Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 5, 187-196
2025
Publisher: Learning Gate
DOI: 10.55214/25768484.v9i5.6812

The influence of financial constraints and firm age on firm performance: The mediating effect of digital transformation

Cecilia Angelina[1], Ni Putu Andhini Pranadia Putri[2], Toto Rusmanto[3*]
[1,2,3]Department of Accounting, School of Accounting, Bina Nusantara University, Jakarta, Indonesia;
cecilia.angelina@binus.ac.id (C.A.) ni.putri004@binus.ac.id (N.P.A.P.P.) trusmanto@binus.edu (T.R.)

Abstract: Amid the increasing challenges of digital transformation, Indonesia's non-cyclical consumer sector faces difficulties in terms of innovation and competitiveness. This sector covers primary consumer needs that are resilient to economic crises but faces high demands for innovation and competition. This study explores the effect of financial constraints and firm age on firm performance, with digital transformation as a mediating variable. Based on empirical evidence from 210 companies from 2019-2023 analyzed using quantitative methodology with MAXQDA and STATA, the results show that financial constraints significantly negatively impact firm performance, reflecting the difficulty of obtaining funding for strategic investments, including digital transformation. Although expected to mediate the relationship, digital transformation did not show a statistically significant effect. Firm age provides stability through experience but faces challenges in adapting to technological changes and dynamic markets. The practical implication is that companies must allocate funds more efficiently for digitalization. Investors should consider digitalization readiness and evaluate the firm's financial constraints before investing because limited funds can hinder innovation and growth. The government also needs to encourage access to digital funding to accelerate the transformation of this sector.

Keywords: *Consumer non-cyclical, Digital transformation, Financial constraints, Firm age, Firm performance.*

1. Introduction

The rapidly developing digital era has made companies worldwide face high-cost demands to innovate and compete competitively, especially in the manufacturing sector, including the non-cyclical consumer sector. This sector provides basic needs that consumers will purchase despite unstable economic conditions. Non-cyclical consumer companies are companies that produce primary products and services. According to Utami [1] the non-cyclical consumer sector is defensive and can survive economic crises. This is supported by the statement of Surtiningsih and Wijaksana [2] that non-cyclical consumer companies have good opportunities in the future because they are not too affected by poor economic conditions.

Over time, the company's financial condition will fluctuate, which can ultimately give rise to financial constraints. Financial constraints occur when a company experiences limitations in accessing funds or financing to support certain investment activities. Cheng, et al. [3]; Hennessy and Whited [4] highlight that financial constraints can arise due to various factors such as credit constraints, corporate taxes, inability to borrow, difficulty in issuing equity, unavailability of bank loans, or low asset liquidity [5]. The urgent need or demand to innovate toward increasingly sophisticated digitalization often triggers the emergence of financial constraints. Many companies have carried out digital transformations that require digital technology and tools to keep up with the times, so the need for digital investment is increasing.

History: Received: 19 February 2025; Revised: 20 April 2025; Accepted: 23 April 2025; Published: 3 May 2025
* Correspondence: trusmanto@binus.edu

Many researchers define digitalization from various perspectives. Kaplan, et al. [6] define digitalization or digital transformation as changes related to the application of digital technology across different aspects of human society Kaplan, et al. [6]. On the other hand, Yoo, et al. [7] define digital transformation as a combination of digitization and digital innovation processes to improve existing products through more sophisticated capabilities [8]. Companies carry out digital transformation with the hope of further development, especially in improving performance that will benefit the company, stakeholders, and shareholders. Implementing this digital transformation will have a positive impact, such as increasing productivity, effectiveness, and product or service innovation. It will attract stakeholders and shareholders to invest their shares and help the company avoid financial constraints.

As the firm ages, the experience and knowledge it gains will increase, thereby improving operational efficiency and the ability to adapt. More mature companies are generally better able to manage risks and take advantage of opportunities so that firm performance can improve. As evidence, older companies experience increased productivity, profitability, larger firm size, lower debt ratios, and higher equity ratios. Furthermore, older firms are better able to convert sales growth into subsequent growth of profits and productivity [5].

