

The linkage between leadership style of project manager and project performance: Evidence from telecommunication industry

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This research analyses how different leadership styles affect project managers in the telecommunications sector, focusing on transactional and transformational leadership's direct effects on project performance. Ambidextrous Leadership's role as a mediator is explored alongside the influence of Project Management approaches (Waterfall, Agile, Hybrid) and Project Manager Certifications. Data from 224 Project Managers in 77 Indonesian telecom companies was examined using Structural Equation Modelling Partial Least Square (SEM PLS). The findings indicate that Transactional and Transformational Leadership alone don't directly affect Project Performance, but Ambidextrous Leadership significantly enhances it. Different Project Management Approaches (Waterfall, Hybrid, Agile) amplify the impact of leadership styles. Transactional leadership is strongly linked to the waterfall, while transformational and ambidextrous leadership aligns with the agile and hybrid approach. Project Management Certification strengthens Transactional Leadership's effect on Project Performance, with less impact on Transformational Leadership. The research emphasizes the significance of Ambidextrous Leadership in improving project performance and how project management approaches and certifications can enhance or moderate the influence of leadership styles on telecommunication project management. These findings offer industry practitioners and organizations valuable insights, contributing to leadership, project management, and telecommunications research.

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1. Introduction

An organization generally has project work. "A project is a temporary endeavor undertaken to create a unique product, service, or outcome" (Project Management Institute-PMI 2017). Project managers lead project teams to achieve project objectives and meet stakeholder expectations. The Project Manager's leadership skills significantly impact the successful implementation of a project. Many external and internal factors influence leadership in project management. The evolution of project management techniques is divided into two sides: the first is traditional project management or Waterfall, commonly used in physical projects like Manufacturing and Construction, and the second is Agile Project Management, widely used in Service and Information Technology projects. These two methods will affect the leadership model in project management. The impact of leadership must be considered due its implementation by business owners could positively influence the company's performance, strengthened by using a corporate entrepreneurship strategy (Wahyudi et al. 2024). The emergence of Industry 4.0 can be attributed to advancements in information technology and communication, the Internet of Things, and Cyber-Physical Systems (Li, 2017). Technological advancement impacts changes in work behaviour and work systems of organizations (Pranata et al., 2021). According to estimates, the fourth industrial revolution will have a notable impact on projects, management processes, and the work environment of those executing said projects, and this impact is expected to be significant. Because projects will become more complex due to Industry 4.0, managers need the capacity to adapt their capacities and skills to the criteria in several cases (Shehadeh et al. 2017; Loeis et al. 2022a). The rapid changes in Industry 4.0 will influence business leadership and project management models that require leaders who can adapt to change. "Turbulence" refers to a state with frequent and intense changes in important environmental factors (Glazer &

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Weiss, 1993). Leaders face challenges in generating revenue and maintaining competitiveness in a turbulent business environment (Pun, 1990). The telecommunications industry is known for experiencing environmental turbulence due to its fast-paced and ever changing nature, which includes technological advancements, market demand, competition, and regulatory policies. As a result, it is commonly referred to as the highspeed industry (Eisenhardt, 1989). The telecommunications industry in Indonesia is highly turbulent, as research suggests it is currently in a Red Ocean competitive environment (Budisusetio, 2019; Al Eida, 2020).

A leader or project manager must ensure that a project proceeds according to plan and not veering off course. However, many projects have failed or at least been delayed, leading to increased costs. Several surveys involving many respondents can provide information about the extent of project failures. The Project Success Survey (2018) by PWC Belgium, involving 98 companies, revealed that 59% of respondents stated that at least 1 in 4 projects failed to deliver the desired results on time and within budget, with most respondents having a negative assessment of project completion success (PwC, 2018). The Project Management Institute (PMI) survey in 2020 of 3,950 Project Professionals found that projects failed due to being Over Budget (35%), Scope Creep (34%), and Total Failure (12%) (PMI, 2020). Leadership skill is the most important foundation for a project organization. Leadership is a crucial behavior, asset, and attribute for managers in Industries related to engineering, technology, and construction (Farler & Haan, 2021). The PMI 2020 survey of 3,972 professional project managers found that 65% of respondents emphasized the need for leadership skills, second only to other skill needs (PMI, 2021). Similarly, Version One's survey in 2020 found that the biggest challenge in implementing Agile project management, as stated by 46% of respondents (ranking second), was the lack of leadership. Few studies have examined how project managers' leadership styles can impact projects' success within specific industries (Toor & Ofori, 2008). The success of a project is influenced by the leadership style of the project manager (Sadeghi & Pihie, 2012). Based on this background, research is required to understand the impact of different leadership styles on project outcomes within the telecommunications industry.

2. Literature Review and Hypothesis

2.1. Literature Review

2.1.1 Transactional Leadership, Transformational Leadership, and Ambidextrous Leadership

The Leadership style combines traits, skills, and behaviors that leaders employ when interacting with employees (Lussier & Achua, 2004). Two of organizations' most well-known leadership styles are transformational and transactional (Bass & Avolio, 1990). Burn (1989) developed these concepts by taking inspiration from Maslow's pyramid of needs. Transactional leadership is a style that focuses on interpersonal transactions between the leader and employees, involving an exchange relationship (Bycio, 1995). It pertains to the interaction between the leader and the team to address their needs (Bass, 1999). Transactional relationships involve rewarding the team for activities the leader requests (Bass, 1999). Transformational leadership involves leaders who act as role models and motivate others through their confidence and enthusiasm, creating a feeling of satisfaction and gratitude among their followers (Bass & Avolio, 1990). Transformational leaders can aid individuals in progressing from lower levels of survival-focused needs to higher levels, as per Maslow's hierarchy (Kelly 2003; Yuki 1989). Transformational leaders have the power to inspire their followers to transcend their interests. They can have a strong and significant influence on the people who follow them and focus on the individual developmental needs of each follower. Additionally, they assist their followers in seeing existing problems in new and innovative ways, raising their awareness of issues (Robbins & Judge, 2009). As Bass (1985) aptly puts it, "The best leaders are those who possess both transactional and transformational leadership skills". Transactional leadership is characterized by four different traits: continuous reward, management by exception (active), management by exception (passive), and laissez-faire (Bass, 1985). Transformational leadership is defined by four aspects: idealized influence, intellectual stimulation, inspirational motivation, and individualized consideration. Regarding Transactional leadership, Laissez-faire behavior should be categorized as an avoidance leadership style. Therefore, this research will exclude Laissez-faire behavior and focus solely on three characteristics of Transactional Leadership. The implication of transformational leadership is the improvement of innovation in the case of the creative industry (Loeis et al. 2023b). It must be applied by the highest-ranking leader in the company, namely the director, chairman, and CEO to create a thriving innovation in business (Wahyudi et al. 2021). The questionnaires were created according to four transformational and three transactional leadership behaviors, with five questions allocated to each leadership style.

The term "ambidextrous" has its origins in the Latin language, where "ambi" means "both" or "both of them", and "dexterous" means "right or comfortable" (Maier, 2015). The term "ambidextrous" or "ambidexterity" was first introduced in the field of management by Robert B. Duncan in his 1976 article titled "The Ambidextrous Organization: Designing Dual Structure for Innovation" (Kuwashima et al., 2020). Ambidextrous leadership fosters exploratory and exploitative behaviors in a team's members (Mueller et al., 2020). Although different terms are used, ambidexterity is the ability to harness two opposing capabilities simultaneously. The measurement of ambidextrous leadership abilities can be done using a scale known as the Ambidextrous Leadership Scale (Rosing et al., 2011). Ambidextrous leadership refers to the capacity to balance and integrate two opposing complementary modes of leadership: exploration (innovative and risky) and exploitation (efficient and predictable). In this research, we selected 6 indicators to measure an individual's ability to balance and integrate the two modes of leadership, namely (1) the Project Manager balances the need for stability and continuity with the

need for change and adaptation, (2) Project managers are tasked with the responsibility to balance between the short objective and longer objective, (3) Project Manager have a clear vision and strategy for the future while staying focused on the present (4) Project Manager able to manage conflicting priorities and demands effectively, (5) Project Manager can integrate different perspectives and ideas to achieve a common goal and (6) Project Manager can integrate different perspectives and ideas to achieve a common goal.

