2019).

2.5 Factors Affecting the Project

Many construction companies seek to reduce the effect of incorrect decision-making issues. Consequently, with low project success proving to be a significant concern confronting executives, introducing PM offices has become one of the critical deliverables for many corporate management teams. Having appropriate monetary resources limits how many jobs a project manager can oversee at once. Below are the fundamental problems impacting the construction organisation of the project.

2.6 Project Information Overload

O'Reilly (1980) asserts that there is a connection between excessive information and subpar project outcomes. The more information you have, the less effective you will be at making decisions. Too much information can make it hard to choose the correct information because it can be hard to separate the necessary information from the rest of the information available and because distractions can cut down on the time available to process the information (O'Reilly, 1980). People who work on projects have a lot more knowledge than those who work on one thing at a time because more projects are ongoing simultaneously. When there is a lot of project knowledge for each project, it can be a problem in project environments (Swar et al., 2017). In the project environment, there needs to be more consistency in how projects are set up and how well people know how to do them. The more complicated a project is, the more confused project workers

become. They need to know what information to give to whom, when, and in what format. Project managers may need help finding good information in some places (Roetzel, 2019).

2.7 Causes of Project Information Overload

Projects are overloaded due to different reasons, especially the interoperability and dependability of the different processes, causing information overloading and affecting the decision-making processes and project performance. For decision-making and smoother project execution, accurate information on the accurate time and fundamental proposition plays an important role (Tsurkan et al., 2019). Moreover, social changes and development are affecting the decision-making processes and project performance, and the most alarming thing is that this information remains overlooked and hidden and does not surface most of the time, affecting the decision-making process and project execution.

Moreover, significant contributors to information overloading are personal factors, information characteristics, characteristics, task and process parameters, information systems and other technological and logistic support, and organisational structure. If the knowledge workers remain current regarding the market trends, needs, demands and other requirements, the decision-making process becomes much more manageable. Similarly, the availability of the correct information at the right time and in proportion to the right people makes the decision-making process more accurate and concise and eliminates the effect of information overloading. In the same way, logical coherence of the processes and tasks and their mapping reduce information overloading. Likewise, the information system has developed the capacity and capability for cognitive processes and shares the burden with PMs and Project leads, improving decision-making processes and reducing information overloading. (Gavshon & Gorur, 2019). Last but not least, the organisational structure (whether centralised, decentralised, or fragmented) plays a vital role in the decision-making processes, provides better logistic, moral and ethical support and reduces the information overloading in the projects.

2.8 Decision Making

Given the vast number of study findings that point to man's failure to make fully reasonable decisions, the reason is nevertheless the company's most predominant and most sought-after point of view. Appropriate behaviour is pursued to such a degree that participants within corporate organisational structures need to mask certain decision-making mechanisms as rational processes to achieve acceptance in thinking and action (Rumeser & Emsley, 2019). The thought of man as absolutely reasonable persisted until the 1950s. Since then, researchers have presented impressive findings demonstrating that man still suffers from many obstacles to free decisions. The failure of our brains to cope with the complexities of important decisions, our prejudice against recent facts, risk aversion, political considerations, and our emotions are factors that influence our decision-making behaviour (Galli, 2018). Given all these observations regarding our natural way of making decisions, we strive to make successful and productive decisions reasonably. The notion of reason in decision-making affects our attempts to reduce resource spending and optimise Performance in operations (Danesh et al., 2018).

However, it is only in recent decades that a theoretical direction has arisen, for which the core issues are how an individual makes a decision and how they can and can be supported in challenging problems of choice. Decision-making issues occur and are considered from unified roles, independent of the fields of the particular application. This query terminology is entirely justified because there is much proof that there are

similar features and patterns of people's actions when taking economic, political, social, and technological decisions. The generality of people's actions and the commonality of their behavioural criteria decide the decision-making theory's uniform analytical activities (Dombrowski et al., 2019).

