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THE ROLE OF TEAM WORK IN MEDIATING THE INFLUENCE OF PROJECT TEAM COMPETENCY AND PROJECT COMPLEXITY ON PROJECT PERFORMANCE

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ABSTRACT

Project management is becoming increasingly important to respond to rapid changes in the business and technological environment and to increase the role of all project team members to ensure continued success. The aim of this research is to analyze (1) the influence of project team competency on Project Performance, (2) Team Work mediates the influence of project team competency on project performance, (3) the influence of team work on project performance, (4) project complexity mediates the influence of project team competency towards team work. The sample for this research is employees working on the Pertamina Exploration & Production (EP) Cepu Department project in the 2021-2022 period with 75 employees as respondents. The sampling technique used was saturated sampling. The data used is primary data through distributing questionnaires to respondents. The analysis was carried out using the Partial Least Square (PLS) method using Smart PLS version 3.0 software. The research results conclude that (1) Project team competency makes a positive contribution to increasing project performance, (2) Project Complexity does not contribute to increasing project performance, (3) Project team competency contributes to project performance through team work, (4) Project complexity contributes to project performance through team work.

KEYWORDS: Project Team Competency, Project Complexity, Team Work, Project Performance.

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1. INTRODUCTION

In carrying out a project, good project management is needed. A project is a combination of various resources gathered within an organization on a temporary basis to achieve a goal. (Gruden N and Stare, 2018). Project management is the integrated application of knowledge and best practices

centered on the coordination of resources, time, scope, quality, cost, and risk. Project-based work represents a series of challenges, and an effective combination of sufficient knowledge, technical expertise, and experience and leadership behavior. The synergy of these elements leads to the competence of project management staff, which, in turn, has a positive effect on project performance. (Juras, 2019). Thus, human resource factors play an important and main role in projects, because the support and existence of human resources will be able to carry out project management systems and methods.

Project management is becoming increasingly important in a fast-paced world; project management is one of the strategic aspects for businesses and companies in managing large activities. How could it not be, without going through the right project management stages, every activity will be difficult to plan well and structured. Therefore, it is very important for companies to have a project management strategy and implement it optimally. Every year, huge amounts of funds are invested in various projects. However, some of the project investments contribute to project success, as well as the project failure rate. The target completion time for several projects exceeds the planned target time limit. Delays in project completion will have implications for increasing completion time and project costs. This phenomenon indicates a problem with project performance that is not yet optimal.

The Resources Based View (RBV) perspective on project management is very important and relevant, because project management practices are based on tangible and intangible resources (Zaman, 2021 & Kahlid, 2022). For example, tangible resources in project management include the use of codified methodologies, templates, tools and techniques that are already generally available as well as human resources (competencies) and team work.

The research aims to analyze the influence of Project Team Competency and project complexity on Project Performance and Team Work mediates the influence of Project Team Competency and project complexity on Project Performance. Several studies have examined the relationship between project team competency, complexity and teamwork with project performance, such as by Al Shatti (2018) and Abdullah et al. (2022) who conducted research to see the effect of team work performance on project performance. Shafique et. all. (2023) researched with the aim of seeing the effect of project complexity on project performance with team performance as a mediating variable. Juras (2019) conducted research to examine the influence of project team member competence on project success with team member dynamics variables, Khalid (2022) conducted research with the same variables as Juras (2019), but placed the commitment variable as a moderating variable. The research above basically examines the relationship between project team competence, complexity and teamwork with project performance, with a partial research model. Research by Shafiqueet. all. (2023) and Juras (2019) are considered research gaps which provide an opportunity for this research to develop a research model by integrating the two research models.