2.1.2 Project Performance

The success of the project measures project performance. There are multiple interpretations of what constitutes a successful project, as scholars have investigated various angles and viewpoints concerning the definitions of failures and success in projects. Based on PMI (2017), project success is measured based on quality, timeliness, customer satisfaction, and budget compliance. The initial criteria for success consist of cost, time, and quality (or scope) (Williams et al., 2015; Parker et al., 2015). Muller and Turner (2007) developed ten measures of success, including additional end-user satisfaction, supplier satisfaction, team satisfaction, satisfaction of other stakeholders, and customer satisfaction. The three main aspects that establish the success of a project are cost, time, and quality, known as the "iron triangle" of project management. The performance of a project is judged by how well it meets these three factors. The PSQ, an acronym for the Project Success Questionnaire, was developed based on the work of Pinto and Slevin in 1986 and consists of 10 criteria, including the traditional "iron triangle" of time, cost, and quality (Pinto & Slevin 1986). Therefore, the Project Performance Success Criteria in this research include (1) scope, (2) cost, (3) time, (4) quality, and (5) customer satisfaction.

2.1.3 Project Management Approach and Telecommunication Project

Project Management is essentially divided into two approaches: waterfall and agile. The Waterfall approach emphasizes a sequential process that appears to flow like a waterfall, moving from requirement planning, design, implementation, and verification to maintenance. It was first introduced by Royce (1970). The Agile approach is a set of iterative and incremental development methods. It allows for the rapid development of software with easily adaptable requirements. Vinekar et al. (2006) elaborated on the difference between Agile and Traditional (waterfall). The first difference is that Agile focuses on Leadership and Collaboration, while Waterfall focuses on command and control (Vinekar et al., 2006). Then, Waterfall is preplanned, while Agile is adaptable. The waterfall is process-centric, while Agile is people-centric. The next development in the methodology is the introduction of the third, namely Hybrid. The research examined three project management techniques: traditional, agile, and hybrid (Gemino et al., 2021). The telecommunications industry spans various types of companies with distinctly different products, objectives, and modes of operation. Within all these telecommunication companies, individuals are engaged in projects (Desmond, 2004). Telecommunication projects encompass activities related to the construction of telecommunication networks, combining elements of construction, engineering, and services using information technology devices. According to Valdar (2017), a telecommunication network is an electronic system of links, nodes, and controls that oversee operations to enable the exchange of voice and data between devices and users. A comprehensive telecommunication network connects various systems and technologies to establish fixed and mobile telecommunication networks. Telecommunication projects within a complete end-to-end system involve various activities, including Planning and Design, Construction (encompassing infrastructure and network elements), Hardware, Engineering, Software and Applications, Integration Services, Performance Optimization Services, Maintenance Services, Research and Product Development, and Consultation Services. Project Managers in the Telecommunication industry use approaches either as standalone methods (Waterfall or Agile) or in combination (Hybrid). This research categorizes the Project Management Approach into three groups: (1) Waterfall, (2) Agile, and (3) Hybrid. Utilizing project management methodologies aims to enhance the likelihood of achieving project success (Spundak, 2014).

2.1.4 Project Management Certification

Certification in project management is a crucial step toward professionalization in the discipline. Certification programs aim to provide persons with the knowledge and expertise to effectively manage and complete projects (Joseph & Marnewick, 2018). Practitioners holding professional certifications and adhering to standards issued by project management institutions are expected to achieve higher levels of project management performance. Research conducted by Aslam and Bilal (2021) indicates that project management certification positively influences project performance, as mediated by the professionalism of project managers (Aslam & Bilal, 2021). Aligned with the two approaches in project management, namely waterfall and agile, project management certifications are generally categorized into these two streams. However, presently, each certification tends to lean towards a hybrid approach. Organizations that have expertise in project management, such as the Project Management Institute (PMI), provide qualifications that are based on both the waterfall method, such as Project Management Professional (PMP), and the Agile method, like PMI Agile Certified Practitioner (PMI ACP). Axelos also provides certifications, including Projects IN Controlled Environments (PRINCE2®) and Agile PRINCE2®. According to a research study, PMP and PRINCE2 Practitioner are the most widely recognized certifications in project management (Joseph & Marnewick, 2018). According to a survey conducted by KPMG in 2022, which included 201 Project Managers across sectors in Cyprus, 51% of Project Managers have no certification, 31% have PMP or other PMI certifications, and 13% hold PRINCE2 or other Axelos certifications (KPMG 2022).

2.2. Hypothesis

The background of the research framework and the hypothesis questions are as follows:

2.2.1 Transactional and Transformational Leadership influence Project Performance

Holzmann and Mazzini (2020) mentioned that the key topic in successful project management is leadership. Their research in the creative industries found that transformational leadership is the most favorable for successful projects, followed by the transactional leadership style. Both styles are strongly correlated with project success positively. This supports the notion that transformational leadership significantly influences project success more than transactional leadership (Abbas & Ali, 2023). Both pieces of research mentioned the positive impact of transformational and transactional leadership on project success and compared transformational leadership's more substantial impact than transactional leadership.

In addition, leaders who adopt transformative leadership styles employ emotional intelligence to establish a secure and supportive atmosphere that inspires team members to perform better during project execution (Renzi 2020). Research has indicated that utilizing transformational leadership can increase project success (Doan et al., 2020). The transformational leadership style can have a positive influence on the success of a project. The project manager's transformational leadership style promotes the project members' perception of success. If project members believe in the project's direction, its success is assured (Ali et al., 2021). A Project manager who practices transformational leadership behaviors can effectively enhance the success of projects in developing countries such as Pakistan (Iqbal et al., 2019). The study investigates the influence of transformational leadership and soft skills on project managers regarding their impact on project success factors (Rogo et al., 2020). Zhao et al. (2021) also mentioned that transformational leadership positively affects project success. All this research supports the statement that transformational leadership positively impacts the success of projects.

On the contrary, transactional leadership positively affects the success of projects, but it is insignificant, as researched in building construction (Mufaricha et al., 2021). From older literature, Tyssen et al. (2014) found no significant impact of transactional leadership on project success. Zhu and Kindarto (2016) conducted research on the impact of transactional leadership on project success among IT project managers within an Indonesian company. They discovered a negative relationship between these two variables, which was not statistically significant. The investigation revealed that when managers implement a transformational leadership style, it positively and significantly impacts the success of projects in complex humanitarian emergencies. In complex humanitarian emergencies, the project's success is not significantly related to the manager's leadership style, specifically those who adopt transactional or passive-avoidant approaches (Frimpong 2017). Based on this literature, we developed Hypothesis 1 and Hypothesis 2 in Table 1.

2.2.2 Ambidextrous Leadership Influence on Project Performance

Organizational success is driven by leaders who possess the skill of ambidextrous leadership, which means they can manage and balance competing demands effectively (Hmedan, 2023). Ambidextrous leadership significantly impacts how well an organization performs (Beh, 2023). Ambidextrous leadership positively impacts company performance in telecommunications (Bawono et al., 2022). Ambidextrous leadership has a significant impact on organizational excellence (AlEdia, 2020). Specifically, in projects, Ahsan (2020) mentioned that Ambidextrous leadership positively influences project success. Ambidextrous leadership is essential for the success of unique projects, as standardized processes alone cannot execute them (Ahsan et al., 2020). Ambidextrous Leadership and Project Performance are positively and directly related (Zheng et al., 2017). All these pieces of literature support the notion that Ambidextrous leadership positively impacts the organization's and its projects' performance. Based on these findings, we add Hypothesis 3 in Table 1.

