

THE ROLE OF DIGITAL LITERACY IN SUPPORTING PERFORMANCE THROUGH INNOVATIVE WORK BEHAVIOR: THE CASE OF INDONESIA'S TELECOMMUNICATIONS INDUSTRY

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ABSTRACT

The so-called “fourth industrial revolution” that is developing at an exponential pace today is characterized by several new technologies, such as robotics, artificial intelligence, and the Internet of Things (IoT). Especially in Indonesia's telecommunications industry, there is a change in the use of telecommunications services with a greater need to provide innovative data services. This research aimed to investigate the relationship among transformational leadership, innovative work behavior, performance, and digital literacy (as a moderator of the relationship between innovative work behavior and performance). This illustrates how innovation in technology can serve as a core element to drive the competitiveness of a company, especially in high-tech industries. The role of innovation is becoming increasingly significant and can determine the survival and growth of a company. This study surveyed 230 managerial-level and above employees from three telecommunication companies in Indonesia. Structural equation modeling (SEM) was performed with LISREL to analyze the data in this quantitative research. The results showed that there was a significant and positive relationship between transformational leadership and innovative work behavior, innovative work behavior was also significantly and positively related to performance, and digital literacy significantly moderated the relationship between innovative work behavior and performance.

Keywords: Digital literacy; Innovative work behavior; Strategic management; Transformational leadership; Telecommunication industry

1. INTRODUCTION

The so-called “fourth industrial revolution” that is developing at an exponential pace today is characterized by several new technologies, such as robotics, artificial intelligence, and the Internet of Things (IoT). Especially in Indonesia's telecommunications industry, there is a change in the use of telecommunications services. Data services are very important and have become the biggest area of growth for telecommunication operators. Based on a survey conducted by the Indonesian Internet Service Providers Association (APJII, 2019), internet use in Indonesia reached 54.7% in 2017 (with 143.3 million users) and grew to 56% in 2018 (with 160.6 million users).

Many researchers, such as Suwartha et al. (2017), have emphasized the importance and significance of innovation in the current era. Innovation and creativity is seen as a determinant of competitive advantage (Berawi, 2017). Companies need to show continuous breakthroughs and

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innovation in order to stay competitive in industry (Spanuth & Wald, 2017). To produce creativity, human factors are critical (Chen et al., 2016). In this context, leadership factors also determine how to promote creativity in employees (Lin & Wong, 2014). Innovative work behavior from employees will produce better performance. The current version of the industrial revolution is changing the process of work; many automated processes have been created that have succeeded by using digital technology. This study specifically examined how digital factors moderated the relationship between employee performance and innovative work behavior.

Studies regarding digital literacy as a moderating variable of the relationship between innovative work behavior and performance are still relatively rare. Therefore, the researchers wanted to examine digital literacy as a moderating influence, which can reinforce the correlation between employee innovative work behavior and performance. From previous studies, we conceptualized that transformational leadership correlates with innovative work behavior, and innovative work behavior correlates with employee performance, with digital literacy moderating the relationship between the innovative work behavior and the employee performance. This research model is shown in Figure 1.

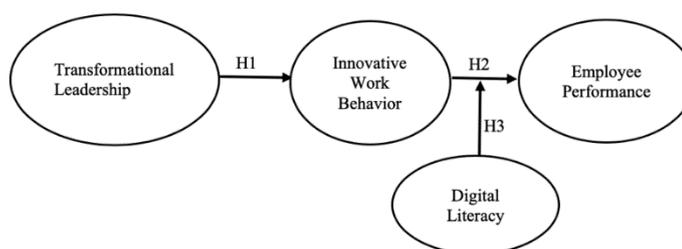


Figure 1 Research model

2. LITERATURE REVIEW

2.1. Transformational Leadership and Innovative Work Behavior

According to Avolio and Bass (1995; 2004), transformational leadership is a multidimensional concept, which consists of four factors: intellectual stimulation, individual considerations, inspirational motivation, and charisma. Transformational leaders provided intellectual stimulation. In this, they challenge the status quo and always stimulate their followers to find new ways to achieve a solution and to solve problems. They also consider each individual team member, so team members receive fulfillment of their emotional needs. Transformational leaders inspire and motivate. They can give directions and suggestions on how to achieve goals and objectives that have been determined. Team members choose transformational leaders as their role models. Leaders with charisma will listen to and understand the ideas and suggestions from their team members.