Several studies on team competence on both team performance and project performance have provided consistent results. Khalid's (2022) research findings confirm the positive relationship between team competency and project team performance. Organizational success may depend on the capacity of competent teams to collaborate and consistently execute at a high level to advance

the work. Juras (2019) conducted research to examine the influence of project team member competence on project success with variable team member dynamics. The research findings concluded that project team dynamics were able to mediate the influence of project team competence on project performance. Project complexity is also one of the causal factors that has a negative impact on the performance of the project team. Research findings by Shafiqueet.all. (2023) show that project teams can reduce negative effects on project complexity.

2. LITERATURE REVIEW

The theory used in this research is Resource Based View (RBV) Theory. The theoretical basis of the Resource Based View (RBV) originates from Penrose's view in 1950 about organizations as a collection of resources and the same view by Wernerfelt in 1984. Resource Based View (RBV) considers company resources as a fundamental determinant of competitive advantage and performance. Although resources can be categorized in various ways, for example tangible and intangible, tangible resources facilitate the execution of business processes while intangible resources are resources that can generate competitive advantage by enabling organizations to incorporate unique and valuable practices (Ray, et al., 2004; Barney, 1991).

2.1. Project Team Competency

A company will be able to achieve success if it is supported by employees who have high team competency. In terms of terminology, definition Project Team Competency is a basic personal characteristic that is a determining factor in whether a person is successful or not in carrying out a job or situation. (Vernia&Sandiar, 2020). Ability is one element of maturity related to knowledge or skills that can be obtained from education, training and experience. (Tjahyanti&Chairunnisa, 2021). Wibowo (2017) states that Project Team Competency shows skills or knowledge that are characterized by professionalism in a particular field as the most important thing, as superior in that field. Sedarmayanti (2017) stated that Project Team Competency is a fundamental characteristic possessed by a person which directly influences excellent performance.

Competent team members to collaborate effectively and continually strive toward project completion are critical to project success. The research results of Gruden and Stare (2018) concluded that the competent behavior of a project team significantly and positively influences project performance. These findings consider competency important because it shows an influence of more than 20% of project delays, costs, and work hours. Increasing the competence of all team members contributes to project success. Competent project managers and team members will be able to build multidisciplinary teams, utilize technology, and appropriate best practices for project success (Oh and Choi, 2020).

2.2. Project Complexity

Project complexity can be defined as a form of differentiation of varied elements, task masses, specialists, components and interdependencies. The above interpretation of complexity reflects systems theory in which complex systems are often defined in terms of differentiation and interaction between elements. As projects can be viewed as complex systems, as above the meaning of project complexity seems appropriate.(Clark, 2021). Masruroh et al., (2020) define project

complexity as a project that is unstructured so that it is difficult to understand, ambiguous and related to each other.

According to various researchers, it seems that project complexity negatively influences project success, observed in the form of unit costs, effectiveness and efficiency, productivity, time and total costs (Bjorvatn& Wald, 2018). In the project management literature, an important connection between project success and project complexity is mentioned and it is also known that this linkage is associated with project outcomes. Usman (2018), in his study aimed to examine the influence of different project complexities and project management competencies of project managers in public sector mega engineering projects in Pakistan and their influence on project performance. Complexity in a project cannot be avoided. These cannot be controlled or eliminated but one can have a better understanding to deal with them, resulting in better project performance. Hypotheses have been developed to test the influence of project management competency variables on project performance and further the influence of Technical, Organizational and environmental complexity on project performance. The results show that technical and organizational complexity have a negative effect on project performance while the environmental complexity hypothesis does not support project performance.

Zaman (2021) in his study on project-based organizations in Pakistan, especially in the field of Information Technology with 250 employee respondents. Who work on different projects. The research results show that project complexity is negatively related to project success, Shafique et al. (2023) stated that complexity in project management can cause major problems for many projects. Therefore, through his research aims to identify problems in project complexity so that managers can increase the likelihood of project success. The research results reveal that Project Complexity has a negative impact on Project Success and Project Performance.

