

THE EFFECT OF TEAM WORK QUALITY ON PROJECT PERFORMANCE THROUGH MODERN PROJECT MANAGEMENT AND TRADITIONAL PROJECT MANAGEMENT OF ENERGY BUSINESS IN IRAQ

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Abstract: Various combinations of traditional and agile project management (MPM) improve project success at varying levels of collaborative quality. Consequently, the purpose of this study is to examine the impact of teamwork quality (TWQ) on project performance (PM) via modern project management (MPM) and traditional project management (TRPM) in the Iraqi energy market. To achieve this purpose, data were obtained from 202 project managers by simple random sampling, and the Partial Least Square (PLS)-Structural Equation Modeling (SEM) technique was utilized. In the research, a cross-sectional design and quantitative methodology were utilized. The regression analysis results suggest that TWQ has a positive and statistically significant effect on TRPM and MPM. TWQ also has strong and favorable effects on PM. Similarly, TRPM and MPM also have a major impact on PM. Additionally, the indirect implications demonstrate that the TWQ considerably and positively modulates the link between TRPM, MPM, and PM. Based on these findings, it is recommended that businesses learn to execute both TRPM and MPM as a team to overcome the particular dangers posed by using a single approach. Lastly, organizations must establish good TRPM procedures before planning to implement agile methodologies. The findings of this study indicate that TRPM with strong MPM support and high-quality workgroups can improve project success. Therefore, the findings of this study could help practitioners and project managers understand the significance of TWQ, TRPM, and MPM in enhancing PM.

Keywords: Teamwork quality, project performance, Iraq.

Introduction

Project performance is the development, implementation, and management of projects that contribute to the performance and strategy of an organization. Instead of concentrating on task completion, project performance focuses on the big picture (Takim & Akintoye, 2002). Therefore, maintaining project performance is crucial to the firm's competitive advantage (Takim & Akintoye, 2002). Diverse researchers determined that organizational culture, project management culture, and teamwork quality are the three most influential aspects of a project's performance and outcome (Agbejule & Lehtineva, 2021; Meng, 2012). However, the most important of these criteria is teamwork quality, which improves project execution quality (Agbejule & Lehtineva, 2021). Researchers have focused on the significance of both conventional and contemporary project management (Layton, Ostermiller, & Kynaston, 2020). Therefore, the quality of cooperation in project management is a significant success factor (Chofreh et al., 2019).

The teamwork quality evaluates how effectively a group collaborates and how hard they work (Chiocchio, Kelloway, & Hobbs, 2015). Traditional project management is characterized by linear procedures, stability, and detailed preparation. Still, modern project management is typically based on an inventive and adaptable life cycle sensitive to new situations (Stare,

2013). Vinekar, Slinkman, and Nerur (2006) suggested that the role of workgroup quality in contemporary and conventional project management is distinct. Modern project management places a premium on collaboration that necessitates the interplay of interdisciplinary talents, small teams, and close attention to detail, as opposed to the traditional project management emphasis on individual effort, low levels of customer participation, and larger teams (Lee & Chen, 2021). The prior literature suggested that traditional and modern project management are significant elements influencing project performance (Fernandes et al., 2018).

On the other side, numerous scholars have maintained that cooperation quality can indirectly impact project performance (Hoegl & Gemuenden, 2001). Prior study has explored the impact of teamwork quality on traditional project management (Hoegl & Gemuenden, 2001) and modern project management (Tran et al., 2021) as well as the effect on project performance (Agbejule & Lehtineva, 2021). It is based on prior research on the direct influence of contemporary and traditional project management on project performance (Agbejule & Lehtineva, 2021; Kerzner, 2022; Müller & Turner, 2007) has been determined that modern project management has a positive effect on project performance. Traditional project management is a

global field comprised of approaches for planning, estimating, and managing activities (Salameh, 2014). These procedures aim to achieve the desired result on time, within budget, and according to specifications (Salameh, 2014). In project management, teamwork improves productivity and efficiency. Respecting one another, everyone stresses their strengths, maintaining accountability, and seeking aid without hesitation. There will be less friction and more can-do attitudes everywhere (Smith & Imbrie, 2004), and conventional and modern project management played a crucial role in achieving this result, which increased project performance. This thesis was bolstered by the assertion that collaboration quality could indirectly affect project performance in the presence of conventional and contemporary project performance (Agbejule & Lehtineva, 2021; Dasí et al., 2021; Morey et al., 2002). Previous studies examined the indirect mediating influence between teamwork quality and project performance (Agbejule & Lehtineva, 2021), but the indirect moderating effect between traditional and modern project performance was disregarded.

