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Analyzing Impact of Modern Project Management Techniques on Completing Projects Within Specified Timeframe (An Empirical Study on Bagdad City)

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Abstract

My research paper borrows from different theories regarding knowledge, attitudes, skills, and tools for the purpose of project management (PSM) and whether these impact project performance (PP), customer satisfaction (CS), and the projects being successful (PS) in engineering projects which concentrate on Baghdad, Iraq. Data were collected through pilot survey of 148 engineers who were engaged in projects Baghdad using the SEM methods resulted in realization of deep interconnection among these factors. The outcome suggests that there is positive relationship between PSM and PP; PSM is considered to have positive effects on CS but negative impacts on PS. Additionally, MCoM and PTM showed significant factors of PP; on the other hand, PCM and PRM were found to influence PS. Nevertheless, we found that many NCs exist; however, the finding suggests the complexity of these parameters' interplay and thus provide practical implications.

Keywords: Project Management Skills, Project Performance, Customer Satisfaction, Engineering Projects, Structural Equation Modeling

Introduction

These times are time to follow advanced temptations of project management, if business owners want to make sure that all tasks are finished on time. Increasing with the complexity of a project, effectual project management is necessary for success. The purpose of this study is to quantify the effects of modern project management techniques of temporary duration.

According to Ika, L. A., & Pinto, J. K.'s (2022) international journal of project management research on the various definitions of project project success the modern project management has. The objective of this study is to comprehensively assess whether utilising modern tools of project management positively influences the completion of projects on time. The present study attempts to bridge the researchers' gap of present literature and beyond the scope of previous researches. Therefore, the authors would like to extend their contribution to the field of this work. The research question guiding this study is: How do the current project management strategies help in completion of the project in time? This topic will be approached through an evaluation of various research works and the available empirical data in this essay. Project management asserts that ways, means, and methods of newer project management techniques,

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are of great importance, to achieve completion of the task within a given period of time. This paper is aimed at undertake an evaluation of these methods and their implications on project as a whole. This of case study of generative AI tools in project management shall be addressing the gaps of the literature review while contributing to the field. While in search for a topic for this study, the research question given by the work of Weng, W. (2023) on intellectual robots in project management helps with structuring the investigation. Through this research, we aim to add light to what is the effectiveness of modern project management approaches to project deadlines. Sepasgozar et al. (2019) developed a new method of delay evaluation that brings out the role of the methods of project implementation and PMBOK standard. This study in particular is aiming at closing those gaps which are existing in the modern project management literature by examining the relationship between the project completion timelines and the techniques of modern project management. This study will lead to the knowledge advancement by conducting research on the efficacity of the means in assuring the timeliness in project delivery.

Gomes, J., & Romão, M. conduct a research that focuses on how project benefits and project management methods can be merged across other methods to optimize project outcomes. They were aiming to bring out the critical components of project success through a framework, which helped projects being discussed and analyzed. Their study sought to address the central query: "What difference could making a combination of benefits and project management methods pose on the success of projects in organizations?" The study focus on the latter findings show project management process with targeted critical success factor, brings enhanced project practice which will make favorable project outcome. Our idea is to take a closer look at the current state of knowledge and pinpoint the areas where there is little to no research done. We want to learn more about the modern project management and how the practices of such can be improved to help with earlier projects delivery. The main research question driving this study is: Do these methods really affect project management and the completion of projects in a stipulated period? This paper will focus on the question at hand, thereby providing important information that will be useful to project managers and those whose interests are tied to the project.

Literature Findings

Comparing the conceptual frameworks of the PMBOK Guide and project performance delves into dissecting their interplay and influence on project outcomes. The PMBOK Guide serves as a comprehensive blueprint for project management practices, offering a global standard comprising processes, tools, and techniques. It is defined as a work breakdown structure as a deliverable- oriented hierarchal decompositions of the work to be executed by the project team to accomplish the project objective and create the required deliverable Muka (2012). The five major phases of PMBOK Guide discusses as the following Figure (1) Chou and Yang (2012).

