

Transfer Knowledge And Information Technology On Work Climate And Managerial Performance: Moderating Effect Organization Culture

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Abstract

Change becomes essential for managers to achieve targets and goals that have been targeted, especially with the many global changes that are very fast and are also affected by uncertain conditions caused by the pandemic, which changes normal conditions to non-normal. Several phenomena will be less significant in the ability of local managerial and foreign managerial performance, so organizations prefer to use managerial expatriates. This study aims to analyze the influence of organizations, Climate work, knowledge transfer, and the simultaneous application of Information technology to affect managerial performance. This study uses the partial least squares (Smartpls 3.0) approach to analyze the value of structural parameters in modeling structural equations (SEM). This study method is quantitative, including a questionnaire with a Likert scale—the study population was 54 employees from supervisor to manager level. There is an influence of

knowledge transfer and application of information technology on managerial performance mediated by the climate work so that the transfer of knowledge and the application of technology-mediated by the climate work environment have a positive and significant effect on managerial performance. Nature of this research managerial performance can be developed by furnishing the transfer of knowledge as knowledge management with the application of information technology strengthened by a culture of the organization through the Climate of work

Keywords: Transfer of Knowledge_1; Application of Information _2; Organizational Culture_3; Climate of Work _4; Managerial Performance _5

INTRODUCTION

Change is fundamental for managers to be able to achieve the targets and goals that they have targeted, especially with the many global changes that are very fast and also affected by uncertain conditions caused by the pandemic, which changes regularly to abnormal conditions (Chong, 2013; Kandil et al., 2017). Managing a project is the responsibility of managers, so understanding the profile of managerial people is very important (Ahadzie et al., 2014). For a few years, the manager position dominates by managers who came from outside Batam or abroad (Ningrum, 2018), so when the Covid-19 pandemic occurred, it needed the role of a local manager. Several phenomena will be less significant in the ability of local managerial and foreign managerial Performance, so organizations prefer to use managerial expatriates (B.Randang, Frankiano, SH, 2011; Hsu, 2012; Yuen, Yee Yen, 2016) such as planning, organizing, directing, supervising, problem-solving, evaluating, investigating, staffing, negotiating and being a company representative of other parties, this research designs and analyzes the role, in research(Hsu, 2012; Yuen, Yee Yen, 2016)

Previous research in the construction industry stated that managing managerial Performance is the key to developing the foundation of organizational development in recent years as part of developing individual competencies of managerial level managers so that they can contribute well to organizations and companies (Cheng et al., 2005). Various studies have revealed managerial Performance can be achieved with a significant influence on organizational culture and work environment

(Ahadzie et al., 2014; Cheng et al., 2005; Chong, 2013; Negi and Dangwal, 2019). The influence of information technology has also explained the close relationship between the impact of using information technology in boosting managerial Performance (Kaushal, 2011). The role of expatriates is the essential backbone of the competitive advantage of multinational companies in the process of transferring knowledge in various geographical areas (Gonzalez and hakraborty, 2014; Hsu, 2012).

The existence of organizational culture as suspicion of influence between the transfer of knowledge and the Application of information technology, whose research sufficiently explored, will determine the importance of effective transfer of knowledge from expatriates to local employees in Indonesia, especially in the oil and petroleum mining construction industry. To get answers to these suspicions in this study designing and analyzes the influence of knowledge transfer from foreign managerial, the Application of information technology that interacts with organizational culture, and its effect on managerial Performance mediated by the work environment in local managerial working on three construction projects of subsea production module for the oil and gas industry in Batam.

This research contains significant implications to help industry practitioners in the mining sector in Batam, the government to understand the sources of knowledge required by local managers, and formulate and design knowledge management policies that follow the organization's culture to create conducive learning for organizations and employees.