Innovative work behavior is a term that describes one's ability in a role, within a part of or the whole organization, to trigger, promote, and implement ideas, products, or services (West & Farr, 1990; Janssen, 2000; Jong & Hartog, 2010). Innovative work behavior is often linked with extra roles (Katz, 1964; Katz & Kahn, 1978) that surpass normal work expectations and assignments (Seibert et al., 2001). From the literature, a researcher can find several other ideas linked to innovative work behaviors (Abstein et al., 2014), such as employee innovation (West, 2002; Huhtala & Parzefall, 2007), innovative work performance (Hammond et al., 2011; Janssen, 2001), and innovation on the job (Dorenbosch et al., 2005).

In this study, an employee's innovative work behavior is defined as a complex process that concatenates creativity and the application of ideas (Janssen, 2000; Janssen, 2004). Innovative work behavior consists of idea exploration, idea generation, fighting for ideas, and the application of ideas (Jong & Hartog, 2010). Idea exploration is finding new or better ways to

improve current products, processes, or services. Idea generation could work towards new products, processes, or services as well as for suggestions of new markets or new solutions to problems that have already been identified. Fighting for ideas is when an individual introduces their own creative ideas or others and pushes for them in work talks and discussions (Howell & Higgins, 1990). Most new ideas need to be promoted in work groups or organizations because change can be difficult. This process includes deploying resources, persuading and influencing, encouraging, negotiating, and taking risks to challenge the status quo (Kleysen & Street, 2001). Eventually, the implementation of the ideas needs to be done. This process requires a results-oriented attitude, which is essential to turn ideas into realistic products, processes, and services. This implementation process may also include developing new products or processes, testing, and then modifying them to become innovative replacing the usual work processes and behaviors (Kanter, 1988; Kleysen & Street, 2001; Jong & Hartog, 2010). Therefore, the first hypothesis in this study to be tested was:

Hypothesis 1: Transformational leadership is positively and significantly related to innovative work behavior.

2.2. Innovative Work Behavior and Employee Performance

According to previous studies, innovative work behavior consists of four sets of interconnected behavioral activities: problem recognition, the generation of ideas, the promotion of ideas, and idea realization. This set of activities can improve employees' abilities to innovate (Jong & Hartog, 2010). The first two activities involve the identification of problems and generating ideas to address those problems, representing the phase of creativity-oriented work behavior. The last two activities are referred to as implementation-oriented work behavior, where individuals try to promote their new ideas and work on those ideas in their organization. Studies have shown that those who are innovative, work beyond their requirements, and enlarge their contribution generate continuous innovation (Yildiz et al., 2017).

Previous research has shown that innovative work behavior is positively related to task performance (Dörner, 2012). Although task performance has traditionally been included in employee job descriptions, various non-explicit employee contributions to the organization have not been taken into account. Another study has shown that those who work in non-innovative positions are unlikely to be motivated or are less motivated to work on new ideas, therefore, they do not consider new ideas to be implemented in their work. Therefore, the second hypothesis to be tested in this study was:

Hypothesis 2: Innovative work behavior is positively and significantly related with employee performance.

2.3. Digital Literacy as a Moderating Variable to the Relationship Between Innovative Work Behavior and Employee Performance

Technological innovation is a main factor for a company to become competitive; it is also increasingly crucial for a company in order to grow and survive. Technological innovation requires continual R & D and the internalization and effective use of new technologies, especially those obtained externally (Yim et al., 2013). According to Mohammadyari and Singh (2015), it is important for individuals to critically analyze digital material more deeply to understand the underlying meaning in information. The digital awareness requires the development of a set of key skills that are technical, cognitive, and social-emotional.

In order to be digitally literate, an individual has to have the ability: to do basic computer-based activities and to access resources; to find, identify, and study information effectively for the purpose of research and learning; to choose and develop capabilities in using the most relevant tools or features to do their jobs, solve their problems, or make products. This includes how individuals can understand and behave well in online communities and securely protect

themselves from any harm in digital circumstances. Individuals who have better capabilities to adopt new tools can use them if they suit the individual's needs or are more preferred, while individuals who find it difficult to adopt new tools may find it difficult or feel trapped in using a system they don't like (Ahmed, 2010). The continuous change and evolution of e-learning technology emphasizes the value of exploring the impact of digital literacy on e-learning applications. Digital literacy is more than just the ability to use software or devices; it includes more complex cognitive, emotional, and sociological skills, which users need in order to work effectively in digital environments (Martin & Madigan, 2006). Therefore, the third hypothesis that was tested in this study was:

Hypothesis 3: Digital literacy moderates the relationship between innovative work behavior and employee performance.