2.2.3 Transactional Leadership and Transformational Leadership Influence on Ambidextrous Leadership

Ambidextrous leaders should make use of both transformational leadership traits like motivation and inspiration, as well as transactional leadership traits like goal achievement, to effectively lead and motivate their employees (Kassotaki, 2019). According to Baškarada et al. (2016) and Luo et al. (2018), a successful leadership approach involves a mixture of transformational and transactional leadership styles. This approach is called Ambidextrous leadership (Baskarada et al., 2017; Luo et al., 2018). Building on the literature, which suggests that Transformational Leadership and Transactional Leadership each impact the formation of Ambidextrous leadership, we developed Hypothesis 3 and Hypothesis 4 in Table 1.

2.2.4 Mediating/Intervening Role of Ambidextrous Leadership between Transactional Leadership and Project Performance and between Transformational Leadership and Project Performance

Building upon the relationships established between Transactional Leadership and Project Performance, Transformational Leadership and Project Performance, as well as the integration of Transactional Leadership and Transformational Leadership forming Ambidextrous Leadership, we conducted a study to examine how Ambidextrous Leadership influences Project Performance by acting as a mediator between Transactional Leadership and Project Performance, as well as between Transformational Leadership and Project Performance, as illustrated in Hypothesis 6 and Hypothesis 7 in Table 1.

2.2.5 Moderating Role of Project Management Approach (PMA) with three categorizations (PMA Hybrid, PMA Agile, and PMA Waterfall)

The primary objective of project management methodologies is to enable projects in all areas to perform and compete in the market (Popa et al., 2021). Combining agile and traditional practices is a leading project management approach, as validated by practitioners' decisions. Moreover, hybrid and agile approaches can deliver the same outcomes regarding time, budget, scope, and quality as traditional approaches but with significantly increased stakeholder success. Using agile methodologies instead of traditional project management methods can lead to better accomplishment of a citizen-centric approach (Kumarwad & Kumbhar, 2018). However, According to Pace (2019), the results indicated that the project management method is weakly associated with project success. Managers should choose the appropriate leadership style for each situation, and typically, traditional project management usually uses command and control (Fischer & Charef 2021).

The next model assesses how the Project Management Approaches (PMA Hybrid, PMA Agile, and PMA Waterfall) mediate between leadership styles and Project Performance. We assess how the combination of the three leadership styles (Transactional, Transformational, and Ambidextrous Leadership) affects Project Performance across Hypothesis 8 through Hypothesis 16 in Table 1. From Hypothesis 17 to Hypothesis 22 in Table 1, we assess how the Project Management Approaches (PMA Hybrid, PMA Agile, and PMA Waterfall) moderate the correlation between Transformational and Transactional Leadership towards Ambidextrous Leadership.

2.2.6 Moderating Role of Project Manager Certification (SER)

The next model involves the addition of the variable Project Manager Certification as a moderating role between Transactional Leadership versus Project Performance, Transformational Leadership versus Project Performance, and Ambidextrous Leadership versus Project Performance.

The Project Management certification positively impacts individual project performance, as evidenced by research on certified Project Managers in Pakistan. The information gathered from IT project managers in the US showed that certified IT project managers had significantly higher rates of success and implementation in integrated project management than non-certified IT project managers (Canlas, 2022). Additionally, the research indicated higher personal competencies for project and program managers with multiple certifications than those with only a PMP (Perry, 2017). Participants reported that obtaining their PMP certification improved their skills in project management, leading to greater project success for clients (Armstrong, 2015). This literature provides evidence for a strong positive connection between Project Management Certification and Project Performance. On the other hand, some argue that obtaining a certification in Project Management does not affect Project Performance (Starkweather & Stevenson, 2011). In South African IT projects, it was found that obtaining project management certification did not impact the project's performance. Additionally, there was also a moderate suggestion that, based on Parker (2019), there were no significant differences between Project Managers with Certification and Project Managers without certification for Project Scope and Project Schedule performance, but Project Managers with certification were better for Project Cost Performance than those without certification (Parker, 2019). Levy's (2020) study found that obtaining certifications in Project Management, such as PMP and CAPM certifications, does not influence how an authentic leadership style relates to the performance of a project (Levy 2020). The moderating role of Project Management Certification between Leadership styles and Project Performance is indicated in Hypothesis 23, Hypothesis 24, and Hypothesis 25 in Table 1.

Table 1

The hypothesis was utilized in the research.

No	Hypothesis
H1	Transactional Leadership (TRS) influences Project Performance (PP)
H2	Transformational Leadership (TRF) influences Project Performance (PP)
H3	Ambidextrous Leadership (AL) influences Project Performance (PP)
H4	Transactional Leadership (TRS) influences Ambidextrous Leadership (AMB)
H5	Transformational Leadership (TRS) influences Ambidextrous Leadership (AMB)
H6	Transactional Leadership (TRS) has an influence on Project Performance (PP) through Ambidextrous Leadership (AMB)
H7	Transformational Leadership (TRF) has an influence on Project Performance (PP) through Ambidextrous Leadership (AMB)
H8	PMA Hybrid moderates Transactional Leadership (TRS) on Project Performance (PP)
H9	PMA Agile moderates Transactional Leadership (TRS) on Project Performance (PP)
H10	PMA Waterfall moderates Transactional Leadership (TRS) on Project Performance (PP)
H11	PMA Hybrid moderates Transformational Leadership (TRF) on Project Performance (PP)
H12	PMA Agile moderates Transformational Leadership (TRF) on Project Performance (PP)
H13	PMA Waterfall moderates Transformational Leadership (TRF) on Project Performance (PP)
H14	PMA Hybrid moderates Ambidextrous Leadership (AMB) on Project Performance (PP)
H15	PMA Agile moderates Ambidextrous Leadership (AMB) on Project Performance (PP)
H16	PMA Waterfall moderates Ambidextrous Leadership (AMB) on Project Performance (PP)
H17	PMA Hybrid moderates Transactional Leadership (TRS) on Ambidextrous Leadership (AMB)
H18	PMA Agile moderates Transactional Leadership (TRS) on Ambidextrous Leadership (AMB)
H19	PMA Waterfall moderates Transactional Leadership (TRS) on Ambidextrous Leadership (AMB)
H20	PMA Hybrid moderates Transformational Leadership (TRF) on Ambidextrous Leadership (AMB)
H21	PMA Agile moderates Transformational Leadership (TRF) on Ambidextrous Leadership (AMB)
H22	PMA Waterfall moderates Transformational Leadership (TRF) on Ambidextrous Leadership (AMB)
H23	PM Certification (SER) moderates Transactional Leadership (TRS) on Project Performance (PP)
H24	PM Certification (SER) moderates Transformational Leadership (TRF) on Project Performance (PP)
H25	PM Certification (SER) moderates Ambidextrous Leadership (AMB) on Project Performance (PP)
H26	PM Certification (SER) moderates Transactional Leadership (TRS) on Ambidextrous Leadership (AMB)
H27	PM Certification (SER) moderates Transformation Leadership (TRF) on Ambidextrous Leadership (AMB)

Furthermore, Project management certifications include training in leadership skills as part of the curriculum. Additionally, Project Management Certification emphasizes adopting best practices in leadership and management. These best practices often include aspects of transformational, transactional, servant, situational leadership styles, or ambidextrous leadership. Individuals pursuing certifications learn about various leadership styles, and this exposure can shape the leadership style of a Project Manager. 188 certified project managers in the USA showed a noteworthy and favorable correlation between having a transformational leadership approach and success in complex projects. However, there was no significant correlation between project success in virtual projects and leadership style (McCorkle, 2012). The last Hypothesis was developed to measure the moderation effect of Project Manager (PM) Certification between Transformational and Transactional Leadership towards Ambidextrous Leadership in Hypothesis 26 and Hypothesis 27 in Table 1. The Figure 1 represents the conceptual model.