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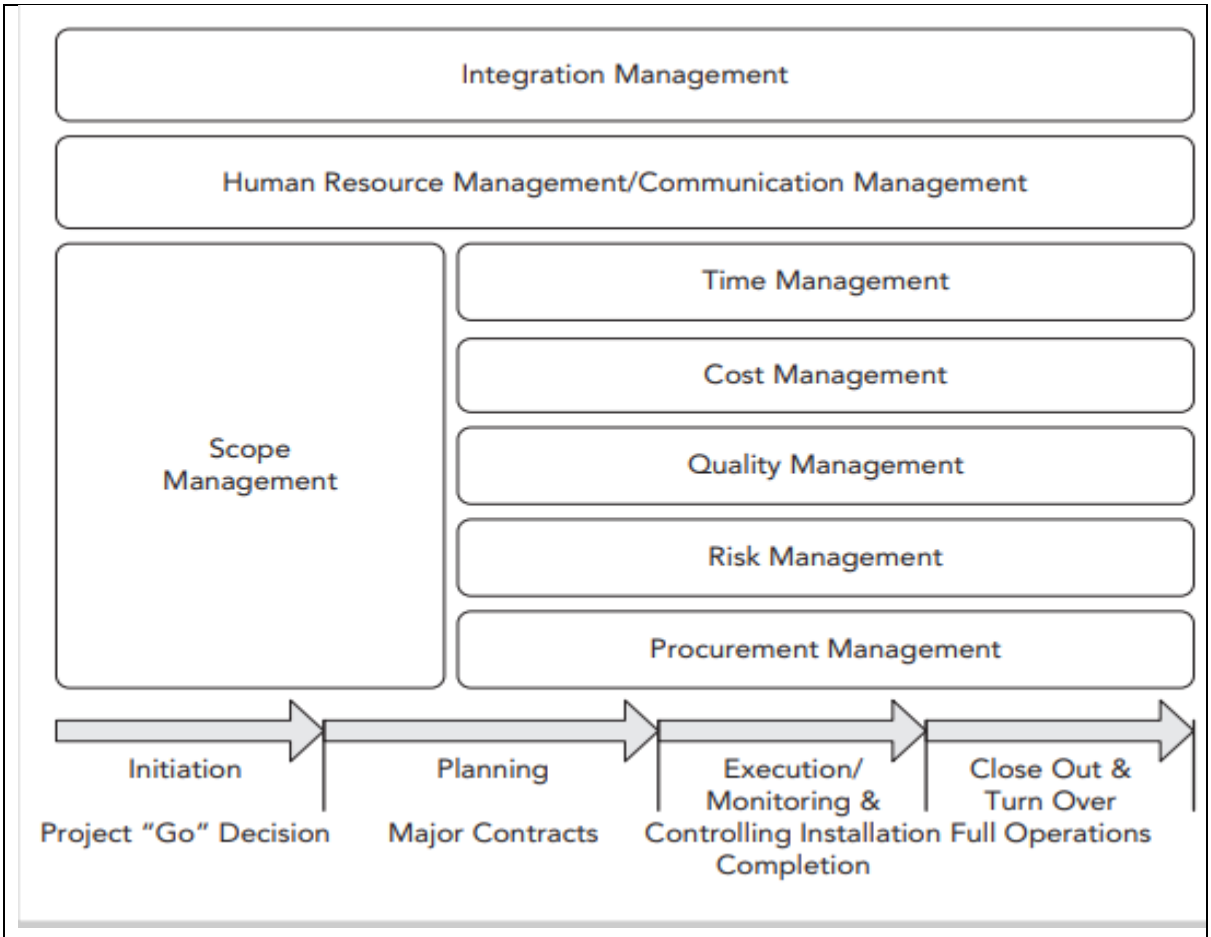

Figure 1: PMBOK. Guide and project phase (Five Phases)

Research Hypotheses

Hypothesized Linkage Between Project

H01: There is statistically significant for PSM in PP.

H02: There is statistically significant for PSM in CS.

H03: There is statistically significant for PSM in PS.

H04: There is statistically significant for PCoM in PP.

H05: There is statistically significant for PTM in PP.

H06: There is statistically significant for PCM in PP.

H07: There is statistically significant for PRM in PS.

H07: There is statistically significant for PP in PS.

H08: There is statistically significant for PP in PS across CS.