Moreover, Verzuh and Association (2021) explore team characteristics within traditional and modern management and the influence of collaboration quality on project performance in a hybrid context that blends the two distinct techniques if they fail to account for it. Therefore, conventional and contemporary project management are employed as moderating variables in the present study. In addition, most past studies have focused on nations other than Iraq. In light of the gaps in prior research, the current study aims to examine the influence of teamwork quality on project performance through modern and conventional project management in Iraq's energy companies.

According to the researcher's best knowledge, no research has been conducted on the impact of teamwork quality on project performance when project leaders employ both traditional and modern project management. In light of this deficiency, our research was motivated to bridge the gap between modern and conventional project management as a moderating variable between workgroup quality and project performance. In addition to providing managers with practical information, our research provides the following theoretical advances to the current body of knowledge. The research was organized into five sections: the introduction, literature review, research methodology, data analysis and results, and discussion

and conclusion.

Review of Literature Teamwork Quality, Traditional Project Management, and Modern Project Management

Teamwork Quality (TWQ) indicates the degree to which project team members interact and are motivated to work together (Lee & Chen, 2021). According to Hoegl and Parboteeah (2003), teams are effective if they maintain high standards of "communication, coordination, the balance of member contributions, mutual support, effort, and cohesion" in their interactions. TWQ can be separated into its components: social skills and internal motivations. Ika, Diallo, and Thuillier (2010) and Yang, Huang, and Wu (2011) described TWQ as a crucial determinant for project success. According to Mokhtarian, Handy, and Salomon (1995), good project development requires cooperation skills. The capability to freely inform and share data and expertise with these other team members without withholding vital information is what we mean by communication (Dietrich et al., 2010). The capacity to communicate effectively is vital to TWQ and, thus, is crucial for efficient project management. In a multiple project management scenario, the ability to communicate freely and openly among Project team members without the need for a mediator (such as a supervisor or team manager) is crucial, as when the multiple project leader manages different groups (Al Shatti, Bischoff, & Willy, 2018).

TWQ was demonstrated to be empirically related to both traditional and contemporary project management. Specifically, it was discovered that TWQ has a good and significant association with conventional project management (Agbejule & Lehtineva, 2021). Another study demonstrated a favorable and substantial link between TWQ and traditional project management (Betta & Iwko). According to additional research, TWQ strongly favors modern or agile project management (Betta & Iwko, 2019). In addition, they suggested that when the TWQ is increased, project management is also increased. On the other hand, the positive and considerable impact of TWQ on contemporary project management was discovered (Hoegl & Gemuenden, 2001). According to additional studies, TWQ is also a major predictor that directly impacts project performance (Kuthyola, Liu, & Klein, 2017). Based on past data, one may conclude that TWQ is a key predictor of traditional and contemporary project management and project performance. Consequently, the following study hypothesis is stated:

H1: Teamwork quality is positively and significantly associated with traditional project management.

H2: Teamwork quality positively and significantly affects modern project management.

H3: Teamwork quality also significantly and positively affects project performance.

Traditional Project Management and Project Performance

Traditional project management (TRPM) is a systematic approach emphasizing methodical planning and control methods (Muszynska et al., 2015). Kerzner (2017) identifies three major benefits of plan-driven methodologies: the ability to structure the decision-making process, the provision of the organization to project management, and the provision of anticipated uniformity in organizing, scheduling, and managing. When parameters are well-defined and well-known, the conventional plan-driven method excels in projects. However, the approach frequently encounters difficulties in projects with much unknown information (Chin, 2004). Previous empirical research has demonstrated that traditional project management substantially impacts project performance (Hass, 2007). On the other hand, traditional project management was proven to negatively impact project performance (Zavyalova, Sokolov, & Lisovskaya, 2020). These data indicate that traditional project management could improve project administration. Consequently, the following hypothesis is stated:

H4: traditional project management has a positive and significant relationship with project performance.

