14th ISCA 2024

Learning Agility as a Mediating Factor in the Relationship between Transformational Leadership and Digital Transformation Adaptation

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ABSTRACT

This study aims to analyze the influence of transformational leadership on digital transformation adaptation, with learning agility as a mediating variable. The research method uses a quantitative approach with data collected through a questionnaire. A total of 70 respondents met the criteria to complete the questionnaire. The results show that transformational leadership has a significant positive impact on digital transformation adaptation and enhances employees' learning agility. Although learning agility plays a mediating role, this study also found that organizational factors, such as culture and work structure, affect the effectiveness of this mediator. These findings are consistent with previous research showing that transformational leaders can create a supportive learning environment. However, the study also noted research indicating that certain conditions, such as work stress, can hinder employees' ability to learn and adapt. This research provides valuable insights for organizations in designing leadership strategies that support digital adaptation in the era of technological disruption.

Keywords: Transformational Leadership, Digital Transformation Adaptation, Learning Agility

1. Introduction

In the rapidly evolving digital era, organizations face significant challenges in adapting to digital transformation, which involves the adoption of new technologies and changes in work processes and strategies. Transformational leadership plays a crucial role in digital transformation by fostering a culture of innovation and continuous learning (Osemeike Gloria Eyieyien et al., 2024). Research shows that transformational leadership has a positive impact on the adoption of digital innovation (Sousa & Rocha, 2019) and can predict learning agility(Chang et al., 2023). However, many studies focus more on the direct relationship between leadership and digital transformation outcomes, without considering how transformational leadership processes influence change.

Learning agility, defined as the ability of individuals to learn from experience and quickly adapt, is recognized as a key factor in the context of organizational change (De Meuse et al., 2010) Studies indicate that individuals with high learning agility are better equipped to face change (Dai & De Meuse, 2021) and contribute to improved performance in dynamic situations (Gravett & Caldwell, n.d.). When discussing digital adaptation, a deeper understanding of learning agility

remains an important area of focus (AlNuaimi et al., 2022). Additionally, increasing employee participation in the digital transformation development process is a critical aspect that requires attention (Porfírio et al., 2021)

This study aims to examine the role of learning agility in supporting the relationship between transformational leadership and an organization's ability to adapt to digital transformation. A better understanding of this interaction can help organizations become more prepared for future challenges characterized by uncertainty and rapid technological change.

2. Literature Review

2.1 Transformational Leadership

The Transformational Leadership theory developed by Bass & Avolio (1990) explains that transformational leaders can inspire and motivate team members to exceed their capabilities. Leaders who adopt this approach focus on achieving long-term goals while fostering individual development within the organization. According to Bass and Avolio (1994) in (Dionne et al., 2004),transformational leadership comprises four main components: idealized influence, where leaders build trust and loyalty to motivate their followers; inspirational motivation, which emphasizes conveying an inspiring vision and optimism; intellectual stimulation, which encourages followers to think critically and creatively when facing challenges; and individualized consideration, where leaders focus on personal development for each individualBass & Avolio, 1990). Through these components, leaders not only serve as role models but also create an environment that supports innovation and learning.

Rapid changes make transformational leadership essential not only for enhancing employee engagement but also for preparing them to face the technological shifts required within organizations (Rafferty & Griffin, 2004). he charisma and confidence exhibited by transformational leaders can inspire and motivate followers to achieve optimal performance (Kuzmenko, 2009). The capacity of transformational leaders to cultivate adaptability in employees is key to successfully meeting the challenges of digital transformation (Bass & Riggio, n.d. 2006). Therefore, transformational leadership is not just a leadership style but a driving force behind fostering individual learning agility. Derue et al. (2012) emphasize that learning agility can be developed through the support and learning environment created by leaders.