Table 2. Group and Construct Vs Number of Indicators

Group	Construct	Number of indicators
Project Management Techniques/Tools/Skills (PSM)	Scope	6
	Time	11
	Cost judgment	7
	Communication	7
	Cost judgment	5
	Risk	15
	Procurement	9
	project performance	4
	Customer satisfaction	4
	Project success	6

Research Method and Flow

The research method and flow were included research method established the SEM framework and the measurement indicators based on literature review, collected survey data and assessed the

relationships of indicators and constructs based on the conceptual SEM

model, optimized the model specifications to improve the SEM framework before modifying the structural model. Specifically, the goodness of fit (GOF) of the research model was used as a criterion for evolutionary optimization. In the final phase, the relationships of project management TTS, PP, CS, and PS were analyzed using the optimized model

Survey Process

The study involved surveying 180 respondents engaged in construction engineering projects in Baghdad City, Iraq, to empirically assess the utilization of the PMBOK Guide and its impact on effectiveness and efficiency, particularly in terms of project performance, stakeholder satisfaction, and project success.

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Structural Equation Modeling

The research model incorporated two categories of variables: observed indicators and latent constructs. Observed indicators represent directly measurable elements like the usage of specific techniques and tools, while latent constructs, such as project performance and customer satisfaction, are inferred from these indicators but aren't directly measurable themselves. To assess the hypotheses concerning the impact of latent constructs on other variables, structural equation modeling was employed. This statistical technique is widely recognized as the most effective method for such analyses due to its comprehensive approach.

Analytical Process and Results

Descriptive Statistics

Table 1: Socioeconomic characteristics of survey respondents.

Attribute	Category	Frequency	Percent (%)
Gender	Male	115	77.7
	Female	33	22.3
	Total	148	100
Age	21-30	49	33.1
	31-40	33	22.3
	41-50	16	10.8
	51-60	34	23
	More 60	16	10.8
	Total	148	100
Education Level	Bachelor	98	66.2
	Master	33	22.3
	Other	17	11.5
	Total	148	100
Awareness Level and Certified	Low	17	11.5
	Less average	17	11.5

Training Program for PMBOK. Guide	average	49	33.1
	More than average	32	21.6
	High	33	22.3
	Total	148	100
License	Engineer License	49	33.1
	None	99	66.9
	Total	148	100
Role in Project	Government/Owner	49	33.1
	Contractor	33	22.3
	Consultant/ Techniques Service	49	33.1
	Professional	17	11.5
	Total	148	100
Work Experience	Less than 2	17	11.5
	2-5	16	10.8
	5-10	33	22.3
	10-15	32	21.6
	15-20	50	33.8
	Total	148	100
Practical Experience in PMBOK. Guide	Less than 2	17	11.5
	2-5	49	33.1
	5-10	17	11.5
	10-15	32	21.6
	15-20	33	22.3
	Total	148	100.0
	Less than 5M	33	22.3

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Project scale in [USA: $]	5M-25M	33	22.3
	25M-100M	16	10.8
	100M-500M	49	33.1
	More than 500M	17	11.5
	Total	148	100.0

Factor Analysis (EFA&CFA)

5.1 Factor Analysis

Promax rotated factor analysis was applied on the 74 items relating to nine scales. Detailed results of exploratory factor analysis (EFA) can be seen through Table (2).

It conducted a sample size adequacy analysis, called Kaiser-Meyer-Olkin for short (KMO), to know the internal consistency of the items and the adequacy of the sample size to conduct confirmatory factor analysis, as the value of the sample size adequacy test for the independent variable adaptive leadership across (74) items was represented by (KMO = 0.796) which is greater than the value (0.7).

Table 2. Measurement Variables with EFA and CFA Loadings, Validity and Reliability Values

Factor and Measurement Items	**EFA Loading**	**CFA Loading**	**Cronbach Alpha**	**AVE > 0.05**	**CR > 0.7**	**Explained Variance %**
PSM			0.924	0.688	0.947	4.482
PSM1	0.738	0.638				
PSM2	0.801	0.776				
PSM3	0.928	0.93				
PSM4	0.914	0.928				
PSM5	0.869	0.878				
PSM6	0.836	0.789				
Time			0.950	0.646	0.982	11.074
PTM1	0.734	0.718				
PTM2	0.877	0.867				