Modern Project Management and Project Performance

Agile stresses people over procedures and technologies, offering working software over voluminous documentation, fostering customer collaboration over contract negotiation, and adjusting to changing circumstances over adhering to a timeline. Modern project management (MPM) can be viewed through the prism of the manifesto's core concepts, according to Aguanno's (2005) research. TRPM strives to anticipate and restrict variability and uncertainty, whereas MPM seeks to manage unpredictability and accommodate changes, particularly in the late phases of the latter project (Sanchez, Micaelli, & Bonjour, 2019). (Margjoni & McClure, 2019; Špundak, 2014) For MPM to be successful, the project team must collaborate closely with the client and customer's agent to build a high-

quality product using efficient approaches. Due to the inherent uncertainty inherent in novel design, decision-making, and other forms of labor that have never been performed before, MPM is particularly effective for such projects. This work involves a substantial amount of uncertainty, complexity, and risk. Agile approaches iterate changes rapidly based on input and assessment of progress (Bianchi, Conforto, & Amaral, 2021). As a result of enhanced prioritization of requirements and faster simultaneous delivery of functionality, an agile approach fosters a work environment that stimulates innovation, increases productivity, and responds rapidly to change (Stettina & Hörz, 2015). Previous empirical research has demonstrated that MPM substantially impacts project performance (Howes, 2001).

On the other hand, it was discovered that MPM positively impacts project performance (Wideman & Bangalore, 1990). These data indicate that MPM could improve project administration. Consequently, the following hypothesis is stated:

H5: traditional project management has a positive and significant relationship with project

Teamwork Quality, Project Management, and Project Performance

Hybrid project management blends traditional project management framework (TRPM) with the adaptability of modern project management in order to achieve project performance (MPM). Improved project scope management, faster delivery, a quality management method, and client satisfaction are all characteristics of a well-executed project. They are all supported by open communication and collaboration among the project's stakeholders (Kerzner, 2017). This analysis focuses on the project's performance effectiveness. TRPM and MPM are more flexible, collaborative, adaptable to change, and highly disciplined approaches to project management (Salameh, 2014). MPM needs an improved project, collaboration, control, management, and trust among team members to ensure that the project meets company standards and matches organization goals (Shokri et al., 2012). TWQ is essential for keeping open lines of communication and teamwork in a dynamic setting. Implementing an agile methodology can be difficult, but fostering a culture of trust can help ease some of the frequent tensions from the required modifications. Coram and Bohner (2005) discovered that an MPM method necessitated meticulous planning to achieve project

requirements for the initial launch. This indicates that a single technique is insufficient but that both agile and TRPM may utilize the multiple components of project management to capture the many dimensions of the project and program context to ensure the project's success. In addition, the collaborative benefits of MPM may be lessened if team members fail to communicate effectively to set limitations and identify pertinent concerns (Gemino, Horner Reich, & Serrador, 2021).

In contrast, using TRPM may prevent businesses from continually seeking new innovative methods and wasting resources on ideas that have already been evaluated (Xiangui, 2019). Consequently, dynamic tension serves as a catalyst for continual discourse and discussion regarding strategic issues and an incentive for integrated communication and collaboration (AbuKhamis & Abdelhadi, 2022). According to Batra et al. (2010), if there is neither a structure nor collaboration, MPM can lead to chaos in large, complex, scattered enterprises. In contrast, projects that require a great deal of learning, investigation, and adjustments are more likely to be limited by rigidity if they have a framework but lack mobility (Stare, 2014). Additionally, there appear to be a variety of methods for assembling an agile-TRPM hybrid model. Depending on the organization and type of project being worked on, the methodology may be either more elegant or more TRPM-focused. For example, only a tiny amount of a project may be completed in a single sprint, while the remainder may be completed using the stage opening model (Michael J Bianchi et al., 2021).