2.2 Dynamic Capabilities Theory

The Dynamic Capabilities theory, introduced by Teece et al. (1997), refers to a framework for understanding how companies can sustain a competitive advantage in rapidly changing environments, particularly in the context of technological innovation. Companies lacking dynamic

capabilities are unable to integrate, learn, and reconfigure resources (Krottler Axel et al., 2018) These dynamic capabilities include the ability of individuals to adapt to technological changes. Technological transformation is not just about adopting new technologies; it also involves profound changes in organizational culture and work processes (Ibrahimi & Benchekroun, 2023). Technological change is defined as a process aimed at enhancing an entity by triggering significant change through a combination of information, computing, communication, and connectivity technologies (Vial, 2019)

Three key elements of dynamic capabilities are processes (how companies learn and adapt), positions (strategic assets like technology), and paths (strategic choices based on the company's evolution) (Teece et al., 1997). his concept is highly relevant to the role of learning agility as a mediator. According to (Derue et al., 2012), learning agility is the ability of individuals to learn from experience and apply that knowledge to new situations. Employees with high learning agility are better equipped to tackle challenges encountered during digital transformation processes, and they are more likely to internalize the necessary learning to adapt to rapid changes.

In the relationship between transformational leadership and digital transformation adaptation, leadership that fosters agility helps create a collaborative work environment where all departments can effectively contribute to shared goals (Ibrahimi & Benchekroun, 2023), which in turn enhances their ability to adapt to digital changes. By creating an environment that supports learning and innovation, transformational leaders contribute to the development of the dynamic capabilities necessary for individual success in the digital era.

Based on this discussion, the proposed hypothesis is that learning agility mediates the relationship between transformational leadership and digital transformation adaptation. In other words, transformational leaders can enhance employees' readiness for digital transformation by fostering learning agility, enabling individuals to adapt more quickly and develop the new competencies required.

Through the theoretical discussion and the proposed hypothesis regarding the relationship between Transformational Leadership, Learning Agility, and Digital Transformation Adaptation, the author formulates the following conceptual research model:
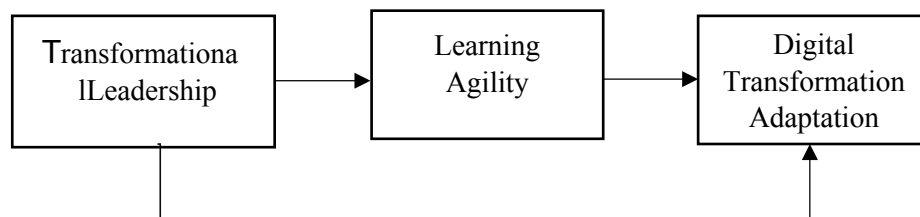

Figure 1 Research Model

Based on the research model in Figure 1, the following research hypotheses can be formulated:

H1: Transformational leadership has a positive influence on digital transformation adaptation.

H2: Learning agility mediates the relationship between transformational leadership and digital transformation adaptation.*transformation*

3. Research Methodology

In this study, a quantitative approach was used to measure and analyze the relationships between variables, with the aim of determining the extent of the influence of one variable on another (Sugiyono & Lestari Puji, 2021). A purposive sampling technique was applied to select respondents, consisting of employees with 1 to 3 years of work experience and a minimum education level of a bachelor's degree. These criteria were chosen because employees with such backgrounds generally have a good understanding of workplace changes, including in the context of digital transformation, making them likely to produce a representative sample.

Data were collected using a 1–5 Likert scale through a questionnaire consisting of several questions designed to measure variables such as Transformational Leadership, as defined by Bass dan Avolio (1997), which has been shortened by (Berger et al., 2012) into 8 items. Additionally, the Learning Agility variable uses items adapted from Lombardo & Eichinger (2000), as modified by Bedford & Skovholt (2011)into a 9-item scale and 5 items for the Digital Transformation Adaptation variable, referring to the study by (Nasiri et al., 2020)

The selected respondents were workers with experience in the digital sector. They were employees of service cooperative companies operating in the digital sector in Wonosobo, Central Java. A total of 70 respondents were collected, all of whom met the established criteria. Data analysis was conducted using SPSS. This process included checking the data to ensure no errors or missing values, followed by descriptive analysis to describe the characteristics of the respondents. Next, we performed regression analysis to examine the relationships between Transformational Leadership, Learning Agility, and Digital Transformation Adaptation. The results of this analysis are expected to provide deeper insights into the interactions between the variables studied.