2.3. Team Work

Teamwork is a business group that produces performance consisting of: clear goals, open and honest communication, cooperative decision making, an atmosphere of trust, a sense of belonging, good listening skills, and also the participation of all members .Khalid (2022) .According to Shafique et al. (2023) that Teamwork is a group consisting of two or five students who are bound together by the same goal to complete a task and to involve each member of the group.

Juras (2019) through his study analyzed the competency profiles of project team members, as well as their influence on project success. The established competency profiles of project team members are analyzed in relation to project team dynamics and project success. The mediating role of project team dynamics in the influence of project team members' competency profiles on project success is also examined in this research. The research results conclude that the competency profile of project team members plays an important role in achieving the desired project performance and outcome levels and ultimately ensuring project success. The competency profile of project team members also positively influences project team dynamics. Through project team dynamics, it also indirectly influences project success. Thus, project team dynamics mediate the influence of the competency profile of project team members on project success. The research results of Auromiqo et al., (2019), state that the project team plays an important role in project success; project success is closely

related to team performance. Selection of a project team is one way to increase project efficiency and effectiveness.

The relationship of project complexity on team collaboration and performance outcomes has been a focus of research while studying the impact and effects of project complexity. Luo et al. (2017) in research findings revealed that as project complexity (e.g., multiplicity and ambiguity) increases, higher and more advanced levels of communication are required to achieve maximum performance; however, the complexity of project activities can actually be reduced with more knowledge and training among team members and project managers. Therefore, project complexity and project success can be mediated by team performance.

Zaman (2021), concluded in his research that project complexity has a negative effect on project success with the mediating role of the use of agile methodologies and teamwork. Every time a project faces complexity in a project, teamwork will automatically result in between team members and will ultimately lead to project success. Projects require a high level of cooperation among team members to save other members from any stressful conditions.

Shafique et al. (2023), complexity in project management can cause major problems for many projects. The study results state the influence of project complexity on project success using team performance as a mediator. The research results reveal that Project Complexity has an impact on Project Success and Team Performance mediating the relationship between project complexity and project performance of large construction projects in Pakistan. The complexity that occurs in various projects requires mitigation strategies to overcome project failures. There are negative consequences of project complexity that force project managers to improve team performance to achieve project success. Project team performance can reduce the negative effects of project complexity on project success. The importance of teamwork in completing projects successfully, teamwork will be useful in directing and improving team performance. Shafique et al. (2023).

2.4. Project Performance

A project is an effort that mobilizes available resources, which is organized to achieve certain important goals, objectives and expectations and must be completed within a limited time period in accordance with the agreement. Thus, project performance can be interpreted as the work results achieved in mobilizing available resources organized to achieve goals within a limited time period (Shatti, 2018).

Project performance in this research is based on Stakeholder Requirement Theory which is defined as the level of project delivery that meets stakeholder requirements at the negotiated time, within the negotiated budget, meets certain quality requirements and is accepted by the customer (Usman, 2018). Project performance is only part of project success where project success also incorporates time, budget, scope, satisfaction, client welfare, technical and organizational validity as well as contribution to organizational effectiveness.

3. REASEARCH METHOD AND HYPOTHESIS

This research is quantitative research, with a type of explanatory research that analyzes the influence of one variable on other variables. The populations in this study were 75 employees at the PT Pertamina Exploration & Production (EP) Cepu Department project. The sampling technique is carried out using a census, where all members of the population are selected as samples. Thus, the number of people in this study was 75 employees as well as respondents. The research variables consist of exogenous variables: project team competency and project complexity and team work as mediating variables. The endogenous variable is project performance. The Likert scale is used to measure research variables; a. strongly disagree (score 1); b. Disagree (score 2); c. Neutral (Score 3); d. Agree (score 4); e. Strongly agree (score 5) .The data source used is primary data, namely data obtained directly from the research object, in the form of answers to statements contained in the questionnaire. The data collection technique used in this survey research is a questionnaire, namely a list of statements used to obtain data. The data analysis method uses the Partial Least Square (PLS) method with a covariance-based approach because of its flexibility to handle more complex models where moderation and mediating relationships are tested. (Hair et al., 2017)