TWQ, open communications, and trust amongst PTMs can enable firms adopting a traditional plan-driven methodology to work more like an agile one, resulting in improved outcomes while developing new products (Leybourne, 2009). According to the studies mentioned above, the teams' quality in TRPM and agile methodologies may affect PS. At that time, when team members collaborate, they have a greater opportunity to learn from one another and acquire new skills that may affect the project's performance. Important applications of the hybrid strategy include the capacity to deal with uncertainty, primarily in the face of constant client input and product iterations (Cooper & Sommer, 2018). Consequently, this study aims to investigate how TWQ and MPM can be integrated into PS. Alternatively, this is consistent with findings from contingent studies indicating that several approaches to project management influence

PS in concert (Fernandes et al., 2018). Using TRPM and MPM, the research mentioned above can analyze a range of project performances.

On the other hand, numerous authors believed that TWQ could indirectly influence project performance (Hoegl & Gemuenden, 2001). According to additional research (Dasí et al., 2021; Morey et al., 2002), TWQ may indirectly affect project performance through the TRDM and MPM. Consequently, the following research hypotheses are developed:

H6: Traditional project management significantly mediates the relationship between teamwork quality and project performance.

H7: Modern project management significantly mediates the relationship between teamwork quality and project performance.

Methodology and Sample Selection

The effect of teamwork quality on project performance through modern and traditional project management in Iraq's energy sector is studied. A quantitative research approach, explanatory study, and cross-sectional research design were employed for this aim, as advised by prior studies and suitable for questionnaire-based research (Lou et al., 2010). Iraq's energy industry remained the target population of this study. These enterprises employ approximately fourteen individuals in Iraq. The energy industry offered three distinct programs: customer delivery, product development, and other operational development projections. A questionnaire was distributed to 400 project managers using the simple random selection technique. From a total of 300, 209 questionnaires were returned. When data were screened, 202 questionnaires were found to be legitimate for further analysis; this is the actual response rate of the study, which is adequate for quantitative research (Whitley & Ball, 2002). From a demographic standpoint, the average age of respondents was between 31 and 40 years old, and they had been working in their respective fields for 10 years. Almost 59.9 percent of respondents who work in energy-based organizations have been employed for 10 years, indicating that they are more aware of the company's procedures. On the other hand, 54.4 percent of respondents worked as key project specialists on a project team, 25 percent of managers worked as group members, and 19.6 percent performed project-supporting activities. While eighty percent of managers were engaged in customer delivery projects, twelve

percent were engaged in product development, and the remaining eight percent were engaged in operational project development.

Research Instrument and Research Framework

Traditional project management was adopted (O'Sheedy, 2012), which included seven things for measurement. Six questions from the O'Sheedy study were used to gauge the dimension of contemporary project management methods (2012). Four elements

adopted from O'Sheedy's study were utilized to evaluate collaboration (2012). The performance of the project was taken from several prior studies (O'Sheedy, 2012) and (Serrador & Turner, 2015) that measured six elements (O'Sheedy, 2012; Serrador & Turner, 2015). Each question was measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The projected instrumental variables are shown in Figure.1 below.