Two companies are related to the research variables: PT Kino Indonesia (KINO) and PT Gudang Garam (GGRM). KINO initially penetrated the article through a digital platform to market daily necessities. However, because the company's leverage is relatively high, funding digital innovation becomes challenging. The emergence of this financial constraint reduces the company's space, especially when making long-term investments that affect profitability. Then, there is GGRM, which was established in 1958. With the wealth of experience gained, this company has a competitive advantage in dominating the domestic market. Here, firm age helps maintain performance stability even though the company faces regulatory and competitive pressures.

Teece, et al. [9] Dynamic Capabilities Theory is intimately tied to digital transformation. The ability of a business to innovate and adapt in a changing business environment is the main focus of this idea. Companies in the age of technology, for example, invest more in software or additional technological devices to adapt and boost productivity. According to the Resource-Based View (RBV) theory, a company's ability to be successful is based on its resources, which include money, expertise, and technology. Investment in digital transformation is limited by financial constraints, which impedes performance and innovation. Conversely, the firm's age provides valuable experience and reputation, which helps improve performance, mainly when supported by technological advances.

This paper examines the impact of financial constraints and firm age on firm performance. In addition, we examine whether digital transformation, which influences a mediating variable, will affect the relationship between financial constraints and firm performance. Therefore, this study aims to provide theoretical and practical contributions to understanding the dynamics of firm performance, especially in the era of rapid digitalization.

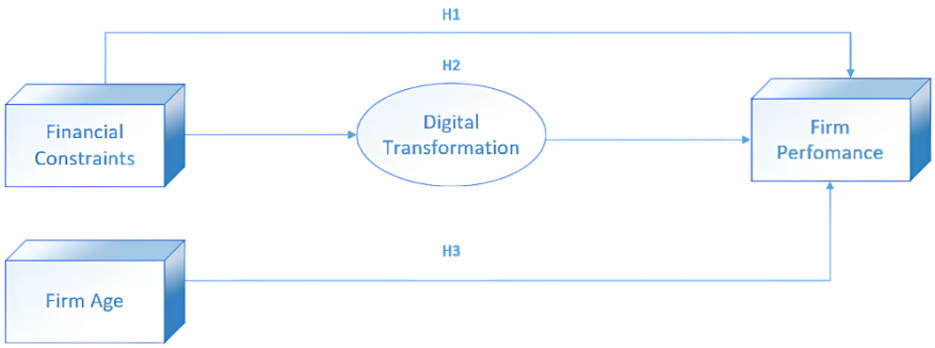

Figure 1.
Conceptual Framework.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 5: 187-196, 2025
DOI: 10.55214/25768484.v9i5.6812

1.1. Research Questions

1. Does financial constraint affect firm performance?
2. Does digital transformation mediate the relationship between financial constraint and firm performance?
3. Does firm age affect firm performance?

2. Literature Review

2.1. Financial Constraints on Firm Performance

Companies that have better access to finance have better firm performance. When companies experience financial constraints, they will also have difficulty investing, which will hamper the company's development and growth and will certainly also impact firm performance [10]. The impact of Financial Constraints can also hinder companies from investing in digital technology, which will ultimately also have an impact on firm performance. Suppose the company can overcome the existing financial constraints [10]. In that case, it is likely to carry out digital transformation to impact operational efficiency, expand the market, and encourage existing innovation.

As explained in the meta-analysis study by Putra [5] financial constraints were repeatedly identified to have a negative impact on firm performance. These constraints hamper business development and investment and limit firms' ability to innovate and digitally transform, having a long-term impact on operational efficiency and competitiveness. Regarding these findings, this study aims to examine a similar relationship in the context of the consumer non-cyclical sector in Indonesia.

H_1: Financial constraint significantly negatively affects firm performance.

2.2. Digital Transformation as a Mediator between Financial Constraints and Firm Performance

Financial constraints have an impact that can also hinder companies from investing in digital technology, which will ultimately also have an impact on firm performance. Suppose the company has been able to overcome the existing financial constraints. In that case, it is likely to carry out digital transformation to influence operational efficiency, expand the market, and encourage existing innovation. Digital transformation integrates technology into various aspects of a company's operations to improve efficiency, competitiveness, and innovation [11]. Companies that can integrate digital technology into operational processes in all sectors will better survive in the digital era in the modern era.