PTM3	0.837	0.82				
PTM4	0.779	0.752				
PTM5	0.911	0.908				
PTM6	0.826	0.809				
PTM7	0.834	0.822				
PTM8	0.759	0.734				
PTM9	0.787	0.756				
PTM10	0.776	0.744				
PTM11	0.888	0.885				
PCM			0.941	0.706	0.982	7.199
PCM1	0.838	0.822				
PCM2	0.827	0.799				
PCM3	0.899	0.899				
PCM4	0.884	0.865				
PCM5	0.894	0.894				
PCM6	0.876	0.839				
PCM7	0.803	0.755				

Table 2. (Continued)

PCoM			0.879	0.621	0.982	4.162
PCoM1	0.899	0.881				
PCoM2	0.618	0.573				
PCoM3	0.828	0.732				
PCoM4	0.861	0.883				
PCoM5	0.883	0.828				
PRM			0.98	0.758	0.991	22.563

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PRM1	0.911	0.927				
PRM2	0.901	0.821				
PRM3	0.901	0.93				
PRM4	0.888	0.811				
PRM5	0.899	0.926				
PRM6	0.886	0.906				
PRM7	0.907	0.931				
PRM8	0.815	0.728				
PRM9	0.869	0.894				
PRM10	0.932	0.88				
PRM11	0.917	0.929				
PRM12	0.892	0.811				
PRM13	0.903	0.931				
PRM14	0.837	0.843				
PRM15	0.835	0.753				
PPM			0.898	0.786	0.967	8.866
PPM1	0.871	0.869				
PPM2	0.828	0.81				
PPM3	0.75	0.729				
PPM4	0.642	0.612				
PPM5	0.844	0.833				
PPM6	0.602	0.556				
PPM7	0.756	0.714				
PPM8	0.895	0.899				
PPM9	0.651	0.574				
PP			0.788	0.505	0.984	2.288

PP1	0.83	0.787				
PP2	0.67	0.657				
PP3	0.781	0.612				
PP4	0.75	0.771				
CS			0.939	0.799	0.98	3.191
CS1	0.89	0.845				
CS2	0.903	0.916				
CS3	0.914	0.93				
CS4	0.91	0.882				
PS			0.919	0.633	0.921	6.203
PS1	0.834	0.809				
PS2	0.823	0.799				
PS3	0.83	0.782				
PS4	0.833	0.807				
PS5	0.823	0.791				
PS6	0.928	0.933				
PS7	0.66	0.615				

Subsequently conducting EFA, to validate the established constructs, confirmatory factor analysis (CFA) was applied. CFA results were analyzed with the help of indices such as x2 /df (Chi-square goodness of fit-to-degrees of freedom ratio), CFI, TLI, GFI and RMSEA. Standard criteria for well-developed model were as follows: x2 /df < 3, acceptable up to 5; GFI > 0.9; TLI > 0.9; CFI >0.9; 0< RMSEA < 0.08 (Hair, Black, Babin, & Anderson, 2010). The results of CFA for the four latent variables were x 2 /df = 2.293; GFI = 0.83; CFI = 0.91; TLI = 0.94 and RMSEA = 0.074. These model fit indices revealed a better fit. Thus, the model confirmed the dimensionality of the three constructs.

Table 5: Construct Correlation Matrix

	PSM	**PTM**	**PCM**	**PCoM**	**PRM**	**PPM**	**PP**	**CS**	**PS**
PSM	**0.830**								

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PTM	0.043	**0.804**							
PCM	0.194	-0.101	**0.840**						
PCoM	0.419	-0.07	0.024	**0.788**					
PRM	0.214	0.281	0.465	-0.069	**0.871**				
PPM	0.122	0.397	-0.231	0.059	0.172	**0.887**			
PP	-0.101	0.459	-0.277	-0.495	0.189	0.344	**0.711**		
CS	0.219	0.078	-0.029	-0.074	0.181	0.241	0.115	**0.894**	
PS	-0.364	0.153	-0.342	-0.051	-0.259	0.229	0.113	0.011	**0.796**

The results In Table (5) show the Average Variance Extracted (AVE) serves as a critical metric for evaluating the convergent validity of constructs within a research study. By examining the AVE values associated with each construct, we gain insights into how effectively the indicators collectively account for the variability inherent in that construct. Our analysis revealed that the indicators linked to each construct collectively contribute to a significant portion of the variance, as evidenced by their respective AVE values. Notably, constructs such as PPM, PRM, and CS exhibit robust convergent validity, with AVE values ranging between approximately 0.69 to 0.80. These findings suggest that the indicators aligned with these constructs effectively capture a substantial amount of the underlying variability. Conversely, constructs like PP and PCoM show slightly lower AVE values, indicating moderate convergent validity, albeit still explaining a noteworthy portion of the variance within their constructs. In summary, the AVE values instill confidence in the reliability and validity of our measurement model, affirming that the selected indicators aptly capture the essence of the constructs they aim to measure.