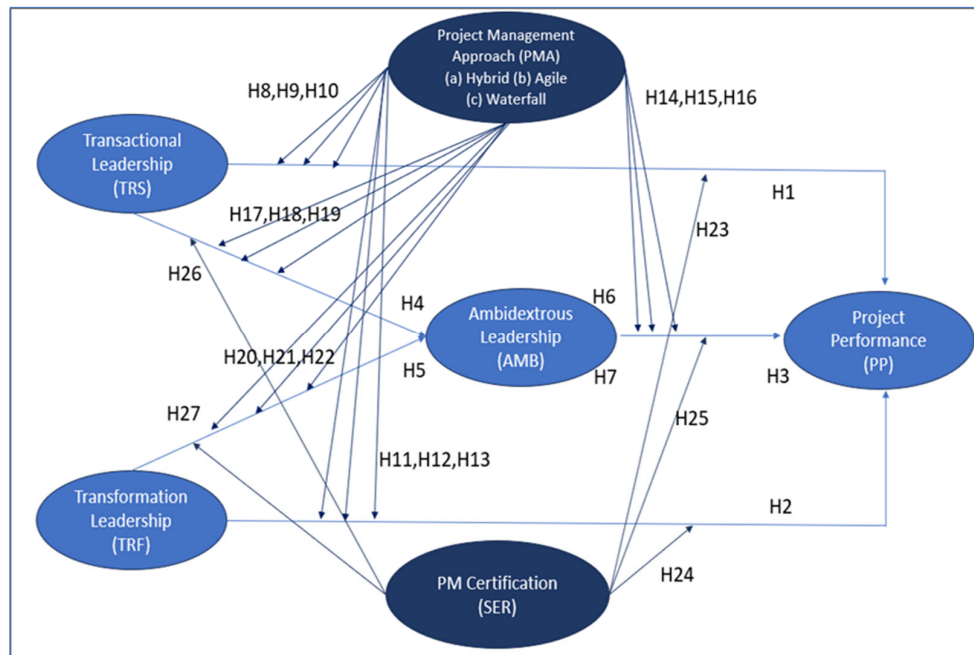


Fig. 1. Conceptual Model

3. Materials and Methods

3.1 Research Design

The research utilized a descriptive correlational design to portray how project managers perceive their leadership style, approach to project management, project manager certification, and project performance. The research methodology used was correlational, to study how diverse leadership styles (Transformational, Transactional, and Ambidextrous) affect the outcome, Project Management Approach, and Project Manager Certification on a project's outcome.

3.2 Subject and Study Site

The respondents were selected using Purposive Sampling. There were two specific criteria for the selection of respondents. Firstly, the respondents should hold positions as Project Managers, and secondly, their projects should be in the telecommunications industry. The total number of questionnaires received was 244 (n=244). After the selection process, 20 responses were deemed invalid. This was due to four respondents not holding the position of Project Manager and 16 respondents working as Project Managers but not in a Telecommunications company. The total number of valid responses was 224 (n=224).

3.3 Data Collection Procedure

The questionnaire was administered using Google Forms. The invitation text was sent to Project Managers, including the PMI Indonesia Chapter, Prince2 Indonesia, the Project Management Office (PMO) PI Indonesia, and a group of Project Managers in a telecommunication company. An invitation was also pushed on social media based on respondent profiles that match the criteria.

3.4 Instrumentation

The questionnaire had five parts: Respondents' Demographic and qualification Profile, Transactional leadership, Transformational leadership, Ambidextrous Leadership, and Project Performance. The Respondents' Demographic and qualification Profiles include Gender, Formal Education, Project Management Position, Year of Experience, Project Manager Certification, and Project Management Approach. The profile also asks for the respondent's contact number and the name of the company. However, based on ethical considerations, the contact number and the name of the company will not be published directly.

3.5 Data Analysis

The s employed descriptive statistics to outline the characteristics of the participants. Structural Equation Modelling Partial Least Square (SEM PLS) was utilized to process the data and test the hypothesis. The SEM analysis elaborates on the Mediation and Moderation Influence of the variables. Mediation involves the indirect effect of an independent variable (Transactional Leadership and Transformational leadership) on a dependent variable (Project Performance) through a mediator variable (Ambidextrous Leadership). Moderation involves the influence of a third variable (Project Management Approach and Project Manager Certification) on the correlation between the effectiveness of Transactional Leadership, Transformational Leadership, and Project Performance.

4. Results

4.1 Profile of Respondents

Table 2 describes a profile of respondents' responses. The table consists of seven categories: the Telecommunication company profile, Project Manager gender, Project Manager formal education, Project Manager level, Project Manager years of experience, Project Manager certification, and Project Manager method approach.

Table 2
Profile of Respondents

Category	Description	Frequency	Percentage
Telecommunication Company Profiles (Number of Company)	Operators	6	7,8%
	Vendor Telco	6	7,8%
	Vendor Telco & IT	4	5,2%
	Main Contractors	19	24,7%
	Subcontractors	39	50,6%
	Tower Providers	3	3,9%
Telecommunication Company Profiles (Number of Respondents)	Operators	38	17%
	Vendor Telco	76	33,9%
	Vendor Telco & IT	4	1,8%
	Main Contractors	47	21%
	Subcontractors	51	22,8%
	Tower Providers	6	2,7%
	Not declared	2	0,9%
Gender	Male	210	93,8%
	Female	14	6,3%
PM Formal Education	Senior High School	11	4,9%
	University Diploma (23 Years)	24	10,7%
	Bachelor's degree	144	64,3%
	Master or Doctor Degree	45	20,1%
PM Level Position	Project Coordinator	21	9,4%
	Project Manager	119	53,1%
	Senior Project Manager	75	33,5%
	Project Director	9	4,0%
PM Experience (Year)	Less than 2 years	12	5,4%
	2 years till < 7 year	74	33,0%
	7 years till < 15 year	89	39,7%
	15 years or more	49	21,9%
PM Certification	No. Certification	130	58,0%
	PM waterfall certification	63	28,1%
	PM agile certification	5	2,2%
	PM waterfall and agile certification	26	11,6%
PM Approach	Waterfall	76	33,9%
	Hybrid	136	60,7%
	Agile	12	5,4%
Total		224	100%

The 224 respondents come from 77 companies, with the highest respondents coming from Vendor Telco (n=76, 34%) and the highest number of companies from the Subcontractors (n=39, 50,6%). The majority of Project Managers are male (94%). The education level of Project Managers in this high technology industry is primarily at the university level, with diplomas, bachelor's, master's, or doctoral degrees making up 95%. Almost half of Project Managers (42%) have a Project Management Certification. Most project managers (60.7%) reported that their projects already use a hybrid approach, combining elements of the waterfall and agile methodologies. The sections may be divided by subheadings.

4.2 Result of Partial Least Square Structural Model Testing Analysis

The research applied two testing models, the measurement model, also referred to as the outer model, and the structural model, which is the inner model, conducted by SEM PLS. The first stage in the process is the measurement model, which aims to establish the reliability and validity of reflective indicators linked to latent variables by applying three measurement methods. Following this, the structural model is implemented. After validating all indicators through a confirmatory factor analysis, the next step is to test the overall structural model (inner model). A model is created and evaluated to determine how exogenous latent variables influence endogenous latent variables. This model is called a structural or inner model. The degree of relationship strength is determined by calculating the variance percentage or R². Then, t values are obtained through bootstrapping and tested to ascertain if the effects are significant (Hair et al., 2009).

The diagram in Figure 2 illustrates the Full Structural Model, which was derived using the Partial Least Square estimation technique. From this figure, it is evident that the yellow boxes represent each indicator, while the blue circles denote latent variables, namely TRS (Transactional Leadership), TRF (Transformational Leadership), AMB (Ambidextrous Leadership), and PP (Project Performance), along with the moderating variable SER (Project Management Certification). The model does not display the categorical variable of PMA (Project Management Approach). The arrows in question contain numerical values that help to measure the reliability of the variable constructs being studied and the validity of the indicators being used. An indicator is valid only if its factor loading is higher than 0.50.