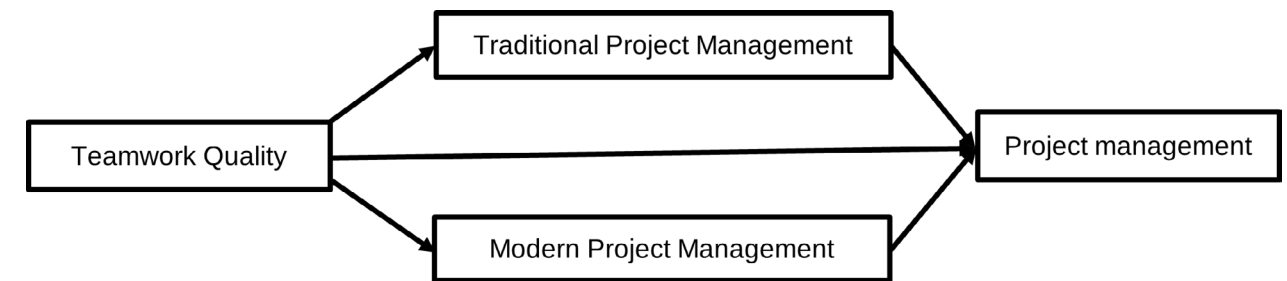


Figure.1: Research Framework

Assessment of Measurement Model

The study aimed to examine the impact of teamwork quality on project performance through modern and traditional project management of Iraq's energy company. Structural equation modeling based on PLS (Partial Least Squares) was employed in empirical research. PLS is based on principle components analysis and a combination of repeated regression, and its objective is to explain the change in model constructs (Chin, 1998). Consequently, the current model has the advantage of predicting all path coefficients and element loads and avoiding biased parameter predictions. In addition, Chin, Marcolin, and Newsted (2003) suggested that PLS was an effective analytical technique for minimizing Type II errors (Loureiro & Kastenholz, 2011). The suitability of measurements can be assessed by assessing the convergent and discriminant validity (Hulland, 1999). The minimal item load inside the respective construct was examined to assess convergent validity. If all scale load values for evaluating reflective constructs approach or exceed 0.5, the construct explains more than fifty percent of the variance in observable variables (Loureiro & Kastenholz, 2011). The factor loadings values in Table 1 are near 0.70 and larger than 0.5. Hence the item was not rejected. In addition, composite reliability was emphasized while assessing build dependability and projecting internal consistency. Composite dependability was more appropriate than

Cronbach's Alpha for PLS-SEM because, unlike Cronbach's Alpha, it did not require that all indicators be equally trustworthy (Hair et al., 2017). According to Ellinoudis et al. (2011), Cronbach's alpha reliability coefficient should exceed .70. Composite reliability is used to assess the dependability of structures, and this metric is more exact than Cronbach's Alpha. Table 1 illustrates additionally that Cronbach alpha and composite reliability continue to be above the threshold value provided by Hair et al. (2017) and that each manifest variable (MV) accounts for a considerable share of the change in the associated latent variable (LV). In contrast, the suggested values for extracted average variance are more than 0.5. The projected values in Table.1 indicates that these values are more than 0.5. In conclusion, the measurement model satisfied the convergent validity criterion. All extracted values for the average variance in Table 2 were larger than 0.50, suggesting that the indicators indicated at least 50 percent changes. The second criterion is discriminant validity, which may be evaluated using Fornell and Larcker, cross-loadings, and heterotrait monotrait correlations (Hair Jr et al., 2016; Hair Jr et al., 2017; Henseler, Ringle, & Sarstedt, 2015). Fornell and Larcker (1981) Describe the parameters' creation to obtain the square roots of the average variance and correlation values. Second, cross-loading should be employed to evaluate the structure to guarantee that the real construct does not exceed the base construct.

In contrast, in their study, Henseler et al. developed the Hetrotrait-Monotrait Correlation (HTMT) approach (2015). A third approach is employed for discriminant validity analysis, and the findings cannot exceed 0.85 to 0.90. (Henseler et al., 2015). The results of the

discriminant validity study are predicted in Tables 2 and 3, which demonstrate that the concept has discriminant validity because the Fornell and Larcker values are bigger than the diagonal values. The HTMT value is less than 0.85.

Table.1: Convergent Validity

	Code	Loadings	Composite reliability	average variance extracted
Quality Team Work	QW1	0.812	0.894	0.748
	QW2	0.529		
	QW3	0.822		
	QW4	0.673		
Traditional Project management	TRPM1	0.754	0.832	0.619
	TRPM2	0.775		
	TRPM3	0.806		
	TRPM4	0.702		
	TRDM5	0.583		
	TRDM6	0.925		
	TRDM7	0.789		
Modern project management	MPM1	0.768	0.916	0.722
	MPM2	0.878		
	MPM3	0.756		
	MPM4	0.739		
	MPM5	0.890		
	MPM6	0.741		
Project Performance	PM1	0.783	0.912	0.674
	PM2	0.831		
	PM3	0.798		
	PM4	0.722		
	PM5	0.761		
	PM6	0.762		

Table.2: Fornell and Larcker

	QW	TRPM	MPM	PM
QW	0.921			
TRPM	0.388	0.832		
MPM	0.452	0.516	0.819	
PM	0.346	0.642	0.673	0.853

Note: QW-quality teamwork, TRPM-traditional project management, MPM-modern project management, PM-project performance.