3. METHODOLOGY

3.1. Sample and Data Collection

The study used an explanatory survey method with the individual as the unit of analysis; the observed unit was an employee of a telecommunications company in Indonesia. The explanatory survey method is a research method that aims to determine the characteristics of a variable or construct by examining a number of samples. Data was collected in a one-shot-timeframe cross section. The data were collected for the sole use of answering the research questions in this study.

The researchers collected data from 230 managerial-level and above employees of the top three telecommunication companies in Indonesia. These employees worked in different functions (e.g., commerce, IT, network, finance, corporate strategy, human resources, risk management, and legal). These employees were involved in tasks that included the development of new ideas, approaches, and solutions to acquire and retain customers. Each function had its own customers and internal processes that impacted the outcomes of the companies.

3.2. Measurement

3.2.1. Transformational leadership

For transformational leadership, the researchers used metrics based on those that had already been validated by Bass (1985). The transformational leadership variable had five dimensions: intellectual stimulation, individual considerations, charisma/ideal influence (attribute), inspirational motivation, and charisma/ideal influence (behavior).

3.2.2. Innovative work behavior

To assess the perceived innovative work behavior, especially in the telecommunications industry, the researchers referred to the validated measurement by Jong and Hartog (2010). Their innovative work behavior had four aspects: idea exploration, generation, promotion, and implementation.

3.2.3. Employee performance

In this study, performance refers to the employee's performance. The researchers used a measurement that had already been validated by Koopmans et al. (2012). The performance had four dimensions: counterproductive work behavior, adaptive performance, contextual performance, and task performance.

3.2.4. Digital literacy

Based on the work of Martin (2005), Ng (2012) developed a measure for digital literacy with three intersecting dimensions: technical, cognitive, and social-emotional. Examples of items included in the scale are: the ability to learn new technology easily, motivated to learn with information and communication technology, and willingness to use information and communication technology at work.

4. RESULTS

The respondents in this study consisted of 121 males and 109 females, whose average age was 31.6 years; with regard to education, all the respondents had the minimum of a bachelor's degree. Respondents in the study had an average score (mean) in transformational leadership of 4.73 with a standard deviation of 0.665, innovative work behavior was 4.67 with a standard deviation of 0.513, performance was 4.01 with a standard deviation of 0.421; and digital literacy was 4.83 with a standard deviation of 0.573. Before testing the hypotheses, tests of construct validity and internal reliability were conducted as shown in Tables 1 and 2. The research model proved fit as shown in Table 3, based on the goodness of fit indicators.

Table 1 Factor analysis results

Variable	Dimension	Validity Result	
		Std Loading	Remarks
Transformational leadership	Intellectual stimulation	0.68	Valid
	Individual considerations	0.98	Valid
	Charisma/ideal influence (attribute)	0.66	Valid
	Inspirational motivation	0.99	Valid
	Charisma/ideal influence (behavior)	0.54	Valid
Innovative work behavior	Exploration of ideas	0.70	Valid
	Generation of ideas	0.91	Valid
	Promote ideas	0.64	Valid
	Implementation of ideas	0.97	Valid
Performance	Counterproductive work behavior	0.71	Valid
	Adaptive performance	0.67	Valid
	Contextual Performance	0.73	Valid
	Task Performance	0.75	Valid

Table 2 Reliability test results

Variable	Reliability Result (Construct Reliability)	
	Result	Remarks
Transformational leadership	0.92	Reliable
Innovative work behavior	0.83	Reliable
Employee performance	0.93	Reliable
Digital Literacy	0.84	Reliable

Table 3 Goodness of fit results

Indicators and Value	Standard Value	Remarks
NFI = 0.93	≥ 0.90	Good Fit
NNFI = 0.92	≥ 0.90	Good Fit
CFI = 0.94	≥ 0.90	Good Fit
IFI = 0.94	≥ 0.90	Good Fit
RFI = 0.91	≥ 0.90	Good Fit
RMR = 0.046	≤ 0.10	Good Fit
Standardized RMR = 0.063	≤ 0.10	Good Fit
GFI = 0.91	≥ 0.90	Good Fit

The data supported all the hypotheses with significant positive results, both with the results shown in Figure 2 and based on the t-values generated using LISREL for the structural equation modeling (SEM). The significance testing revealed a number of results. The TL (transformative leadership) variable significantly influenced the IWB (innovative work behavior) variable, $t = 13.22 > 1.96$, so it had a positive and significant effect. The IWB variable significantly

influenced the EMP (employee performance) variable, $t = 13.82 > 1.96$, so it also had a positive and significant effect. The DL (digital literacy) variable significantly influenced the relationship between the IWB and EMP variables, $t = 5.53 > 1.96$, so it was a significant moderating variable of the relationship between IWB and EMP.