The need for progressive PM to ensure the adequate settlement of problems affecting construction organisations or community is imminent. PM has been a new solution to the group's potential and issue. Consequently, it is essential to review best practices in the management of projects to ensure their progress. Progress of the project relates to better answers to challenges and methods for the execution of the different systems. Such success will boost working standards and the ways of doing stuff. Many ventures have been carried out, and several improvements have been made. Any ventures have struggled to accomplish their target, contributing to the need to interrogate complete or partial shortcomings (Altahtooh & Alaskar, 2018).

Around the exact moment, management decision is taken using various methods. The introduction of management decisions includes the execution of various techniques, as discussed below:

- Most firms use hierarchy in decision-making to structure operations and enhance central management. In organisations, administrators typically assign their power to decide at a stage that is closer to the level at which more information is required and that directly engages in the execution of a specific decision (Mohamed & Jintian, 2018)
- The usage of goal inter-functional communities in decision-making in organisations is prevalent. These goal sets are typically set up on a provisional basis. The representatives are drawn from various divisions and ranks. The goal of forming such groups is to use the unique expertise and experience of the participants of the community to make precise and nuanced decisions (Mohamed & Jintian, 2018).
- Using structured guidelines and processes in decision-making is an essential means of organising behaviour. However, directives and regulations place rigidity on the management structure, speeding down creative procedures and making it impossible to change strategies owing to evolving circumstances (Muhammad, 2022).
- The purpose of the use of spikes in decision-making is to organise the activities of the cent’s organisation. Planning is a vital management practice to managers devote much of their time. A method of balancing interests and priorities between various levels has been carried out when drawing up proposals. Control and accounting structures are tailored to the management activities of organisations, and on their basis, strategies are being created (Mohamed & Jintian, 2018; Ahmad et al., 2019).

The project manager, line manager, or another team member may make various essential decisions for successfully implementing projects in the construction sector. This is a question that needs a yes or no answer. An example is when a project manager has to decide whether or not to add more team members. To decide this, there is no middle ground. You need to know this before you make a decision. Is this true? If so, choices on how many people to hire and the nature of the work they should perform may be made. Pros and cons are more critical in this option for project management (Ahmad et al., 2018). These decisions are now being conducted based on the fulfilment of specific requirements. This enables the decision-maker to act after a set of conditions have been satisfied.

2.9 Theoretical Perspective

Theories and models help people understand why they do what they do and how they can improve their actions (Geithner & Menzel, 2016). These ideas help to set up the conceptual framework for this analysis. Previous research has used theories from different fields, like psychology and sociology in PMIS, to help people make decisions. Because of this, much research was done in the literature.

2.10 Resource-based View (RBV)

According to the lens of this theory, firms are considered a collection of resources; the resources can be in the form of men, money, machinery, material, time, and so many other forms (Newton, 2018; Gavriel, 2019). All these resources are coordinated and connected in a logical coherence to generate maximum output and competitive advantages. All the resources, whether they are available in bulk or scarce, their actual utilisation gives competitive advantages to construction firms. All of them are important and become constrained if they are not available or scarce. However, developing human assets and resources needs to be staged as the top priority. The groomed and well-skilled knowledge workers give new directions even to failed projects. Similarly, resource mapping and their proper deployment, extraction (release) and other management results in time and cost reduction. Lean management practices and concepts must be applied while managing organisational resources and should always be maintained on their actual utilisation, management and maintenance. Moreover, projects remain always unique. Therefore, they may not accept some or some specific resources from other projects; therefore, to smoothen their execution at a faster rate, specific resources need to be arranged for the projects. Research also proclaims that the variety and diversity of the resources make the project execution more successful. Furthermore, the PMs should collate the project resources, increasing performance and decision-making processes.