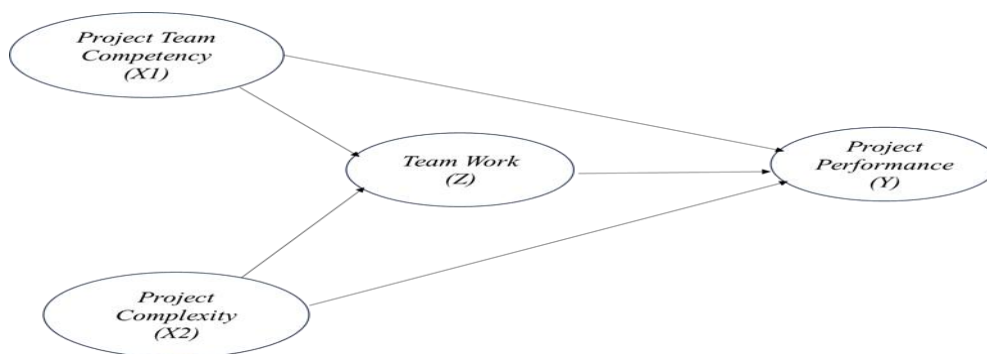


Figure 1. Conceptual Framework

In this research there are 4 hypotheses, namely

- H1:** Project Team Competency has a positive effect on Project Performance
- H2:** Project Complexity has a negative effect on Project Performance
- H3:** Team Work mediates the influence of Project Team Competency on Project Performance
- H4:** Team Work mediates the influence of Project Complexity on Project Performance

4. NALYSIS AND DISCUSSION

Table 1. Respondent Identity

Profile	Amount	%
Age		
25-34 years old	24	32.14
35-44 years old	30	39.29
>45 years	21	28.57
Gender		
Man	58	77.2
Woman	17	22.8
Level of education		
D3	11	14.29

S1	51	67.86
S2	13	17.86
Years of service		
1 to 5 Years	8	10.6
5 to 10 Years	44	59.0
> 10 years	23	30.4

Based on table 1, it can be seen that the dominant age of employees (respondents) is 35-45 years (39.29%), male employees are more dominant (77.2%). Educational background Bachelor's degree (53%). Length of work more than 5-10 years (59%). years (69%). Thus employees have sufficient education and experience to complete the work.

Quality of construct measurement through reliability and validity tests. Construct reliability uses Cronbach's Alpha and Composite Reliability. Reliability test to ensure that the construct is free from measurement bias. Next, the instrument validity test uses the combined loading and cross loading methods, namely average variance extracted (AVE) for convergent validity and square root AVE for discriminant validity.

Table 2. Construct Validity and Reliability

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Project Complexity (X2)	0.846	0.896	0.684
Project Performance (Y)	0.889	0.931	0.818
Project Team Competency (X1)	0.889	0.932	0.820
Team Work (Z)	0.908	0.936	0.786

As shown in Table 2, the Cronbach's alpha value of the four latent variables is higher than the threshold value of 0.70 (Hair et al., 2017). Likewise, the Composite Reliability Coefficient of the four latent variables is more than the threshold value of 0.70 (Hair et al., 2017). Thus, the four latent variables meet the reliability requirements, and the latent variables have good internal consistency, and the indicators are construct measures. For validity, use the AVE value. The results show that it has good validity because the estimated AVE value is higher than the specified standard normal value, namely 0.50.

Table 3. Outer Loading

	Project Complexity (X2)	Project Performance (Y)	Project Team Competency (X1)	Team Work (Z)
X1.1			0.910	
X1.2			0.956	
X1.3			0.847	
X2.1	0.874			
X2.2	0.771			
X2.3	0.862			

X2.4	0.797			
Y1		0.902		
Y2		0.918		
Y3		0.894		
Z1				0.899
Z2				0.922
Z3				0.918
Z4				0.801

Table 3 illustrates that the factor loading of each indicator of the four latent variables is more than the threshold value of 0.5 (Ghozali, 2015). It can be concluded that all indicators in the four latent variables have good validity, and based on empirical results, this research model is free from potential measurement bias.