Table.3: HTMT

	QW	TRPM	MPM	PM
QW				
TRPM	0.408			
MPM	0.553	0.516		
PM	0.426	0.612	0.624	

Note: QW-quality teamwork, TRPM-traditional project management, MPM-modern project management, PM-project performance.

Regression Analysis

The study's hypothesis was tested utilizing a bootstrap 500 resampling 500 technique for the regression analysis. The results of the regression analysis indicate that teamwork quality (TWQ) has a positive

and statistically significant effect on both traditional project management (TRPM) and modern project management (MPM), supporting hypotheses 1 and 2. These results indicate that TWQ is indispensable for the concurrent use of TRPM and MPM. Similarly, studies find that TWQ has a positive and significant influence on PM, indicating that when TWQ improves, project performance also improves, which is verified by other studies (Drouin & Bourgault, 2013; Hoegl & Parboteeah, 2003; Weimann et al., 2013). The proposed third hypothesis supports this association.

In contrast, the association between TRPM, MPM, and PM was similarly significant and favorable, lending credence to hypotheses 4 and 5. In addition, indirect mediating impact demonstrates that TRPM and MPM have a positive and substantial mediating influence on the connection between TWQ and PM, supporting hypotheses 6 and 7. These results imply that TRPM and MPM are significant markers that mediate between TWQ and PM. The projected outcomes are listed in Table 4 below.

Table.4: Hypothesis results

	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
MPM -> PM	0.398	0.398	0.046	8.612	0.000
TRPM -> PM	0.402	0.403	0.043	9.317	0.000
TWQ -> MPM	0.506	0.506	0.056	9.109	0.000
TWQ-> PM	0.514	0.519	0.081	6.348	0.000
TWQ -> TRPM	0.565	0.566	0.041	13.663	0.000
TWQ -> MPM -> PM	0.201	0.201	0.032	6.34	0.000
TWQ -> TRPM -> PM	0.227	0.228	0.028	8.023	0.000

Note: QW-quality teamwork, TRPM-traditional project management, MPM-modern project management, PM-project performance.