Figure (2) shows the final structural model after completing the modification process. The remaining constructs.

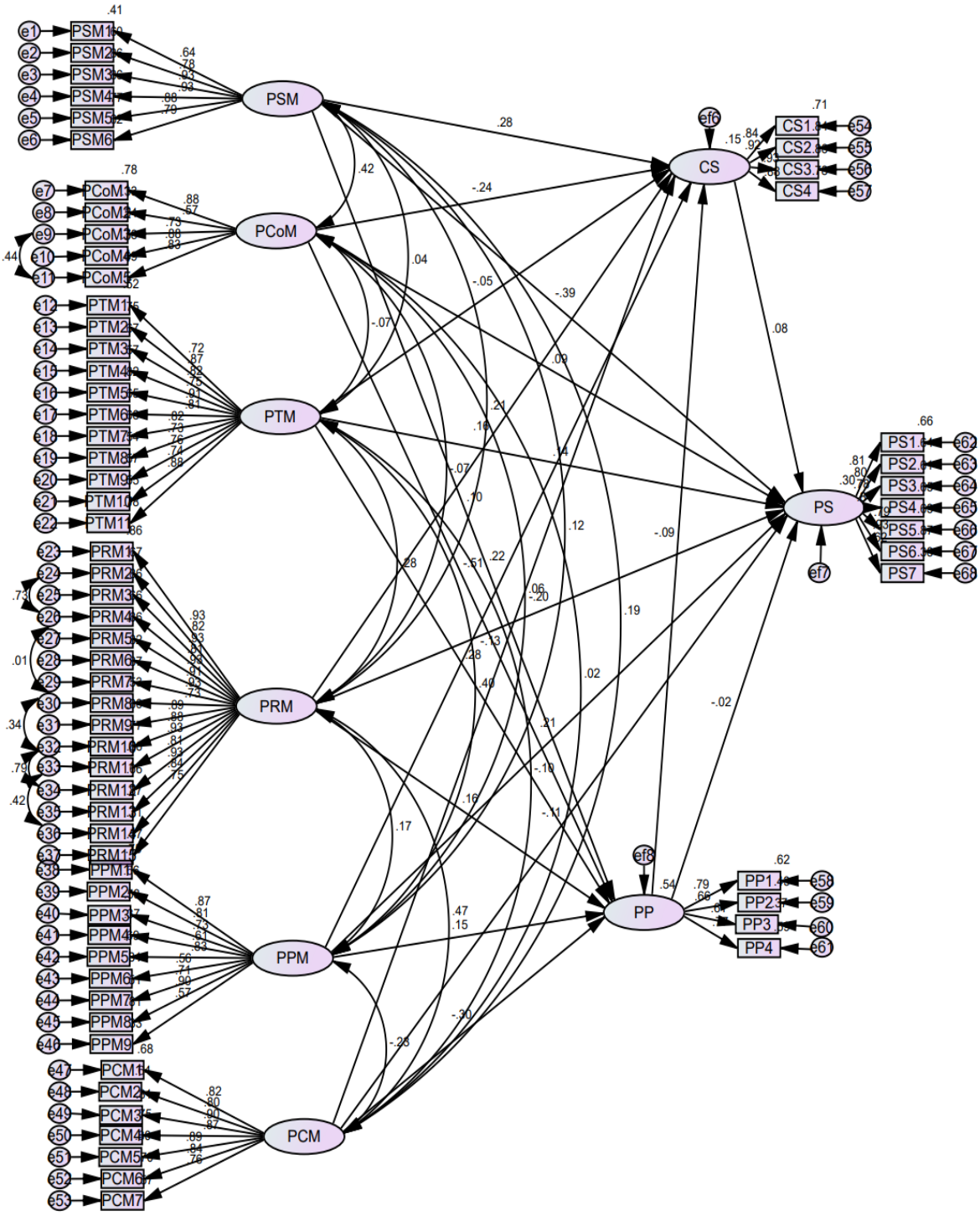

Figure (2): Modified Model Results

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Analysis Discussion

Table (6) presented the estimated effects of different paths in the structural equation model offer valuable insights into the relationships between the constructs under study. Beginning with the effect of PSM on PP, a positive relationship is observed, albeit with a relatively small coefficient of 0.057, this results familiar with Ngure(2019) in the positive effect for PSM in PP. Moving to the effect of PSM on CS, a significantly positive relationship is evident (0.244), this results similar to Dholakia, et a;. (2002), suggesting that an increase in PSM is associated with a notable increase in CS. Conversely, the effect of PSM on PS is notably negative (-0.402), these results approved with Komal et al. (2020), indicating that higher levels of PSM correspond to a significant decrease in PS. Similarly, PCoM exhibits a strong negative effect on PP (-0.520), the results familiar with Meng (2012), suggesting that as PCoM increases, PP tends to decrease substantially. However, PTM demonstrates a positive effect on PP (0.249), indicating that higher PTM levels are associated with a notable increase in PP, these results familiar with Chan (2001), Hoang, Rothaermel (2010), Berssaneti& Carvalho (2015). PCM, on the other hand, exhibits a negative effect on PP (-0.276), these results agreed to Nidumolu (1996), Hoang (2010), Cummings, Kiesler (2007), implying that higher PCM levels correspond to a decrease in PP. The effect of PRM on PS is significantly negative (-0.321), suggesting that higher PRM levels are linked to a substantial decrease in PS, The findings are consistent with those of Naji (2021) and also align with the conclusions drawn by Wu & Zillante (2018), indicating a notable correlation between elevated PRM levels and a significant reduction in PS. Although not statistically significant, the effects of PP on CS (-0.146) and CS on PS (0.089) are observed to be negative and positive, respectively, albeit with smaller coefficients. Lastly, The impact of PP on PS appears to be negligible (-0.037), indicating minimal impact, a result in line with the findings of Alzahrani & Emsley (2013),. In summary, these findings underscore the complex interplay between the constructs, with some relationships exhibiting significant effects while others demonstrate smaller or nonsignificant associations.

Table (6): Impact of body of knowledge on project performance, customer satisfaction, and project Success

Path	Estimated Effect