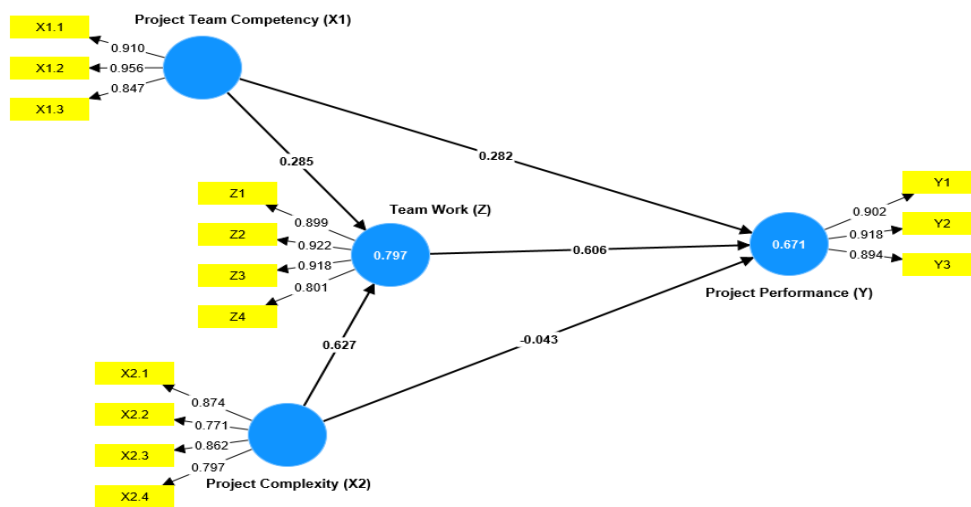


Figure 2. PLS Model

Table 4. Hypothesis Testing

No	Relationship between variables	Path Coefficient	P-Value	Information
1	Project Team Competency (X1) -> Project Performance (Y)	0.282	0.833	Non-Significant
2	Project Complexity (X2) -> Project Performance (Y)	-0.043	0.020	Significant

Table 5. Testing Mediating Variables

No	Relationship between variables	Mediating Variables	Path Coefficient	P-Value	Information
1	Project Team Competency (X1) -> Project Performance (Y)	Team Work (Z)	0.173	0.033	Significant
2	Project Complexity (X2) -> Project Performance (Y)	Team Work (Z)	0.380	0.001	Significant

	Performance (Y)				
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5. DISCUSSION

The results of the tests carried out show that project team competency has a significant positive effect on project performance, meaning that hypothesis 1 is accepted. Thus, strong project team competency will lead to increased project performance, whereas weak project team competency will lead to decreased project performance. Project-based work is closely related to a dynamic work environment full of time pressure and budget constraints. Facing the dynamics of project activities requires a project team that has technical competence, equipped with conceptual competence related to basic management functions such as planning, organizing, staffing, and directing. / leading and controlling as well as, having a strong goal orientation. A project team with high competence will encourage project success.

The results of this research are in line with several studies that examine the relationship between project team competence and project performance, such as by Usman (2018), which shows that project management competence has a positive effect on project performance. The results of the same research conducted by Juras (2019), concluded that The competency profile of project team members plays a critical role in achieving desired project performance and outcome levels and ultimately ensuring project success

The results of the tests carried out show that project complexity has a non-significant effect on project performance, meaning that hypothesis 2 is rejected. Thus project complexity does not determine project performance. There are several arguments that can be explained by the results of project complexity having a non-significant effect on project performance. First, the existence of a project team with a good level of competency will be able to face and handle project complexity because the project team works to complete it in a measurable and planned manner. Second, project activities are dynamic, complex business process activities. Project activities are carried out using standard, measurable and planned systems and procedures, therefore project complexity can be minimized at the start of carrying out Management function activities, namely measurable and precise planning.