LITERATURE

Managerial Performance is the result achievement of a team or individuals in the organization or company by developing and promoting effective communication between various parties in the internal environment of the company and external to the company, and the concepts stated managerial to realize the company's vision and mission with a high level of flexibility (Cheng et al., 2005; Chong, 2013; Muhsin and Dwita, 2022). Creative managerial competence is necessary to achieve success where the manager is not only an external manager but also a reflective act (Cheng et al., 2005; Henderson, 1993). Managerial competence is seen not as a functional task but as an activity that allows people to carry out their work effectively, and personal qualities are central to the approach (Cheng et al., 2005). Managerial Performance is the

capacity of an individual in managerial activities to meet the targets of the organization or company (Derfuss, 2016; Mahoney, 1963; Mintje, 2013), which includes the dimensions of (1) representation, (2) staffing, (3) supervision, (4) coordination, (5) planning, (6) negotiation, (7) investigation, (8) evaluation. Managerial Performance can be measured using the following approaches: (1) Planning as a policy determination of current conditions to plan in the future, (2) Investigation as an activity to check information, reports, and activity results, and (3) Coordination as an effort to integrate actions to communicate with internal parts and implement planned programs, (4) Evaluate as an assessment of planned programs and assess the results of the programs that have carried out, (5) Supervision as supervision of work that has the plan to be carried out and reported, (6) Staffing as the management of subordinates in the work unit, selecting and placing subordinates in their appropriate job positions, (7) Negotiation as a negotiating approach to obtain agreements with internal or external parties, (8) Representation as an information center about the activities carried out reported by the ministry internal and external parties (Mahoney, 1963; Nur Haniyah and Reni Lestari, 2022).

Ajala (2012) posits that the work environment significantly affects Performance. A comfortable and conducive work environment can improve work productivity. The work environment is a state that cannot separate from humans and the state of the workplace. The Covid-19 pandemic created a very challenging environment for humans, so managers need to adapt to the radical environmental changes that occur in the work and social setting (Carnevale and Hatak, 2020). A good work environment will provide satisfaction to employees, where employee satisfaction is essential for the company to increase the productivity and performance of the organization or company. Performance can improve with a comfortable work environment obtaining employees' needs and the workspace's effect (Budie et al., 2019). Employee perceptions of the organization's image through a dynamic work environment can also increase employee engagement and improve employee performance (Dhir and Shukla, 2019). (Na-nan et al., 2017; Sedarmayanti, 2017) brings up factors that affect the work environment, including (1) Lighting or light, (2) air temperature, (3) noise, (4) decoration or layout, (5) employee relations.

Knowledge transfer is considered an increasingly important knowledge management process because of its

ability to help organizations benefit from personal knowledge (Yuen, Yee Yen, 2016). They are learning understanding as experience, contextual awareness, value-added information, or insights based on the framework of an agreement that exists in the individual or group and must manage by themselves by being present in the form of tacit or experiential knowledge. Integration of activities including knowledge creation, Application or knowledge transfer tools, identification, and acquisition is as more beneficial than each activity that is separately carried out (Parent et al., 2014). Knowledge transfer from expatriate managers is one of the competitive advantages of multinational companies (MNC) in transferring knowledge to local managers where positive relationships occur (Hsu, 2012). The utilization of knowledge transferred from expatriates, the character of expatriate managerial individuals with motivation and across cultures can share sustainable knowledge. Organizations can be a competitive advantage (Gonzalez and Chakraborty, 2014). Through knowledge transfer, the company has applied knowledge to increase revenue and maintain competitive advantage (Hassan et al., 2017; Martinkenaite, 2012).

Information is considered a competitive advantage in the organizational environment. Organizations can make actual changes by adopting information technology as an application of new technology. With the application of new technology, managerial can decide the results of data processes processed by information technology (Rezaei et al., 2014), The concept of information technology is the company's ability to manage information effectively into resources in a capability dynamic perspective) (Mazidi et al., 2014; Ross et al., 1998), with IT, the organization can also be different from its competitors to strengthen the comprehensive advantages of the organization so that the role of IT in an organization can improve managerial and organizational Performance (Mazidi et al., 2014). Information technology plays a fundamental role in developing workforce agility by providing speed and flexibility (Mathu and Tlare, 2017).