4. Results

4.1 Respondent Profile

Table 1 Respondent Profile

Profil	Frekuensi	Persentase
Age		
20-25 Years	46	65,71 %
26-35 Years	21	30,00%
36-45 Years	3	4,29%
Education		
Bachelor's Degree	64	91,43%
Master's Degree	6	8,57%
Work Experience		
1-3 Years	51	72,86%
> 3 Years	19	27,14%

The table presents the profile of 70 respondents with variations in educational background and work experience. Below is the interpretation and paraphrase:

- **Education Level**: The majority of respondents, 91.43%, hold a bachelor's degree, while the remaining 8.57% have a master's degree. This indicates that most respondents have a high level of education, particularly at the undergraduate level.

- **Age**: The largest age group among the respondents is 20-25 years old, comprising 65.71% of the total. 30% are between 26-35 years old, while only 4.29% are aged 36-45 years. This suggests that most respondents are relatively young.

- **Work Experience**: In terms of work experience, 72.86% of respondents have worked for 1-3 years, while 27.14% have more than 3 years of experience. This shows that most respondents are in the early stages of their careers.

Overall, this profile indicates that the majority of respondents are young individuals with bachelor's degrees and relatively short work experience, specifically between 1-3 years.

4.2 Assumption Testing

Table 2 Assumption Testing

Test	Description	Value
Normality	Kolomogorov-Smirnov Signifikansi Asimtotik	0,200
Multicollinearity	Variance Inflation Factor	
	Transformational Leadership	2,009
	Learning Agility	2,009
	Tollerance	
	Transformational Leadership	0,498
	Learning Agility	0,498
Heteroscedasticity	Glesjer Test	
	Transformational Leadership	0,988
	Learning Agility	0,315

Table 2 shows the results of classical assumption tests, including tests for normality, multicollinearity, and heteroscedasticity. For the normality test using Kolmogorov-Smirnov, the asymptotic significance value was 0.200. This value is greater than 0.05, indicating that the data are normally distributed and suitable for further analysis. In the multicollinearity test, the Variance Inflation Factor (VIF) for Transformational Leadership and Learning Agility variables was 2.009, below the threshold of 10, indicating no significant multicollinearity issues between these variables. The tolerance values for both variables were 0.498, which also indicates that there is no strong dependence between the independent variables. The heteroscedasticity test using the Glejser method showed a significance value for Transformational Leadership of 0.988 and for Learning Agility of 0.315. These significance values are greater than 0.05, suggesting no indication of heteroscedasticity in either variable.

Autocorrelation testing was not performed because this analysis uses cross-sectional data, which represent data from various individuals at one point in time. Autocorrelation tests are more relevant for time-series data, where measurements are taken over different time periods. Therefore, the results indicate that the data meet the normality assumption and there are no issues with multicollinearity, although some attention is needed regarding heteroscedasticity for the Transformational Leadership variable.

4.3 Hypothesis Testing

Table 3 Regression Results

Independen	Dependen	Unst. Coef B	Std. Err	t	Sig	R Square	Adj. R Square
TL	DTA	0,505	0,093	5.045	0,000	0,301	0,290
TL	DTA	0,126	0,116	1,086	0,281	0,468	0,452
LA		0,467	0,102	4,593	0,000		

The regression results table shows the relationships between Transformational Leadership (TL), Learning Agility (LA), and Digital Transformation Adaptation (DTA). Based on the regression analysis, the unstandardized coefficient for TL is 0.505 with a standard error of 0.093, yielding a t-value of 5.045 and a significance level of 0.000. This indicates that TL significantly influences DTA, with an R^2 value of 0.301 and an Adjusted R^2 value of 0.290.

When LA is introduced as a mediating variable, the regression coefficient for TL on LA is 0.467 with a standard error of 0.102, yielding a t-value of 4.593 and a significance level of 0.000, which is also significant. The relationship between LA and DTA shows a coefficient of 0.126 with a standard error of 0.116, a t-value of 1.086, and a significance level of 0.281, indicating that this influence is not significant. In this model, the R^2 value is 0.468, and the Adjusted R^2 is 0.452.