2.11 Conceptual Framework

PM is one of the big problems confronting the global economy. Construction companies that shape the backbone of the economy dynamically alter their nature and thus entail improvements in management practices and systems. One part of these improvements is the Performance of new fast-changing, which varies from the existing strategy. These improvements result in the addition of dedicated project teams to traditional hierarchical systems. PM is also becoming a crucial topic as the value of projects for construction businesses rises. Construction organisations, where decentralised project teams primarily carry out various specialised tasks, are particularly noticeable. A variety of other challenges emerge during the execution of the programs, including human management concerns relating to the construction of project teams, decisions surrounding coordination with the customer, and the process of making market evaluations as well as decisions (Alfahad et al., 2022). Project managers must therefore make judgments that control risk, simplify situations, and are ideally advantageous to the project, even while dealing with these issues (Dombrowski et al., 2019). This can be accomplished as construction organisations typically acquire PMIS to supply top managers with the critical resources that support the decision-making process in choosing, preparing, coordinating, and managing projects and portfolios (Ekrot et al., 2018).

PMIS consists of records comprising project-specific material and procedures relating to data planning, storage, conservation, and use (Geithner & Menzel, 2016). These protocols are used for developing, preparing, and implementing projects within different organisations. PMIS are automated solutions that enable project managers to oversee, document, and regulate their projects from start-up to start-up (Tsurkan et al., 2019). PMIS assists PMs in the preparation, coordination, and monitoring of programs, but also the strategic decision-making of projects. In addition, PMIS allows individuals and teams to monitor project

success and offers vital visibility into project-related information, such as plans, budget, personnel, vendors, time, expense, quality, and documentation. PMIS also increases the Performance of projects by allowing the planning times, the extent of execution of activities, and the overall status and success of projects more apparent (Obeidat & Aldulaimi, 2016). In addition, PMIS lets project teams and other contributors keep up-to-date by allowing a coherent flow of information. To enhance decision-making about PM, the PMIS wants to gather information criteria relevant to ability and efficiency indicators from the management team (Swar et al., 2017). The conceptual framework in Figure 2 below has demonstrated how PMIS will boost decision-making in the right direction.

The literature on information overload discusses the main causes and effects and suggests workable solutions to deal with the problems associated with information overload. These countermeasures range from general advice on behaviour to more specialised software solutions that aid in processing vast volumes of data. A summary of the elements (personal, information characteristics, task & process parameters, organisational design, and information technology) mentioned in the reviewed literature can be found in Figure 1.