Organizational culture is members' shared meanings that distinguish the organization from other organizations (Fidyah and Setiawati, 2019; Robbins, 2002). Seven characteristics that capture the essence of organizational culture are innovation and risk-taking, paying attention to detail, orientation to results, orientation to people, orientation to the team, aggressiveness, and stability. Organizational culture develops along with some groups as they begin to adjust to various

internal and external problems that have paid off well and are considered beneficial (Fidyah and Setiawati, 2019). Organizational culture becomes a function of beliefs and norms or values that are firmly held together by the group or organization and influence the thoughts and behavioral attitudes of the members of the organization. (Hosseini et al., 2020)

Knowledge Transfer and Climate Work

The business environment affects the process of transferring knowledge. The method of sharing knowledge requires planning to disrupt the state of the Climate. The decision to transfer knowledge in the organization is sometimes also as in a quarterly environment where decisions in the transfer of knowledge must be made quickly (Jones and Mahon, 2012). Organizations with a vision of making knowledge transfer to maintain their competitive advantages will maintain a good climate in transferring knowledge (Decker et al., 2009; Lackey, 2018).

H1: There is an influence of knowledge transfer on climate work.

Application of Technology and Climate Work

Information technology application has created a work environment that is increasingly developing and which directly increases the agility of the organization (Cai et al., 2019; Soto-Acosta et al., 2018) agile organization will increase the competitive advantage of the organization in the global competition (Messeni Petruzzelli et al., 2015; Soto-Acosta et al., 2017, 2018). Information technology has brought significant changes in life, lifestyle, and communication. Emperis's research suggests that information technology has formed a new climate of work and is more efficient in creating new opportunities (Lau et al., 2001; Muñoz et al., 2016). The influence o between technology and the work environment that changes along with the increase in information technology capabilities has impacted the managerial commitment to the organization. Due to the relationship between the work environment and technology that managers feel the benefits (Kuo et al., 2010)

H2: There is an influence of the application of information technology on the Climate of work.

Organizational culture as a Moderator of knowledge transfer

Members of an organizational group guided by a value of togetherness are at the organization's core (Durmusoglu et al., 2014). Research on beliefs, rituals, and language obtained through organizations are used to solve various problems in the organization environment, both internal and external issues, so that the organization can achieve its objectives of the organization (Appelbaum et al., 2012; Asrar-ul-Haq and Anwar, 2016; Boh et al., 2013; Durmusoglu et al., 2014) so that the organizational process in transferring knowledge is greatly strengthened by the corporate culture itself (Boh et al., 2013). Organizational culture seeks to coordinate as a social strengthening of the members of the organization and coordinate the behavior and attitudes of the members of the organization in making efforts to transfer knowledge (Appelbaum et al., 2012; Durmusoglu et al., 2014). Managerial absorb the cultural values of the organization to perform their managerial functions as well as the development of the Performance of the members of the organization with a belief in the importance of organizational culture in the container of the social environment of the organization. Managerial gives an idea of organizational culture through the transfer of knowledge, design, and strategy (Appelbaum et al., 2012; Asrar-ul-Haq and Anwar, 2016; Boh et al., 2013; Durmusoglu et al., 2014).

H3a. Organizational Cultural Interaction and Knowledge Transfer strengthen the influence of Science Transfer on Climate Work.

Organizational Culture as a Moderator for the Application of Information Technology

Organizational culture plays an essential role in the application of information technology in the activities of organizations (Wiedenhöft, 2015). Wiedenhöft's (2015) research identifies the effectiveness of governance in applying information technology with the moderation of the organizational culture. Organizational culture is interlaced with understanding the benefits organizations achieve with information technology. Information technology is very useful and contributes significantly to the organization if the organizational culture supports the use of information technology (V. C. Gu et al., 2014), organizational culture is the primary key to triggering organization to absorb knowledge and direct the use of the organization to the success of the organization (Tseng, 2017), individual organizational culture has a significant relationship with the development of the use of information technology to

support Performance for the organization (J. Te Yang, 2007), so that the organizational culture as the background of the creation of knowledge because it influences the members of the organization to learn, acquire, and exchange knowledge with each other (Valmohammadi and Ahmadi, 2015) the outline of organizational culture can be a moderator to strengthen the function of information technology as a belief for complex expectations (Hellriegel, D., Slocum, J. W., 2010; Robbins, 1990; Tseng, 2017; Valmohammadi and Ahmadi, 2015)