PSM →PP	0.057
PSM →CS	0.244***
PSM →PS	-0.402***
PCoM →PP	-0.520***
PTM →PP	0.249***
PCM →PP	-0.276***

PRM →PS	-0.321***
PP → *CS*	-0.146
PP →PS	**-0.037**
CS → *PS*	**0.089**

*****: p < 0.001**

Conclusions and Recommendations

It is a prime concern of the university that undergraduate and graduate students concentration on the PMBOK. Through guidelines obtained through modeling, construction procedures incorporate a set of critical principles which underpin the relationship between the exposures/variables in the structural equation model. As one of the crucial objectives related to PSM, scope of project (PSM) becomes a crucial contributor to the success of project across various levels. PSM indirectly brings about a substantial PP albeit a low; however, a very strong CS associated with PSM shows the massive role this management principle plays on improving stakeholders' perceptions. On the contrary, there is a polar relationship between critical success (SI) and time spent on the preparation of Stage 3 reports (PS). Moreover, such high needless damage by PCoM on PP shows that project communication management in project success is one of the most important part of management process causing project manager to take care of clear and transparent communication channels. In the same way, Time Management Problem (TNP) is a driver to PP in which well organized time allocation and scheduling are the prerequisite to attain project objectives. Specifically, the attention paid to Cost Management (PCM) regarding PP highlights the necessity to effectively monitor and regulate the expenditures in order to eliminate any possible undesirable influence on the full project scope. Just Like the Paper indicates that the key concept of Risk Management (PRM) in achieving project success (PS) is this which promotes risk reduction measures to balance mental health of stakeholders even in the uncertainties of the project. In some instances, the influence of a particular relationship would be minor or near not existent but those findings overall demonstrate how project-management constructs influence the complex nature of project success, showing such influences take many forms. With recognition of such points of view, the managers project are driven to make use of the PMBOK. A comprehensive handbook to project management is written and it explains the different key themes including the scope, communication, time, cost, and risk to ensure the optimal project performance and customers' satisfaction. Additionally. Conducting programs based on the Project Management Body of Knowledge (PMBOK. Guide) and workshops can be instrumental in enhancing project management practices for engineers in Iraq