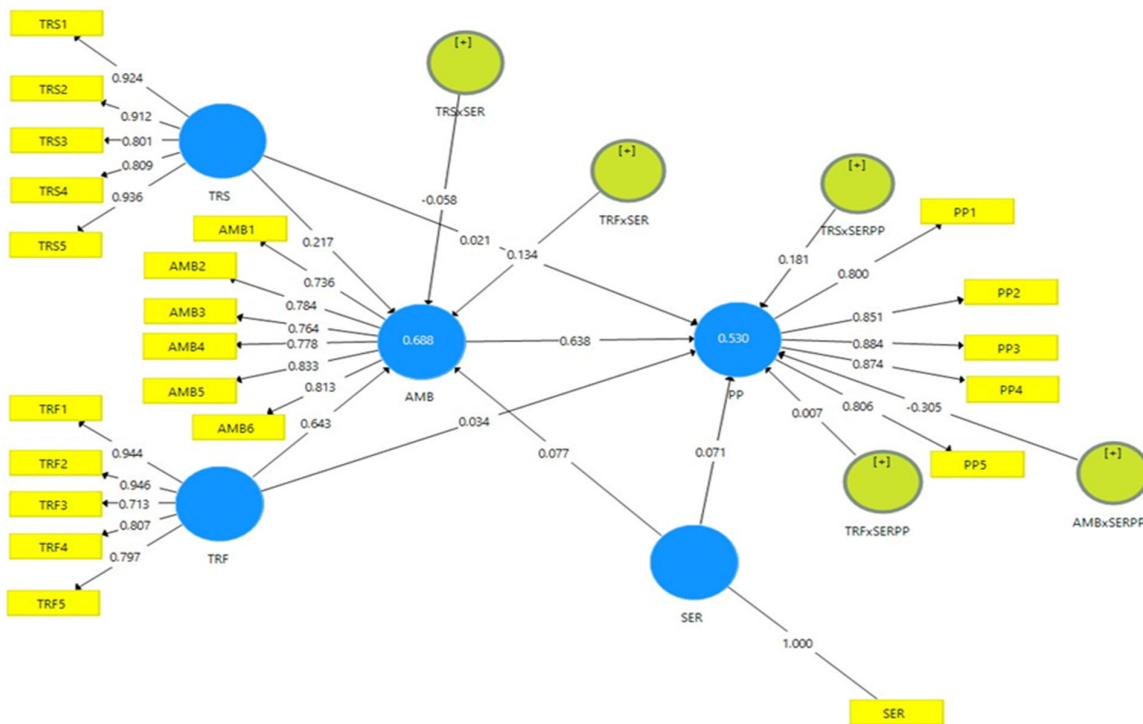


Fig. 2. Full Structural Model Diagram (PLS Algorithm)

Source: Results of primary data processing, 2023

4.2.1 Measurement Model Testing (Outer Model)

The outer model links variables that cannot be directly observed with variables that can be observed. The validity and reliability of latent constructs are evaluated through confirmatory factor analysis (CFA) in the measurement model (outer model). The test used to measure the model comprises three important assessments: the convergent validity test, the discriminant validity test, and the reliability test. These assessments play a crucial role in determining the measurement model's degree of accuracy and consistency. The principle of convergent validity asserts that a construct's measures or observable variables should exhibit a strong correlation with one another. A widely used guideline suggests that loading values should be higher than 0.7 to determine convergent validity for confirmatory research. In contrast, loading values ranging between 0.6 and 0.7 are acceptable for exploratory research. The Average Variance Extracted (AVE) should also be greater than 0.5. However, in the early stages of scale development research, factor loadings in the range of 0.5- 0.6 are considered sufficient (Chin 1998). To ensure that an instrument accurately measures constructs, reliability testing is conducted to assess its precision, consistency, and composite reliability. The Composite Reliability (CR) should be at least 0.7 for confirmatory research and between 0.6 and 0.7 for exploratory research.

a. Convergent Validity

The degree to which multiple measurements of a specific concept are correlated is known as convergent validity. In this research, the loading factor test is used. Hair et al., (2009) suggest that the loading factor score for an item should exceed 0.7 to demonstrate convergent validity. Table 3 shows the loading factor scores.

Table 3
Convergent Validity Test.

Variable	Indicator	Loading Factor	Results
Transactional Leadership (Kepemimpinan Transaksional)	TRS1	0.924	Valid
	TRS2	0.912	Valid
	TRS3	0.801	Valid
	TRS4	0.809	Valid
	TRS5	0.936	Valid
Transformational Leadership (Kepemimpinan Transformatif)	TRF1	0.944	Valid
	TRF2	0.946	Valid
	TRF3	0.713	Valid
	TRF4	0.807	Valid
	TRF5	0.797	Valid
Ambidextrous Leadership (Kepemimpinan Ambidextrous)	AMB1	0.736	Valid
	AMB2	0.784	Valid
	AMB3	0.764	Valid
	AMB4	0.778	Valid
	AMB5	0.833	Valid
	AMB6	0.813	Valid
Project Performance (Kinerja Proyek)	PP1	0.800	Valid
	PP2	0.851	Valid
	PP3	0.884	Valid
	PP4	0.874	Valid
	PP5	0.806	Valid

Source: The Processed Data 2023

Table 3 gives the values for the loading factor of each manifest variable, and indicators with a loading factor greater than 0.7 are legitimate.

Table 4
Average Variance Extracted (AVE)

Variable	Average Variance Extracted (AVE)
AMB	0.617
PP	0.712
TRF	0.716
TRS	0.772

Source: The Processed Data 2023

Based on Table 4, the AVE values of all four latent variables are above the minimum threshold of 0.5, indicating that they are suitable for explaining their respective latent variables. The manifest variables have been assessed for convergent validity, and the results indicate that the instruments used to measure the same concept have yielded highly correlated scores, indicating a significant level of similarity.

b. Discriminant Validity

To evaluate discriminant validity, cross-loading factors with constructs can be scrutinized, and AVE can be measured against the correlations between latent variables. High discriminant validity is observed when the correlation between a construct and its measuring items (each indicator) is stronger than the correlations with other constructs. The values of cross-loading are displayed in Table 5.

Based on Table 5 from the SEM PLS software results above, the cross-loading factor values show stronger correlations between each latent construct and its respective indicators than between other constructs. This implies that the indicators utilized to assess the latent variables fulfil the criteria for discriminant validity.

Table 5
Cross Loading Factor Test Results

	AMB	PP	TRF	TRS
AMB1	0.736	0.460	0.614	0.538

AMB2	0.784	0.534	0.615	0.504
AMB3	0.764	0.530	0.631	0.626
AMB4	0.778	0.499	0.644	0.563
AMB5	0.833	0.618	0.612	0.539
AMB6	0.813	0.586	0.690	0.556
PP1	0.535	0.800	0.439	0.400
PP2	0.569	0.851	0.450	0.378
PP3	0.586	0.884	0.456	0.429
PP4	0.639	0.874	0.469	0.442
PP5	0.565	0.806	0.506	0.475
TRF1	0.767	0.489	0.944	0.706
TRF2	0.759	0.475	0.946	0.712
TRF3	0.588	0.394	0.713	0.556
TRF4	0.627	0.503	0.807	0.622
TRF5	0.658	0.459	0.797	0.600
TRS1	0.618	0.440	0.686	0.924
TRS2	0.592	0.448	0.667	0.912
TRS3	0.617	0.404	0.637	0.801
TRS4	0.641	0.475	0.654	0.809
TRS5	0.620	0.434	0.682	0.936

Table 6
Fornell Lacker Criterion

Variable	AMB	PP	TRF	TRS
AMB	0.785			
PP	0.688	0.844		
TRF	0.808	0.550	0.846	
TRS	0.706	0.504	0.759	0.878

Based on Table 6, the square roots of the AVE (Average Variance Extracted) for each variable exceed their correlations with other variables. The model demonstrates effective discriminant validity.

c. Reliability Testing

As Table 7 shows, there are two ways to conduct reliability testing in Partial Least Squares (PLS): Cronbach's Alpha and Composite Reliability (CR).