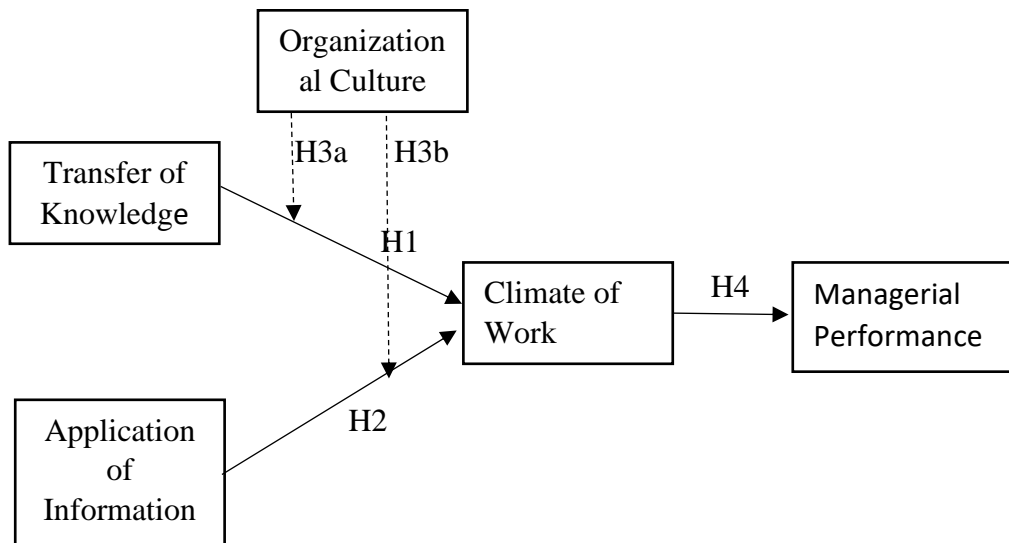
H3b. Interaction of Organizational Culture and Application of Information Technology strengthens the influence of the Application of Information Technology on the work climate.

The Climate of Work and Managerial Performance

In completing a project, the role of managers is always needed in managing the Performance of a construction project (Todorović et al., 2015); the implementation of managerial in carrying out planning, control, responsibility, monitoring, and continuous involvement in the completion of projects(CC., 1976; Pheng and Chuan, 2006; Todorović et al., 2015), improving managerial Performance (MP) in the construction industry through the influence of the work environment by identifying factors of the work environment through the development of knowledge and insights into the work environment(Pheng and Chuan, 2006; Yap and Shavarebi, 2022).

H4: There is an influence of knowledge transfer and application of information technology on managerial Performance mediated by the Climate of work.

Figure 1. research model



RESEARCH METHODOLOGY

The population of this study is managerial in oil and gas construction companies working on three sub-sea manifold projects and their supporting industries in the city of Batam, as many as thirty companies. The departments are related to the research carried out: the Procurement Department, QA / QC Department, Engineering Department, IT / HRD Department, Fabrication Department, Safety Department, Finance Department, and Logistics and Warehouse Department. The number of samples studied was fifty-four using the Full sample technique or census. Managerial are sent a link to fill out the questionnaire via email. After the data tabulation process is effectively complete, the data aggregation is mapped with the data processing results into inputs for hypothesis testing. The hypothesis output results are followed up with additional discussions to corroborate the theoretical and practical implications built.

Measurement.

Knowledge Transfer (KT) managers in their organizations measured using the previous literature with dimensions of tacit and explicit knowledge (Jones and Mahon, 2012; Le, 2020). With the sample item " Various knowledgeable based on their experiences, Gathering knowledge from others based on their experiences, sharing knowledge based on their expertise, often sharing existing reports and official documents, often various reports and official documents prepared by them, facilitated by IT systems invested in various knowledge." Respondents rated all items on a Likert scale of five points from 1 (strongly disagree) to 5 (strongly agree).

The application of Information Technology (AIT) to improve Performance is measured using seven items (Andersen and Segars, 2001; M. Gu et al., 2021). the application of information technology can exert positive energy to improve performance, and information technology affects communication capabilities that produce innovation (Andersen and Segars, 2001). The items used to measure the individual participation of managerial in decision-making data sources for developing processes. An example of the item " Information Technology is crucial to me, and Information Technology is beneficial for me, I suspect that in the future, users of information technology to share knowledge will be better. I suspect that the prospective users of information technology to share knowledge will be better

Climate of Work

A comfortable and conducive climate work (CW) can improve employees' work productivity, and a good workplace environment can affect the transfer of knowledge and training, supported by information technology and organization (Nanan et al., 2017). Work methods and work arrangements of individuals or groups and all types of tools and materials faced around them are part of the work environment(Jahari, 2019). Five dimensions to measure work environment factors are " Lighting or Light, Air temperature, Noise, Decoration or Spatial Planning, Employee Relations." Respondents rated four items on a Likert scale of five points from 1 (strongly disagree) to 5 (strongly agree).