From the analysis results, the a-value of 0.811 with a significance level of 0.000 indicates that the effect of TL on LA is significant. The b-value of 0.467 with a significance level of 0.000 shows that LA significantly mediates this relationship. The c-value of 0.505 with a significance level of 0.000 indicates that TL directly influences DTA. However, the c' value of 0.126 with a significance level of 0.281 indicates that the direct effect of TL on DTA becomes insignificant after including LA as a mediator. Therefore, the reduction of the c-value from 0.505 to 0.126 (non-significant) indicates full mediation by LA in the relationship between TL and DTA.

5. Discussion

5.1 The Influence of Transformational Leadership on Digital Transformation Adaptation

The results of the regression test confirm that Hypothesis 1 is accepted, stating that transformational leadership has a positive influence on digital transformation adaptation. Transformational Leadership (TL) shows a significant effect on Digital Transformation Adaptation (DTA) with a coefficient of 0.505 and a significance value of 0.000. Consistent with the research by Kane et al. (2019), transformational leaders can accelerate the adoption of digital technologies through employee empowerment and rapid decision-making.

Leaders with a clear vision and the ability to motivate employees can help organizations adapt more effectively to rapid technological changes. As emphasized by Bass & Avolio (1994) transformational leaders play a crucial role in motivating employees to innovate and embrace technological changes. Transformational leaders not only inspire but also provide strategic direction in facing rapid changes in the digital era Yukl (2013). For instance, García-Morales et al. (2012) demonstrate that transformational leadership can also create an environment that encourages creativity and experimentation, which is vital in navigating technological uncertainties.

5.2 Learning Agility as a Mediator

Based on the mediation test results, after Learning Agility (LA) was included as a mediator, the direct influence of TL on DTA decreased from 0.505 to 0.126 and became insignificant with a value of 0.281. This indicates that LA mediates the relationship between TL and DTA, suggesting full mediation. This aligns with the findings of Sull (2018) which show that companies emphasizing the development of Learning Agility at all organizational levels are better prepared to face digital challenges and can move quickly in implementing new technologies.

Therefore, Learning Agility not only supports the effectiveness of transformational leadership but also plays a crucial role in the success of digital transformation adaptation. With Learning Agility as a mediator, transformational leadership has a stronger influence in helping organizations adapt to digital changes. These findings support Hypothesis H2, which states that Learning Agility mediates the relationship between Transformational Leadership and Digital Transformation Adaptation.

6. Conclusion

This study finds that Transformational Leadership has a significant positive influence on Digital Transformation Adaptation, with Learning Agility acting as a full mediator in this relationship. This indicates that visionary and inspirational leaders can drive digital transformation adaptation

in organizations, especially when accompanied by employees' capabilities to learn and adapt quickly. Overall, these results support the theories of Leadership and Dynamic Capabilities, both of which play a vital role in supporting organizational success in facing digital changes.

The practical implications of this study suggest that organizations aiming for success in digital transformation adaptation should invest in developing transformational leadership styles and promoting Learning Agility among their employees. Leaders need not only to inspire and motivate employees but also to create an environment that supports continuous learning. By enhancing Learning Agility, employees will more easily adapt to technological changes, thus accelerating the effective digital transformation process.

However, this study also has several limitations. The data used in this research is limited to one industrial sector, specifically digital companies in a certain region, which may restrict the generalizability of the findings to other sectors or regions. Additionally, this research employs a quantitative method with a cross-sectional approach, making it unable to explore the changing dynamics over time. External factors such as company policies and economic conditions that may also influence the results were not further analyzed.

Therefore, future research is recommended to expand the scope to include various industrial sectors and geographical regions to enhance the generalizability of the findings. Longitudinal studies could also be conducted to understand how Transformational Leadership, Learning Agility, and digital adaptation evolve over time. Furthermore, it is essential to investigate the influence of external factors such as organizational policies, corporate culture, and economic conditions on digital transformation adaptation. Adding qualitative analysis may also provide deeper insights into how leadership and dynamic capabilities operate within the context of digital transformation.

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