Table 7
The Composite test results of Reliability (CR) and Cronbach's Alpha

Variable	Cronbach's Alpha	Composite Reliability
AMB	0.875	0.906
PP	0.898	0.925
TRF	0.897	0.926
TRS	0.925	0.944

Table 7's test results indicate that the Composite Reliability (CR) values are greater than 0.7 and the Cronbach's Alpha values exceed 0.6. As a result, the data is reliable, demonstrating that all indicators consistently measure their respective variables.

4.2.2 Structural Model Testing (Outer Model)

Testing the structural model (Outer Model) involves examining the influence of one latent variable on another latent variable. To determine the significance of the influence, the testing involves analyzing the path coefficients by using the t values of these coefficients, which can be obtained through bootstrapping. The findings of the bootstrapping performed in this study are depicted in Fig. 3.

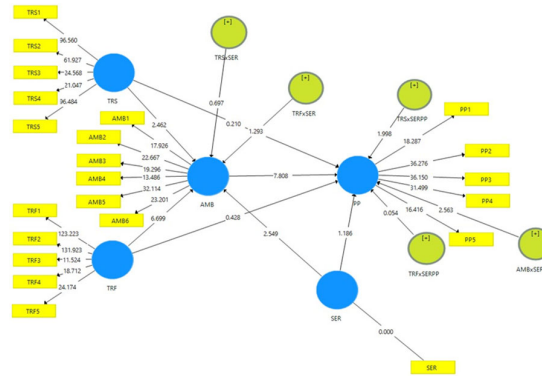


Fig. 3. Bootstrapping

Source: Results of primary data processing, 2023

a. R Square Testing

The impact of independent variables can be evaluated by the R-squared (R²) values. Here are the obtained R-squared values.

Table 8
Results of R Squares

Variable	R Square
AMB	0.688
PP	0.530

The R-squared values presented in Table 8 help us determine the extent to which independent variables explain variance. In the first substructure, the Ambidextrous Leadership variable has an R squared value of 0.688, indicating that 68.8% of the variance in Ambidextrous Leadership can be explained by the variables Transactional Leadership, Transformational Leadership, SER, and PMA. In the second substructure, the R squared value for Project Performance is 0.530, indicating that 53.0% of the variance in Project Performance can be clarified by the variables Transactional Leadership, Transformational Leadership, Ambidextrous Leadership, PM Certification (SER), and Project Management Approach (PMA).

b. F2 Effect Size Testing

Further testing uses the F2 effect size test to determine the magnitude of influence on the overall R-squared values. Ghazali (2020) suggests that F2 effect size values of 0.02 or higher indicate a small effect size, 0.15 or higher indicate a medium effect size, and 0.35 or higher indicates a large effect size. The effect sizes for F2 can be found in Table 9. According to the information in the table, Transformational Leadership (TRF) has the strongest influence on Ambidextrous Leadership (AMB) with an effect size of 0.561, indicating a large effect.

Table 9
Testing of F2 Effect Sizes.

Influence	Effect Size Value	Interpretation
AMB→PP	0.217	Moderate Effect
SER→AMB	0.019	Small Effect
SER→PP	0.003	Small Effect
TRF→AMB	0.561	Large Effect
TRF→PP	0.001	Small Effect
TRS→AMB	0.063	Moderate Effect
TRS→PP	0.000	Small Effect

c. Q² Predictive Relevance Model

The effectiveness of the structural model can be assessed through the Q² predictive relevance model, which gauges its proficiency in generating observed values. Q² is based on the coefficient of determination for all dependent variables. The Q² value ranges from 0 to 1 (0 < Q² < 1), and the closer it is to 1, the better the model. The Q² predictive relevance model is calculated as follows:

$$Q^2 = 1 - (1 - R1^2) * (1 - R2^2)$$

$$Q^2 = 1 - (1 - 0,688) * (1 - 0,530)$$

$$Q^2 = 0,853$$

The results of the calculation in a Q^2 value of 0.853, close to 1. This indicates that the structural model has a good goodness-of-fit; the model effectively captures the given data and provides reasonably precise predictions.

d. The Evaluation of Goodness of Fit (GoF)

The GoF index evaluates a model's overall performance, considering both the measurement model (outer model) and the structural model (inner model). It is calculated using the average communalities index multiplied by the R squared (R^2) model value.

$$\text{Gof} = \sqrt{(\text{average AVE} \times \text{Average } R^2)} = \sqrt{(0.882 \times 0.609)} = 0.733$$

Based on the calculation, the GoF value is approximately 0.733. This places the model's goodness of fit (GoF) in the "moderate" category, showing that the model provides a reasonably good fit overall.

e. Hypothesis Testing

This research examines the significance of the path coefficient and t values to test hypotheses. The outcome of the significance tests demonstrates the degree of influence that each variable under research holds, as shown in Table 10. In this hypothesis test, the researcher used a 95% confidence level, commonly used in business research. For a one-tailed hypothesis, the path coefficient scores must be greater than 1.64, as indicated by the Statistics values.

In summary, the Hypothesis marked as "Supported" in Table 10 has a significant influence based on their p values ($p < 0.05$). In contrast, the "no supported" Hypothesis does not show a significant influence ($p \rightarrow 0.05$). These results help validate the connections between the variables in the structural model.

Table 10
Path Significance Test Results

Hypothesis	Effect	Original Sample (O)	T Statistics (O/STDEV)	P Values	Conclusion
H1	TRS → PP	0.021	0.210	0.417	Not Supported
H2	TRF → PP	0.034	0.428	0.334	Not Supported
H3	AMB → PP	0.638	7.808	0.000	Supported
H4	TRS → AMB	0.217	2.462	0.007	Supported
H5	TRF → AMB	0.643	6.699	0.000	Supported
H6	TRS → AMB → PP	0.138	2.106	0.018	Supported
H7	TRF → AMB → PP	0.410	6.127	0.000	Supported
H8	TRS×PMA Hybrid → PP	-0.185	1.167	0.122	Not Supported
H9	TRS×PMA Agile → PP	-0.015	0.165	0.434	Not Supported
H10	TRS×PMA Waterfall → PP	0.479	1.809	0.036	Supported
H11	TRF×PMA Hybrid → PP	0.153	1.031	0.152	Not Supported
H12	TRF×PMA Agile → PP	0.043	0.630	0.264	Not Supported
H13	TRF×PMA Waterfall → PP	0.195	0.333	0.370	Not Supported
H14	AMB×PMA Hybrid → PP	0.507	4.429	0.000	Supported
H15	AMB×PMA Agile → PP	0.707	8.374	0.000	Supported
H16	AMB×PMA Waterfall → PP	-0.216	0.419	0.338	Not Supported
H17	TRS×PMA Hybrid → AMB	0.250	2.139	0.016	Supported
H18	TRS×PMA Agile → AMB	0.707	8.374	0.000	Supported
H19	TRS×PMA Waterfall → AMB	0.017	0.202	0.420	Not Supported
H20	TRF×PMA Hybrid → AMB	0.439	3.507	0.000	Supported
H21	TRF×PMA Agile → AMB	0.440	3.025	0.001	Supported
H22	TRF×PMA Waterfall → AMB	0.949	11.014	0.000	Supported
H23	TRS×SER → PP	0.181	1.998	0.023	Supported
H24	TRF×SER → PP	0.007	0.054	0.479	Not Supported
H25	AMB×SER → PP	-0.305	2.563	0.005	Not Supported
H26	TRS×SER → AMB	-0.058	0.697	0.243	Not Supported
H27	TRF×SER → AMB	0.134	1.293	0.098	Not Supported

5. Discussion

5.1 Discussion of results

5.1.1 Direct Influence Variable Testing

The direct influence variable is based on Table 10 from Hypothesis 1 to Hypothesis 5, which results that Transactional leadership and Transformational leadership separately do not have any direct influence on project performance; this is contrary to the research of Barrantes Guevara (2013) that Transformational leadership and Transactional leadership have significantly related to Project Success. Meanwhile, Ambidextrous leadership has a significant direct influence on project performance. This is aligned with the research of Zheng et al. (2017), which states that ambidextrous leadership significantly influences project performance.