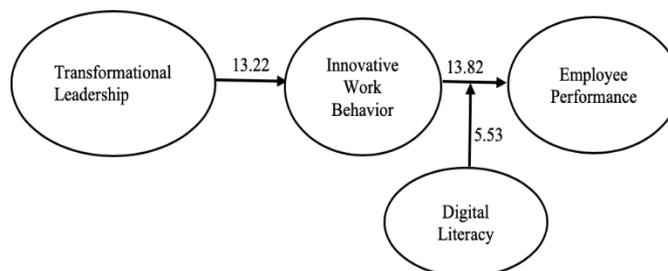


Figure 2 t-value results

This study showed that there was a positive and significant relationship between transformational leadership and innovative work behavior (H1), innovative work behavior was significantly and positively related to performance (H2), and digital literacy was a significant moderating influence on the relationship between innovative work behavior and performance (H3). From this research data, the structural equation model in Figure 3 was derived. The first structural equation, $IWB = 0.99 \times TL$, explains that every unit increment of transformational leadership increased innovative work behavior by 0.99. The second equation, $EMP = 0.94 \times IWB$, explains that every unit increment of innovative work behavior increased employee performance behavior by 0.94. The third equation, $EMP = 0.14 \times MOD_DL$, explains that every unit increment of digital literacy increased employee performance by 0.14. The R^2 value of 0.92 explains that the magnitude of the effect of simultaneous innovative work behavior and digital literacy on employee performance was 92%.

$$\begin{array}{ll}
 IWB = 0.99 * TL, & Errorvar. = 0.016, R^2 = 0.98 \\
 Errorvar (0.075) & (0.016) \\
 t-value & 13.22 \quad 1.00
 \end{array}$$

$$\begin{array}{lll}
 EMP = 0.94 * IWB + 0.14 * MOD_DL, & Errorvar. = 0.080, R^2 = 0.92 \\
 Errorvar (0.068) & (0.025) & (0.024) \\
 t-value & 13.82 & 5.53 \quad 3.30
 \end{array}$$

Figure 3 Structural equation model

5. DISCUSSION

This research developed and tested a conceptual model that investigated the relationships among transformational leadership, innovative work behavior, performance, and digital literacy (as a moderator of the relationship between innovative work behavior and performance). Digital literacy moderated the relationship of innovative work behavior to performance, higher digital literacy of employees further strengthened the influence of innovation work behavior on employee performance. This shows the importance of innovation in technology as a core element of a company to become competitive especially in high-tech industries. It has served as a core element that is crucial to determine the growth and survival of companies. According to Wiratmadja et al. (2016), the innovation of companies is correlated with their productivity.

In summary, our findings confirmed and support the findings of Mete et al. (2016) that human behavior is highly dependent on different factors like ability, willingness, and other environmental factors. Therefore, the researchers suggest that organizations consider individual

and environmental factors in human resource management as the main drivers of innovative work behavior that serve as core elements of continuous company competitiveness.

6. CONCLUSION

Our study expands the limited research on how digital literacy can support innovative work behavior to achieve better performance in the workplace. This extends the literature, especially innovation theory at an individual level in several ways. Existing literature has mostly focused on exploring how the behaviors and styles of leaders and their management skills may affect employee (subordinate) innovative work behavior (Chang et al., 2015; Jaiswal & Dhar, 2015). The results of this research suggest the important role of supporting innovative work behavior from employees in high tech organizations. Transformational leadership also greatly influences the creativity of team members; it can lead to team member self-confidence in performing problem-solving. The results of this study were consistent with the findings from Wang et al. (2014), who examined the correlation between transformational leadership and employees' creativity at work.

In the telecommunication industry represented by the high technology organizations in this study, digital skills are very common and have become part of the daily job. Leaders play an important factor in their use; leaders should update their knowledge especially in the areas of digital skills and knowledge. This research suggests that leaders should update their knowledge so that they can continue to help and inspire their team members in order to solve work-related problems. The results of this study are consistent with the findings of Minh et al. (2016), who examined the relationship between leaders' technical competence and innovative work behavior.

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