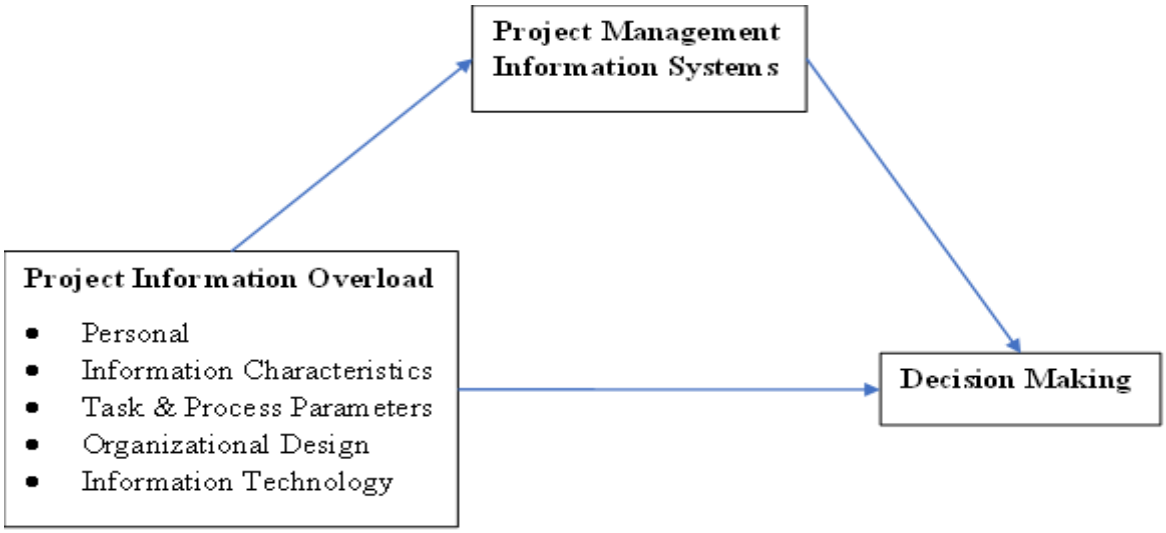

Figure 1: Conceptual Framework

O'Reilly (1980) says there is a link between too much information and poor project results. Beyond a certain point, more knowledge might make it harder to make good decisions. Overloading your brain with too much information can make it hard to choose the most critical information because it can be hard to separate essential facts from the rest of the information available, and distractions that cut down on the time you have to process information (O'Reilly, 1980). The project manager in a project environment gets more information because more projects are going on simultaneously. When there is a lot of project information for each project, it cannot be accessible in a project setting. In a project environment, there is a limited amount of information that people can look at, and there is little good information to look at (Elonen & Artto, 2003). The more complicated a project is, the more people need to know who should get information, when they should get it, and in what format (Elonen & Artto, 2003). Project managers may need help finding reliable information in these places. The below hypothesis formed:

H1: *Project information overload (personal information characteristics, task & process parameters, organisational design, and information technology) has a negative impact on decision-making in construction companies in Oman.*

H2: *Project information overload (personal information characteristics, task & process parameters, organisational design, and information technology) has a negative impact on project management information systems in construction companies of Oman.*

An environment where a project occurs forces the project manager to use the PMIS regularly. If the project manager does not like the information the PMIS provides or how much of it does, there is a chance he will not utilise it again (Raymond & Bergeron, 2008). As an alternative illustration, if the project manager is happy with the PMIS, he or she is more likely to employ the information the PMIS provides.

Raymond and Bergeron (2008) looked into the relationship between PMIS use and project success, but they found no evidence that there was a direct link between them. However, they found that project managers who used PMIS more often made more timely decisions through their work. A study of the link between using PMIS information and making good decisions has yet to be done. Using PMIS data could result in better decisions, especially considering that PMIS data will only be used in a project environment if it has worked well in other projects. The below hypothesis formed:

H3: *Project management information systems positively impact decision-making in the construction companies of Oman.*

H4: *Project management information systems mediating the relationship between project information overload (personal information characteristics, task & process parameters, organisational design, and information technology) and decision-making in construction companies of Oman.*

3. METHODOLOGY

This study utilised a quantitative approach for data collection using survey methods using structured questionnaires adopted from Caniëls and Bakens (2012); Raymond and Bergeron (2008). The target population was the construction companies in Oman. The data regarding the registered construction companies was downloaded from the engineering construction site helped in the recognition and identification of the 2200 project managers. Five hundred questionnaires were distributed to attain the minimum size of 187 for results generalization.

Moreover, due to the geographical location of the registered construction companies, a stratified cluster sampling technique was adopted in the first phase so that all the construction companies could be given due consideration to be included in the study. A simple random sampling technique was applied for the data collection in the second phase. Ethical consideration, no human picture or individual is not discussed in this study. However, data collection permission was obtained from the Tenga Nasional University Malaysia (UNITEN), and respondents were verbally informed about the nature of the study. Also, the purpose of the study was explained. All the respondents are anonymous and could not be linked to any specific individual to protect their privacy and avoid social desirability bias.

The questionnaire used a five-point Likert scale for all of the questions. This study used a five-point Likert scale with values of 1 through 5 (1=strongly disagree to 5= Strongly agree). The questionnaire was distributed in both English and Arabic, keeping in concern the respondents' comfort level but project managers having a good understanding of the English language. All respondents used only the English language response rate of 65%, and 327 responses were collected from the target population; however, after screening the questionnaires for outliers, duplications, missing, and other anomalies, the study left with only 269 respondents. For a more accurate result, the questionnaire was tested in the pilot phase, as it was adopted from other studies, languages, and cultural contexts; however, the Cronbach alpha results were above the satisfactory level, i.e., 0.872. After data collection, the questionnaire was screened for outliers and missing values. So, in this phase, 18 questionnaires were discarded, as they did not qualify to be included in the analysis. Furthermore, Moreover, SPSS was applied to analyse the results. The unit of analysis for the study was individual, i.e., the project manager (a respondent).