Ambidextrous leadership is the only one among the three leadership styles that directly and positively affects the performance of a project. Hypothesis 1, Hypothesis 2, and Hypothesis 3 indicated that the leadership style that complements two leadership behaviors (rather than standing alone), such as Ambidextrous leadership, will positively and significantly influence Project Performance. These Hypotheses follow the concept of Ambidextrous leadership, which involves flexible and complementary leadership behaviors. According to Zheng et al. (2017), project performance is better achieved through ambidexterity rather than relying solely on a single management approach. In addition, research has demonstrated that adopting Ambidextrous Leadership has a constructive and considerable effect on the overall performance of a company.

Transactional and transformational leadership have a positive and significant impact on Ambidextrous leadership. This statement aligns with ambidextrous leadership, which suggests that two different; but complementary leadership behaviors work together interactively, such as transformational and transactional leadership. Ambidextrous leadership should be associated with two leadership styles: transformational and transactional. They argue that ambidexterity includes both exploitation and exploration; ambidextrous leadership must simultaneously use two contradictory yet complementary leadership styles. Transformational leadership relates to creativity and innovation (exploration), and Transactional leadership is related to exploitation. The fourth and fifth hypotheses indicate that Ambidextrous Leadership can be impacted by both Transactional and Transformational Leadership. It could be used to strengthen corporate sustainability, mediated by using business and organizational competencies (Dewi et al. 2023).

5.1.2 Mediating Role / Intervening Role Variable Testing

The mediating or intervening role variable is based on Table 10 from Hypothesis 6 and Hypothesis 7. Ambidextrous leadership mediates transactional leadership and project performance, resulting in a positive and significant influence on the latter. Ambidextrous Leadership functions as a mediator, enabling Transactional Leadership to have a meaningful and beneficial impact on Project Performance. In other words, Transactional leadership indirectly influences Project Performance through Ambidextrous Leadership.

Ambidextrous leadership facilitates the positive influences of transformational leadership on project performance. The mediating effect of Ambidextrous Leadership allows Transactional Leadership to have a positive and significant influence on Project Performance. In other words, Transformational leadership indirectly influences Project Performance through Ambidextrous Leadership.

If the earlier assessment indicates that project performance is not directly affected by either transactional leadership or transformational leadership, then it should be taken into consideration; the addition of the mediation variable through ambidextrous leadership allows both to have a positive and significant influence on project performance. This is in line with the idea that effective ambidextrous leadership involves having the skills and equilibrium to handle both transactional and transformational methods. Leaders with ambidextrous skills must utilize transactional and transformational leadership behaviors to motivate and guide their employees toward achieving their goals. This strengthens the impact of Ambidextrous Leadership, which employs flexibility in any leadership style of project managers.

5.1.3 Moderating Role of Project Management Approach (PMA)

a) The Moderating Role of PMA between Transactional and Project Performance is based on Table 10 for Hypothesis 8, Hypothesis 9, and Hypothesis 10. PMA Hybrid does not moderate transactional leadership in project performance. PMA Agile also does not moderate transactional leadership in project performance, while PMA Waterfall moderates' transactional leadership positively. The waterfall strengthens the impact of the transactional leadership style on project performance, which shows a relevant correlation between transactional leadership and the waterfall (traditional) approach. A transactional leadership style is most effective in structured environments where established processes and defined roles with specific tasks are present, like the waterfall methodology. The Waterfall model is a traditional approach that follows a linear and sequential process. Transactional leadership, conversely, is a style of leadership that is defined by its emphasis on tasks, organization, and performance. Transactional leadership might align well with the Waterfall model because it emphasizes clear structures, defined processes, and a step-by-step approach. This is supported by Keller (2006), who states that in traditional or waterfall project management, the transactional leader must control the activities and make team performance positively related to this leadership.

b) The Moderating Role of PMA between Transformational leadership and Project Performance is based on Table 10 for Hypothesis 11, Hypothesis 12, and Hypothesis 13, which shows that PMA Hybrid does not moderate Transformational Leadership on Project performance. PMA Agile also does not moderate transformational leadership in project performance. Also, PMA Waterfall does not moderate Transformational Leadership on Project Performance. In this research concerning Transformational Leadership, the PMA, whether using Agile, Waterfall, or a hybrid model, does not significantly moderate its influence on Project Performance. However, based on the T Stats value, the order from high to low is PMA Hybrid (1.031), PMA Agile (0.633), and PMA Waterfall (0.333). This indicates that Transformational leadership is closer to Agile and Hybrid than Waterfall. This is consistent with previous research indicating that project managers perceive a greater need for transformational leadership to succeed in agile projects than in traditional ones. Research by Van Kelle et al., (2015) also mentioned that the most crucial factor in determining the success of Agile projects was found to be transformational

leadership. In agile software development, adopting transformational leadership is more advantageous than using transactional leadership. The three research studies indicated that transformational leadership is closer to the agile project management approach, and consequently, transactional leadership is closer to the traditional or waterfall project management approach.

c) The Moderating Role of PMA between Ambidextrous Leadership and Project Performance is based on Table 10 for Hypothesis 14, Hypothesis 15, and Hypothesis 16. PMA Hybrid moderates Ambidextrous Leadership in a positive direction on Project Performance. PMA Agile moderates Ambidextrous Leadership in a positive direction on Project Performance. However, PMA Waterfall does not moderate Ambidextrous Leadership on Project Performance. Both PMA Hybrid and Agile positively moderate Ambidextrous Leadership on Project Performance. Ambidextrous Leadership appears to have a stronger connection with PMA Agile and Hybrid methodologies than with Waterfall. It also indicates that in Ambidextrous Leadership among the three PMAs, Hybrid and Agile have a greater influence on Project Performance than the Waterfall approach. The combination of agile and traditional practices can be validated, and the hybrid approach is considered a top project management approach.

The moderating role of the project management approach between leadership style and project performance is summarized in Table 11.

Table 11

Summary of the moderating role of the Project Management approach between Leadership style and Project Performance

Leadership Style	PM Approach	Endogenous Variable	Significant
Transactional	Hybrid (Agile & Waterfall)	Project Performance	
Transformational	Hybrid (Agile & Waterfall)	Project Performance	
Ambidextrous	Hybrid (Agile & Waterfall)	Project Performance	Supported
Transactional	Agile	Project Performance	
Transformational	Agile	Project Performance	
Ambidextrous	Agile	Project Performance	Supported
Transactional	Waterfall	Project Performance	Supported
Transformational	Waterfall	Project Performance	
Ambidextrous	Waterfall	Project Performance	

From Table 11, only three Hypotheses show a Supported effect on Project Performance: Ambidextrous leadership with a Hybrid approach, Ambidextrous leadership with an Agile approach, and Transactional leadership with a Waterfall approach. The moderating effect will be Supported if the leadership style and PM approach correlate and strengthen each other.

d) The Moderating Role of PMA between Transactional Leadership and Ambidextrous Leadership is based on Table 10 for Hypothesis 17, Hypothesis 18, and Hypothesis 19. Both PMA, Hybrid and Agile, positively moderate Transactional Leadership in Ambidextrous Leadership. The Waterfall PMA does not moderate Transactional Leadership in Ambidextrous Leadership. This is because both Waterfall and Transactional Leadership are aligned on one side and do not contribute to the dual-sided aspect of Ambidextrous Leadership.

e) The Moderating Role of PMA between Transformational Leadership and Ambidextrous Leadership is based on Table 10 for Hypothesis 20, Hypothesis 21, and Hypothesis 22. All three PMAs positively moderate the Transformational Leadership on Ambidextrous Leadership. Transformational Leadership is more closely related to Ambidextrous Leadership than Transactional Leadership. Based on the T Stats value, the order from high to low is PMA Waterfall (11.014), PMA Hybrid (3.507), and PMA Agile (3.025). As Transformational leadership is closer to PMA Agile rather than PMA Waterfall, the combination of Transformational leadership with the moderation of PMA Waterfall will increase the positive significance of a dual-sided aspect of Ambidextrous Leadership.