Organizational Culture

Organizational culture (OC)in project management becomes the decisive stakeholder to bring the Performance of the project (Ahadzie et al., 2014), organizational culture an invaluable element in maintaining organizational and employee performance over a long time as a foothold for competitive advantage in a business environment full of uncertainty (Ugheoke, 2021), organisation culture is measured by the dimensions " implementation of norms, implementation of values, beliefs and philosophies, implementation of codes of ethics, implementation of ceremonies, history of organizations" (Ahadzie et al., 2014) example of the item " The company where I work values each individual who is responsible for expressing his opinion ideas for the progress of the company, my company values the idea of opinions that arise from the results of each individual's thinking for the advancement of the organization, the habit of doing good to everyone is the commitment of all employees", all items were

rated by respondents on a Likert scale of five points from 1 (strongly disagree) to 5 (strongly agree).

Managerial Performance

Management performance is an enterprise system in which managers integrate goal-setting activities, supervision and evaluation, the provision of feedback and training, and employee rewards on an ongoing basis (Kreitner, R., and Kinicki, 2014). To measure managerial Performance, management functions with eight indicators (Derfuss, 2016) "Planning, Investigation, Coordination, Evaluation, Supervision, Staffing, negotiation, and representation." Examples of items to measure performance" I was a manager do department work program planning, as a manager analyzes work reports from subordinates, as a manager reports work results to the management for coordination of achieving company targets") respondents rated all items on a Likert scale of five points from 1 (strongly disagree) to 5 (strongly agree).

RESULT AND DISCUSSION

Validation Measurement

This research uses a partial least squares approach (Smartpls 3.0) to analyze the value of structural parameters in modeling structural equations (SEM). Then a model test is carried out to determine the validity and reliability of the data. The validity measurement is determined by the outer loading value stated by Hair (2018), which has a cut-off of 0.500. Reliability measurements use reference values for composites of reliability and AVE values where CR values are in the range of 0.700, and AVE is recommended >0.500 (Chin, 1998; Fornell and Larcker, 1981). Table 1 shows the validity and reliability test results, the outer loading test results of all variables above the value of 0.700, and the AVE values of all variables above 0.5 were found. Thus the data used in this study meet the assumption of validity. The reliability of the data from the test results, which is greater than 0.700, shows that the data meets the reliability test requirements. In addition to table 2, it is demonstrated that managerial Performance strongly correlates with organizational culture.

Common methods of bias

The data collected is perceptual and from one source simultaneously; therefore, a general method bias test was carried out to avoid general method bias (CMB). First, sort the questionnaires randomly drawn up. The second follows Harman's single factor method (Podsakoff et al., 2003) to test

the bias of the general method, and the test results showed that the first construct with a result of 39.796% of the variance (Siemsen et al., 2010) so that the results are not obtained bias contamination.

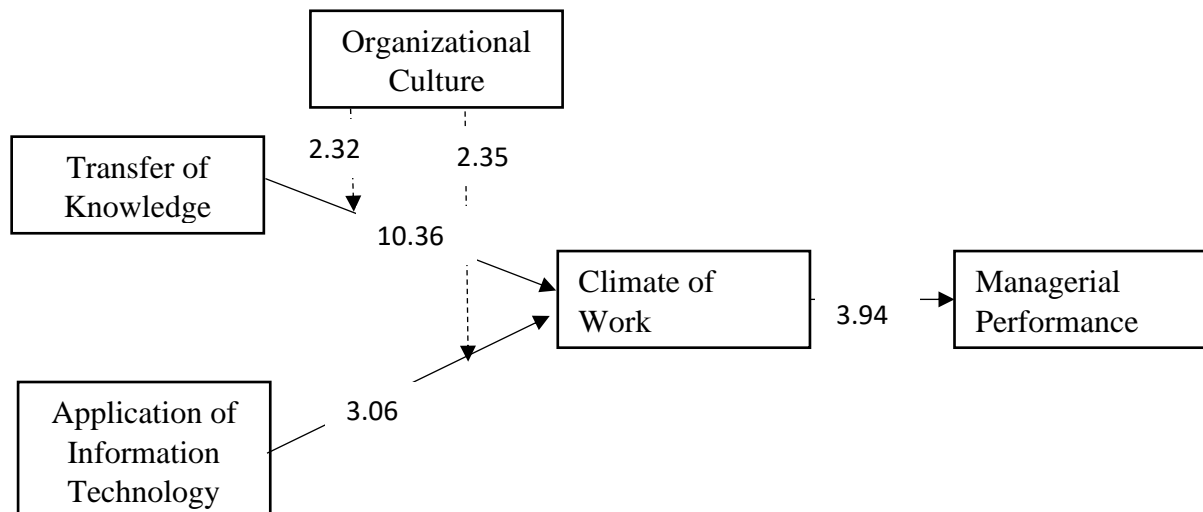
Table 1. Validity and reliability result