4. RESULTS AND DISCUSSION

4.1 Demographics of the Study

The demographics are given in Table 2. The data was gathered from 296 respondents, 82% male participants and 18% female. Following that, the majority of their age group (between 41 and 50 years of era (48%), followed by those between 31 and 40 years of era (29%), with most participants having a Master's degree (43 percent), and followed by a Bachelor's degree (41 percent).

Table 2: Demographic Profile of Respondents

Demographic Factor	Category	Frequency	Percent
Gender	Male	243	82%
	Female	53	18%
Age Range	20 - 30 years old	41	14%
	31 - 40 years old	86	29%
	41 - 50 years old	142	48%
	50 years above	27	9%
Qualification	PhD	9	3%
	Master	127	43%
	Bachelor	121	41%
	Diploma	39	13%

4.2 Descriptive Statistics Analysis

Table 3 contains the results of the descriptive analysis tests for each of the factors that were studied. According to the data in the table, the mean values of all the variables were between 1.92 and 4.35, and the standard deviation was found to range between .337and .84. Based on the collected data, the current study has determined that each of the factors under consideration has a reasonable degree of acceptability.

Table 3: Descriptive Statistics

Variables		Mean	Std. Deviation
Project Information Overload	Personal	4.1189	.42039
	Information Characteristics	4.0895	.33857
	Task & Process Parameters	4.1070	.44680
	Organisational Design	4.3544	.38909
	Information Technology	3.9373	.84556
Project Management Information Systems		2.0054	.47668
Decision Making		1.9216	.41702

4.3 Reliability Analysis

Sekaran and Bougie (2016) have defined reliability as "An indication of the stability and consistency with which the instrument measures the concept and helps to access the goodness of a measure". The item's reliability must be verified to be certain of the accuracy of measurement and minimise measurement error, according to Straub et al. (2004). The average inter-item correlations calculated by Cronbach's alphas were used to determine the internal consistency. Although Cronbach's alpha has a conventional lower limit of 0.70, the alpha coefficient has no set upper limit. Table 4 illustrates the reliability analysis findings. These findings indicate that the data is trustworthy and suitable for the hypothesis tests.

Table 4: Reliability Testing Results of the Measurement

Variables		Cronbach's Alpha	No. of Items
Project Information Overload	Personal	.760	5
	Information Characteristics	.748	8
	Task & Process Parameters	.759	6
	Organisational Design	.835	9
	Information Technology	.929	7
Project Management Information Systems		.717	5
Decision Making		.811	5

4.4 Correlation Analysis

Studies of the standard variation of two or more variables are referred to as correlation analyses. By keeping all other variables constant, the correlation analysis seeks to quantify the link between a specific independent variable and a specific dependent variable. The bigger the correlation value, the stronger the association among the variables will be considered. Table 5 shows the correlation analysis.

Table 5: Correlations Analysis

	Project Information Overload	Project Management Information Systems	Decision Making
Project Information Overload	1		
Project Management Information Systems	-.134*	1	
Decision Making	-.364**	.439**	1

*. Correlation is significant at the 0.05 level (2-tailed)

4.5 Hypothesis Testing

This part provides regression and bootstrapping analysis to assess the relationship between independent, dependent, and mediation variables. It is the conventional technique used by this study to assess the significance level of the relationship, which is the p-value. Statistics show that the *p*-value of 0.01 is "extremely significant". The *p*-value will be between 0.01 to 0.05. In below table 6, a standardised beta coefficient (β) and the *Pp*-values show the strength of the relationship between the independent and dependent variables.