5.1.4 Moderating Role Certification (SER)

The Moderating Role of Project Manager Certification (SER) is based on Table 10 for Hypothesis 23, Hypothesis 24, and Hypothesis 25. In the previous references, there were two different opinions. Firstly, the assertion that Project Management Certification does not impact Project Performance. Secondly, according to PWC (2007) and PMI (2013), Project success rates increase when project managers hold certifications. In this research, Project Manager Certification positively moderates only Transactional Leadership on Project Performance. Project Manager Certification does not moderate the transformational and ambidextrous leadership on project performance. This can be explained that in transactional leadership, having more certification rewards significantly moderates the improvement of Project Performance. In Transformational Leadership, the addition of certification no longer significantly impacts Project Performance. The certification moderates Ambidextrous Leadership's impact on project performance in a negative direction, indicating that the result does not show positive support for this leadership style. Hypothesis 26 and Hypothesis 27 stated that the certification does not moderate transactional and transformational leadership towards Ambidextrous leadership. In summary, the moderation effect of Certification only applies to Transactional Leadership toward Project Performance.

5.2 Summary

5.2.1 Summary of Leadership Style Influence on Project Performance

The Influence of Leadership Styles on Project Performance Research in Telecommunication.

1. The transactional leadership style has no direct influence on project performance. However, it has become positively and significantly influential by mediating ambidextrous leadership.
2. Transformational Leadership also exhibits no direct influence on Project Performance. However, it has positively and significantly influenced project performance by mediating ambidextrous leadership.
3. Both Transactional and Transformational leadership have a positive and significant influence on the development of Ambidextrous Leadership.
4. Ambidextrous Leadership exerts a positive and significant influence on Project Performance.

The study has unveiled that while Transactional and Transformational Leadership styles alone do not directly impact Project Performance, their influence becomes significant when mediated through Ambidextrous Leadership. Ambidextrous Leadership, in turn, has a pronounced positive impact on Project Performance. This highlights the importance of Ambidextrous Leadership in improving project results within the Telecommunication organization.

5.2.2 Summary of Moderation Effect of Project Management Approach and PM Certification

Further Analysis on the Moderation Effect of Project Management Approach (PMA) and Project Management (PM) Certification:

1. Transactional leadership positively and significantly influences project performance by moderating PMA Waterfall. This means that Transactional Leadership is aligned with PMA Waterfall.
2. Ambidextrous leadership positively and significantly influences project performance by moderating PMA hybrid and agile. This means that Ambidextrous Leadership is aligned with PMA Hybrid and Agile.
3. Transactional leadership positively and significantly influences Ambidextrous leadership by moderating PMA hybrid and agile.
4. Transformational Leadership positively and significantly influences Ambidextrous Leadership by moderating all three PMAs.
5. PM Certification moderates Transactional Leadership towards Project Performance but is insignificant for Transformational Leadership.

These findings indicate that PMA Waterfall aligns with transactional leadership, and both strengthen their positive influence on project performance. On the other hand, PMA Hybrid and Agile align with Ambidextrous Leadership, positively impacting Project Performance. When combined with Transactional Leadership, PMA Hybrid, and Agile moderate to increase their influence, leading to Ambidextrous Leadership. All three PMAs moderate the positive influence of Transformational Leadership towards Ambidextrous Leadership, implying that Transformational Leadership is closer to Ambidextrous Leadership than Transactional Leadership. The Project Management Certification enhances the impact of the Transactional Leadership style on Project Performance. Its effect is insignificant for the Transformational and Ambidextrous Leadership styles.

5.2.3 Model Between Leadership Style and Project Management Approach

Fig. 4 provides a visual representation of the connection between how a leadership style and the Project Management approach is used to manage a project.

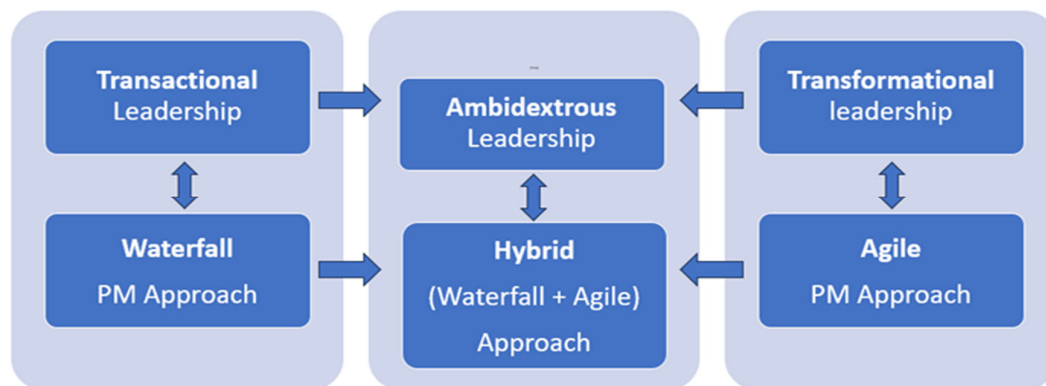


Fig. 4. The Connection Model Between Leadership Style and Project Management Approach

Based on the results and analysis, as well as previous literature, it is evident that Ambidextrous leadership can be developed through Transactional and Transformational leadership. The Hybrid Project Management Approach combines Waterfall and Agile methodologies. Generally, Transactional leadership is connected to the waterfall approach, while Transformational leadership is correlated with the Agile approach. Consequently, Ambidextrous leadership is associated with Hybrid project management.

6. Conclusion, Implication and Limitation

6.1 Conclusion

The research presents significant findings on key project management and leadership factors in telecommunications. The study suggests that Ambidextrous Leadership is crucial for boosting project success, as both Transactional and Transformational Leadership styles rely on this mediator for their impact. Moreover, the findings stress the significance of aligning the Project Management Approach with leadership styles to achieve optimal Project Performance. The study draws connections between Transactional leadership and the Waterfall approach, Transformational Leadership and the Agile approach, and Ambidextrous Leadership with the Hybrid approach. Obtaining the Project Management Certification enhances the effectiveness of the Transactional Leadership style in influencing Project Performance.

6.2 Implication

The combination of Transactional and Transformational leadership styles aligns with the Ambidextrous Leadership approach. According to Zheng et al., (2017), Ambidextrous leadership integrates Transactional and Transformational leadership styles. This research is a practical reference for Telecommunication Project Managers to apply a dual leadership style instead of relying on a single style to achieve project objectives. This aligns with Zheng et al., (2017), who suggest that project performance is better achieved through ambidexterity rather than relying solely on a single management approach. Additionally, Ambidextrous Leadership has been shown to impact Company Performance positively and significantly (Bawono et al., 2022). This research also correlates the theoretical relationship between Project Management Approaches (Waterfall, Agile, and Hybrid) and Project Management Certification. This paper generally contributes valuable knowledge to the Telecommunication industry, enabling organizations to make informed decisions and improve project management practices. This research advances knowledge in leadership management, project management, and telecommunications.

6.3 Limitation

This study was carried out on project managers working for a telecommunications company in Indonesia, which means that the local culture could have influenced the leadership style adopted by these managers. Therefore, it is recommended that future studies be conducted on project managers in the telecommunications industry across several countries to obtain a broader, more global perspective.

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