Code	Item	Outer Loading	Reliability	AVE
Managerial Performance				
MP1	I did the department's work program planning	0.752	0.944	0.606
MP2	I analyzed the work report of my subordinates	0.739		
MP3	I hold regular meetings to discuss the work of my subordinates	0.765		
MP4	I report the results of work to the management to coordinate the achievement of the company's targets	0.767		
MP5	I coordinate work with other departments to obtain maximum results	0.719		
MP6	I evaluate the results of the planned work program	0.800		
MP7	I guide subordinates so that they can complete the tasks given according to the target set	0.784		
MP8	I choose staff according to the skills of the work at hand	0.820		
MP9	I negotiate on company-related policy programs	0.756		
MP10	I am in communication for approval with another company	0.833		
MP11	I represent the company in business meetings	0.826		
Climate of Work				
CW3	A comfortable room temperature supports the workspace	0.781	0.914	0.606
CW4	The noise level at work affects the focus	0.768		
CW7	The workplace is free from criminals	0.758		
Transfer of knowledge				
TK1	Transfer of knowledge based on experience	0.801	0.882	0.652
TK2	Knowledge transfer based on expertise	0.758		
TK3	Share existing reports and white papers with members of the organization	0.807		
TK4	Attend various training and developments	0.860		
Organizational Culture				

OC1	The company provides an excellent place to share things with others, as well as respect the participation of each worker and team spirit	0.882	0.867	0.620
OC2	The company is structured to manage all activities with procedures	0.810		
OC3	The company values the credibility of each employee and values the uniqueness of each employee	0.760		
OC4	A company is a results-oriented organization focused on controlling costs and Performance	0.858		
Application of Information Technology				
AIT1	Information Technology is very important to me	0.716	0.897	0.686
AIT2	Information Technology is beneficial for me	0.707		
AIT3	I use information technology to assist me in sharing and gaining knowledge	0.786		
AIT4	I suspect that in the future, users of information technology to share knowledge will be better	0.746		

Table 2. Descriptive statistic

Variabel	SD	Mean	1	2	3	4	5
OC	7.206	39.19	0.814				
MP	5.820	39.54	0.345*	0.227			
CW	6.414	40.35	0.745**	0.769*	0.259		
AIT	7.782	38.00	0.700**	0.769**	0.227	0.707**	
TK	6.634	38.85	0.700**	0.745**	0.345*	0.814**	0.890**

Figure 2. Structural model result

Tabel 3. t- Statistic

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
OC*AIT -> CW	-0,190	-0,165	0,081	2,359	0,019
OC*TK -> CW	0,181	0,164	0,078	2,325	0,020
CW-> MP	0,375	0,421	0,095	3,946	0,000
AIT -> CW	0,265	0,268	0,087	3,061	0,002
TK-> CW	0,752	0,758	0,073	10,366	0,000