Table 6: Research Hypothesis Testing

Research Hypothesis	Independent Variables	Mediation Variables	Dependent Variables	Statistics	Result
Hypothesis 1	Project Information Overload		Decision Making	β = -.364, *p* < 0.001	Accept
Hypothesis 2	Project Information Overload		Project Management Information Systems	β = -.134, *p* < 0.05	Accept
Hypothesis 3	Project Management Information Systems		Decision Making	β = .439, p < 0.001	Accept
Hypothesis 4	Project Information Overload	Project Management Information Systems	Decision Making	β = -.4554, *p* < 0.001 β = -.2241, *p* < 0.05 β = .3474, *p* < 0.001	Accept

4.6 Discussion

Overwhelming project information (personal information characteristics, task & process parameters, organisational design, and information technology) has a negative impact on decision-making in construction companies in Oman. From the responses given by the participants, this study discovered that many of the participants agreed on the relationship between project information overload and decision-making. Regression findings indicated that project information overload is negatively and significantly correlated with decision-making (β = -.364, p < 0.001). Thus, the first hypothesis is accepted at a 99.99 per cent confidence level, and the null hypothesis is rejected. Project information overload (personal information characteristics, task & process factors, organisational design, and information technology) negatively affect project management information systems in Omani construction firms. Significant contributors to information overloading are personal factors, information characteristics, characteristics, task and process parameters, information system and other technological and logistic support, and the organisational structure (Kubíčková & Hodžić, 2020).

The study discovered that many participants agreed on the relationship between project information overload and project management information systems. Regression findings indicated that project information overload is negatively and significantly correlated with the project management information systems (β = -.134, p < 0.05). Thus, the second hypothesis is accepted at a 95% confidence level, and the null

hypothesis is rejected. Project managers are more willing to utilise the information system if they have the requisite clarification as to their specifications (Tsurkan et al., 2019).

Project management information systems positively impact decision-making in construction companies in Oman. From the responses given by the participants, this study discovered that many of the participants agreed on the relationship between project management information systems and decision-making. Regression findings indicated that project management information systems are positively and significantly correlated with decision-making ($\beta = .439$, $p < 0.001$). Thus, the third hypothesis is accepted at a 99.99 per cent confidence level, and the null hypothesis is rejected. The generality of people's actions and the commonality of their behavioural criteria decide the decision-making theory's uniform analytical activities (Dombrowski et al., 2019). Decision-making affects our attempts to reduce resource spending and optimise Performance in operations (Danesh et al., 2018).

5. CONCLUSION AND RECOMMENDATIONS

The findings from this study also have managerial relevance. Project environments generate specific challenges that find their origin in increased complexity. Linkages and interdependencies between simultaneously running projects are at the root of this increased complexity. This study showed that project managers running several projects simultaneously benefit from using a PMIS. Not all companies with substantial project activities adopt a central PMIS. The management of such firms might want to design a policy on using project management information systems. There may be a caveat. A central PMIS would make it possible for top management to monitor the progress of projects and the decisions made by project managers about resource allocation. Additionally, businesses should spend money on PMIS and time ensuring that the PMIS produces high-quality data because quality decision-making will result from excellent PMIS data. Additionally, this study contends that even when project managers feel overburdened by information, there are no negative impacts to be anticipated from project and information overload up to a specific threshold. Because more research is required to determine where this threshold might be, management should consider this conclusion cautiously. Project managers' health should never be in danger because this will undoubtedly lower the quality of the work. This literature review can offer some advice for managers dealing with information overload at work.

It can be concluded from this study that project managers running several projects at the same time benefit from using a PMIS. Not all companies with substantial project activities adopt a central PMIS. The management of such firms might want to design a policy on using project management information systems. The study also concluded that using project management information systems is advantageous to project managers because of the alleged contribution regarding timelier decision-making and project success. The information generated must be free of complexity, easy to understand and accessible for project managers to share with the project team's members.

6. LIMITATIONS AND FURTHER STUDIES

Like other research studies, the current study has some limitations. Of the study location in Oman, construction industry project managers were only involved on a limited scale of construction companies in Oman. Therefore, results cannot be generalised. However, the study recommends that future work employ

other rigorous statistical methods, using quantitative and qualitative longitudinal research designs to address the project's evolving challenges in Oman's construction companies. Similarly, the literature analysis on information overload indicates that new future research directions have emerged. Furthermore, the study faced more problems in assessing the impact of local and indigenous factors, like regulatory authority, bonds and other regulations. Therefore, the study recommends exploring contextual factors of information overloading and assessing their impacts on the decision-making processes and project execution.

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