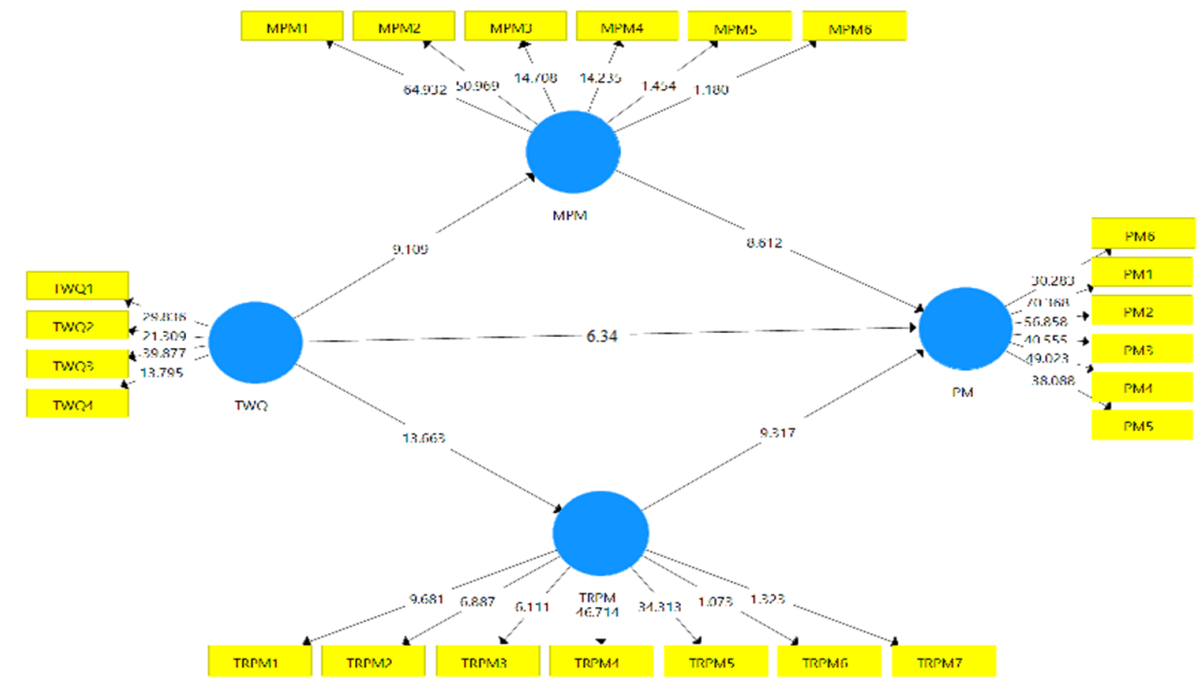


Figure.2: Regression Model

Discussion and Future Direction

The study aimed to examine the impact of teamwork quality on project performance through modern and traditional project management of Iraqi energy businesses. The purpose of this study was to investigate the effect of teamwork quality (TWQ) on project performance (PM) via modern project management (MPM) and traditional project management (TRPM) in Iraqi energy companies. The three project profiles of customer delivery, product development, and various operational development predictions were selected for this study based on the use of TRPM and MPM and their differences in TWQ and PM impact. The primary data indicate that TWQ has a large and beneficial influence on TRPM and MPM, supporting hypotheses 1 and 2. These results suggest that TWQ is indispensable for the concurrent use of TRPM and MPM. According

to (Boehm & Turner, 2003), the adoption of agile via TRPM could lead to conflicts between individuals and processes, demanding a high TWQ to alleviate the pressure. Therefore, to enhance PM, MTMs require a high level of TWQ. On the other hand, according to TRPM, project managers must ensure that the communication process is coordinated and organized (Batra et al., 2010). Agile may stimulate communication and touch with the client in projects involving customer delivery, yet the TRPM may be critical for preventing scope creep. The research findings continue to be validated by several studies with comparable findings (Boehm & Turner, 2003).

Moreover, it was discovered that TWQ has a positive and significant influence on PM, which indicates that when TWQ improves, so does the project's performance,

as supported by numerous research (Lindsjorn et al., 2016). The proposed third hypothesis supports this association. In contrast, the association between TRPM, MPM, and PM was similarly significant and favorable, supporting proposed hypotheses 4 and 5. In addition, the indirect mediating impact demonstrates that TRMP and MPM have a strong and favorable mediating effect between TWQ and PM, supporting hypotheses 6 and 7. These findings imply that these results are consistent with other research that supports the indirect impact of TWQ on PM (Hoegl & Gemuenden, 2001).

In addition to research findings, this study contributes two novel concepts to the field of study. First, the current study highlights the significance of teamwork quality for TRPM, MPM, and PM. Second, the outcomes of this research expand our understanding and knowledge of the concurrent usage of TRPM and MPM. Nonetheless, this study has major implications for the practice of project management. Thirdly, the research will aid practitioners in comprehending the dynamic and healthy nature of diverse TRPM and MPM combinations. MPM is only applicable to certain types of projects. Managers should understand how to employ both TRPM and MPM so that certain risks associated with one strategy can be mitigated by the other. In addition to these contributions, it is essential to acknowledge the current study's limitations. First, the sample was collected from a large firm, and the respondents were from the energy business section of the company. To avoid this bias, longitudinal follow-up studies are required. Thirdly, PM is the focus of this inquiry. Future research could investigate the impact on job performance and job satisfaction. Future research could enhance the model to include elements such as project risk concerns and motivational aspects of team effectiveness. Future research could also concentrate on developing new metrics for measuring the numerous elements of hybrid project management. Such a measurement will aid other researchers in examining the differences between TRPM and MPM in improving PM and work performance. Fourthly, the study was limited to Iraq, a developing nation; future research could be conducted in other industrialized nations to determine the variation in outcomes.

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