References

1. Kermanshachi, S., Rouhanizadeh, B., & Govan, P. (2022). Developing management policies and analyzing impact of change orders on labor productivity in construction projects. Journal of Engineering, Design and Technology, 20(5), 1257-1279.

DOI: https://doi.org/10.33687/jhssr.005.01.0555

2. Weng, J. C. (2023). Putting Intellectual Robots to Work: Implementing Generative AI Tools in Project Management. NYU SPS Applied Analytics Laboratory.
3. Sepasgozar, S. M., Karimi, R., Shirowzhan, S., Mojtahedi, M., Ebrahimzadeh, S., & McCarthy, D. (2019). Delay causes and emerging digital tools: A novel model of delay analysis, including integrated project delivery and PMBOK. Buildings, 9(9), 191.
4. Gomes, J., & Romão, M. (2016). Improving project success: A case study using benefits and project management. Procedia Computer Science, 100, 489-497.
5. Muka, J. P. M. (2012). *A conceptual framework for information technology project management auditing*. University of Johannesburg (South Africa).
6. Chou, J. S., & Yang, J. G. (2012). Project management knowledge and effects on construction project outcomes: An empirical study. *Project Management Journal*, *43*(5), 47-67.
7. Hair, J. F. (2010). Multivariate Data Analysis Hair Black Babin Anderson.
8. Ngure, E. W. (2019). *Effect of Project Scope Management Practices on Performance of Liquefied Petroleum Gas Firms in Kenya* (Doctoral dissertation, University of Nairobi).
9. Dholakia, U. M., & Morwitz, V. G. (2002). The scope and persistence of mere-measurement effects: Evidence from a field study of customer satisfaction measurement. *Journal of Consumer Research*, *29*(2), 159-167.
10. Komal, B., Janjua, U. I., Anwar, F., Madni, T. M., Cheema, M. F., Malik, M. N., & Shahid, A. R. (2020). The impact of scope creep on project success: An empirical investigation. IEEE Access, 8, 125755-125775.
11. Meng, X. (2012). The effect of relationship management on project performance in construction. *International journal of project management*, *30*(2), 188-198.
12. Hoang, H. A., & Rothaermel, F. T. (2010). Leveraging internal and external experience: exploration, exploitation, and R&D project performance. *Strategic management journal*, *31*(7), 734-758.
13. Chan, A. P., Ho, D. C., & Tam, C. M. (2001). Design and build project success factors: multivariate analysis. *Journal of construction engineering and management*, *127*(2), 93-100.
14. Berssaneti, F. T., & Carvalho, M. M. (2015). Identification of variables that impact project success in Brazilian companies. *International journal of project management*, *33*(3), 638-649.
15. Nidumolu, S. R. (1996). Standardization, requirements uncertainty and software project performance. *Information & Management*, *31*(3), 135-150.
16. Cummings, J. N., & Kiesler, S. (2007). Coordination costs and project outcomes in multi-university collaborations. *Research policy*, *36*(10), 1620-1634.
17. Hoang, H. A., & Rothaermel, F. T. (2010). Leveraging internal and external experience: exploration, exploitation, and R&D project performance. *Strategic management journal*, *31*(7), 734-758.
18. Wu, G., Zhao, X., Zuo, J., & Zillante, G. (2018). Effects of contractual flexibility on conflict and project success in megaprojects. *International Journal of Conflict Management*, *29*(2), 253-278.

19. Naji, K., Gunduz, M., & Salat, F. (2021). Assessment of preconstruction factors in sustainable project management performance. *Engineering, Construction and Architectural Management*, *28*(10), 3060-3077.
20. Alzahrani, J. I., & Emsley, M. W. (2013). The impact of contractors' attributes on construction project success: A post construction evaluation. *International journal of project management*, *31*(2), 313-322.

DOI: https://doi.org/10.33687/jhssr.005.01.0555