The results of this research are not in line with the research results of Bjorvatn & Wald, (2018), it seems that project complexity negatively influences project success, observed in the form of unit costs, effectiveness and efficiency, productivity, time and total costs. Usman (2018), shows that project complexity is negatively related to project success. The results of the same research were conducted by Zaman (2021). The results of the study by Shafique et al. (2023) revealed that Project Complexity has a negative impact on Project Success and Project Performance.

The results of the tests carried out show that team work mediates the significant positive influence of project team competency on project performance, meaning that hypothesis 3 is accepted. In this way, project team competency is able to build team work among employees, thereby encouraging increased project performance. Team work plays a mediating role in the significant positive influence of project team competency on project performance, it can be explained that The project

team competency approach is more focused and oriented on important tasks that ensure the success of the organization or project and is team focused, namely emphasizing what the team actually does rather than what should be done individually, meaning it is not only related to individual efficiency but also with good performance from all departments or teams.

The argument above is in line with the opinion of Liskova and Tomsk, (2013), which states that to maximize project performance; project team members must be able to achieve strategic business goals. Therefore, the success of project-based organizations relies heavily on the knowledge of workers, the acquisition of new skills, and the creative application of those skills and competencies. Therefore, the idea of teamwork is essential for the successful completion of project activities. Imran (2019), states that the project team plays an important role in project success, project success is closely related to team performance. Selection of a project team is one way to increase project efficiency and effectiveness.

The results of the tests carried out show that team work mediates a significant positive influence of project complexity on project performance, meaning that hypothesis 4 is accepted. Thus the project complexity existing issues will be resolved with integrated team work among employees; thereby encouraging increased project performance. The role of team work mediates the significant influence of project complexity on project performance, because the presence of team work can reduce the negative effect on project complexity. This is because effective team work is more likely to experience various difficulties related to the project, so that team work is in a good experienced position to use all competencies to overcome problems that develop on the project. As well as being able to improve project performance in terms of project time and quality. However, the complexity of project activities can actually be reduced with more knowledge and training among work team members thereby contributing to project success. Therefore, project complexity and project success can be mediated by team performance.

The explanation above is in line with the arguments of Shafique et.all, (2023) in their study stating that coordinated and coherent teams are increasingly needed for project management and operations to complete projects successfully. Research findings suggest that project team performance can reduce the negative effects of project complexity on project success. The importance of teamwork in completing projects successfully, teamwork will be useful in directing and improving team performance. That complexity can motivate team members to cooperate with each other and this can increase the chances of success. (Zaman, 2021).

6. CONCLUSIONS

Based on the research results and discussion, this research concludes. First, Project team competency supported by technical competence, and conceptual competence related to basic management functions such as planning and organizing will encourage increased project performance. Second, Project Complexity does not contribute to increasing project performance; project complexity can be minimized through measurable and precise planning and supported by the competence and experience of project team members. Third, the existence of team work that shares knowledge, experience and skills and respects each other's contributions makes the team work in an integrated manner and makes project team competency contribute to project

performance, Fourth, complexity can encourage work teams to work hard and stimulate new ways of thinking and motivate team members to cooperate with each other and this can improve project performance.

Recommendations related to this research. First, developing the project team's abilities either through mentoring or other means such as providing job assignments or special challenges will increase project success and also project team satisfaction. Furthermore, the team will continue to be motivated and have high engagement with the project. Second, increasing team collaboration by creating a working atmosphere that is as comfortable as possible. by providing freedom of opinion for each team and giving team members the opportunity to learn many things.

Project complexity provides non-significant results; in future research to get clearer results, the project complexity variable will be further translated into organizational complexity and technical complexity. The research sample was further developed and was not limited to permanent employees but subcontracted employees needed to be respondents.

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