DISCUSSION

In Hypothesis 1, it is suspected that there is an effect of TK on CW; the test results were received with a t-statistical value of $10.388 > 1.967$ with a p-value of $0.000 < 0.05$, so the transfer of knowledge had a positive and significant effect on the Climate of work. Hypothesis 2, it is suspected that there is an influence of AIT on CW; the test results were received with a t-statistical value of $3.178 > 1.697$ with a p-value of $0.002 < 0.05$ so that the application of information technology has a positive and significant effect on the Climate work. Hypothesis 3a. The interaction of OC and TK strengthened the influence of kindergarten on CW by $2.325 > 1.967$ with a p-value of $0.020 < 0.05$ so that the exchange of organizational culture and knowledge transfer strengthened the impact of knowledge transfer on the work environment positively and significantly. Hypothesis 3b The interaction of OC and AIT enhances the influence of AIT on CW; the test results were received with a t-statistical value of $2.359 > 1.967$ with a p-value of $0.019 < 0.05$ so that the interaction of organizational culture with the application of information technology strengthens the influence of the application of information technology on the work environment positively and significantly. Hypothesis 4 There is an influence of knowledge transfer and application of information technology on managerial Performance mediated by the work environment. The test results received with a t-static value of $3.946 > 1.967$ with a p-value of $0.000 < 0.05$ so that the transfer of knowledge and application of technology-mediated by the work environment has a positive and significant effect on managerial performance.

CONCLUSION

The organization's demands for a continuous increase in competitive advantage are increasing, so the Performance of established managers is needed to support the achievement of these targets (Ugheoke, 2021). This research has emphasized the relationship of MP and AIT; OC moderated TK, then CW mediated. Research Lankeshwara and Sugita 2015; (2016; 2015) factors of the work environment and employee performance have a significant influence, this supports research Managerial performance is positively influenced and significantly affects the work environment, it is essential in the world of oil and gas construction industry that a good work environment that includes work safety is an absolute standard that must be met. The process of improving managerial performance is by increasing the ability to innovate, and innovation can be developed through the collaboration of organizational culture and knowledge management (Le, 2020). In this study, managerial performance can be acquired by furnishing the transfer of knowledge as knowledge management with the application of information technology which is strengthened by the organization's culture through the work environment. Empirical research on the influence of the work environment in the construction industry also has a significant impact on managerial Performance, the low managerial ability is not solely due to inadequate construction managerial ability, but the work environment also affects it. Hence, it is advisable to pay attention to 15 aspects of the work environment to improve the ability of managerials in the construction industry (Pheng and Chuan, 2006). Exploring effective ways for companies to improve managerial performance, this research has systematically reviewed the literature and developed a research model proposal to examine the relationship of knowledge transfer, the application of information technology and its influence on the work environment which is strengthened organizational culture as a moderator so that the work environment has a relationship with managerial performance, thus contributing to theoretical and practical development in the fields of organization culture, knowledge management, and managerial performance.

Theoretical Implications

This research complements managerial performance research by referring to the effect of organizational culture as an essential factor for sustainable organizations, with all efforts to

build organizational culture as a driving tool to develop and improve managerial effectiveness (Negi and Dangwal, 2019). This research also complements research on managerial performance that analyzes the relationship between work environment and organizational performance in the construction industry sector. (Pheng and Chuan, 2006).

Practical Implications

This research offers some Practical implications. The first suggests optimal managerial performance by prioritizing quality and quantity is achieved by building a work environment not just as a good work environment, however, the work environment of the oil and gas construction industry which is a general guideline for all activities to maintain work safety which also includes standards covering aspects of occupational health and environmental governance (Sugita and Takahashi, 2015), Second, research also contributes to organizational culture to improve the culture of knowledge transfer and good knowledge management among managerials, growing togetherness, the dynamics of sharing knowledge is a behavior that runs dynamically in the organization, for example in a meeting can be used as a forum for the transfer of knowledge (S. C. Yang and Farn, 2009) Third, the results of the research show the ability to apply information technology in developing dynamic expertise in the work environment, thus suggesting the organization to continue to improve the ability of information technology to strengthen managerial innovations that will enhance the performance of companies engaged in petroleum construction so that they can provide a rapid response to changes and the business environment (Soto-Acosta et al., 2018).

Limitations and Future Research

Research has limitations because the study is cross-sectional with the analysis of correlation relationships between constructs, making causal changes possible in the future. Future research can use a longitudinal approach or experiential methods to simulate changes in the work environment and their impact on managerial performance. Another limitation is that our study obtains data only from middle-level managerials at the fabrication site where construction projects are carried out and does not obtain data from managers from companies that are prominent as support for the project to be carried out. This study is only carried out in one province, and future research can involve cross-border cultural comparisons.

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