Based on previous research, digital transformation plays a significant role as a mediator between financial constraints and company performance. This study shows that companies that can overcome financial constraints are more likely to invest in digital transformation, which ultimately improves operational efficiency, expands markets, and enhances innovation. Research also emphasizes that the implementation of digital technology in a company's operational processes can increase a company's efficiency, competitiveness, and innovation capabilities. Therefore, the hypothesis proposed in this study refers to these findings, as explained in related literature.

H_2: Digital transformation mediates the relationship between financial constraint and firm performance.

2.3. Firm Age on Firm Performance

Firm Age is often considered a significant factor that can affect Firm Performance. Companies that have been established for a long time have more experience in many things, which certainly makes them able to face market challenges more effectively [12]. In manufacturing companies, especially in the non-cyclical consumer sector, it will have an impact because older companies certainly have much experience regarding market share, such as types of goods or foods that are often in demand by consumers, better packaging processes, and many other things that can increase the company's reputation. However, on the other hand, younger companies are often more innovative and responsive in carrying out company activities [12].

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 5: 187-196, 2025
DOI: 10.55214/25768484.v9i5.6812

Referring to the research that has been explained previously, the age factor of the company plays a significant role in determining the firm's performance, both through the experience of the old company and the innovation produced by the new company. Therefore, this hypothesis is formulated by considering the findings and perspectives presented in this paper, which explains that the age of the company can have a positive or negative influence on the firm's performance depending on the context and industry.

H_5. Firm age significantly negatively affects firm performance.

2.4. Resource-Based View (RBV)

Resource-Based View (RBV) was proposed by Barney [13] who stated that a company's competitive advantage depends on its tangible and intangible resources. Companies with adequate financial resources can distribute finances for more strategic investments and technology development. If the company faces financial constraints, it will hinder investment in digital technology and can hurt firm performance. Digital transformation is also capable of more innovative operational efficiency, thus helping to improve firm performance. In addition, firm age describes the experience and reputation to maintain and improve firm performance. Thus, RBV theory emphasizes the importance of resources such as financial capital, knowledge, and digital technology in supporting improved firm performance.

2.5. Dynamic Capabilities Theory

Dynamic Capabilities Theory was proposed by Teece, et al. [9] which states that companies with dynamic capabilities will be better able to respond to market and environmental changes quickly. Three aspects of dynamic capabilities are mentioned: sensing, seizing, and transforming. Through digital transformation, companies can detect emerging opportunities and challenges (sensing), where firm age affects the response - older companies tend to be experienced, while younger companies are more innovative. Seizing good financial access allows companies to take advantage of opportunities faster, while financial constraints encourage efficiency and creativity. Digital transformation helps companies change their business models to be more modern and efficient (transforming), thereby improving performance and encouraging innovation.

3. Data and Methodology

3.1. Data Sources

This study uses a quantitative method using MAXQDA and STATA software. We take data from several sources: Annual Reports, Sustainability Reports, The Official Website, and Refinitiv. Then, it will be processed in MAXQDA to see the frequency of keywords and in STATA to test the relationship between independent and dependent variables.

The data we use comes from the non-cyclical consumer sector in Indonesia in the period 2019 - 2023. The final dataset comprises 210 observations. Here are some of the company requirements that we will use in this study:

Table 1.
Sample of observations.

Sample	No
Listed company in Refinitiv	127
Not digitally transformed by 2019	85
Number of observed data	42 companies for the last 5 years

3.2. Model Specification

The model specification for this study is as follows:

$$FirmPerformance_{it} = \alpha + \beta_1 FinancialConstraints_{it} + \epsilon_{it} \quad (1)$$

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 5: 187-196, 2025
DOI: 10.55214/25768484.v9i5.6812

$$FirmPerformance_{it} = \alpha + \beta_1 FinancialConstraints_{it} + \beta_2 DigitalTransformation + \epsilon_{it} \quad (2)$$

$$FirmPerformance_{it} = \alpha + \beta_1 FirmAge_{it} + \beta_2 FirmSize + \beta_3 Leverage + \beta_4 Profitability + \epsilon_{it} \quad (3)$$

3.3. Variables

3.3.1. Dependent Variable

3.3.1.1. Firm Performance (FP)

Firm performance is measured using Tobin's Q, a widely used indicator in corporate finance that compares the market value of a firm to the replacement cost of its assets. Tobin's Q is calculated as :

$$Tobin's\ Q = \frac{Total\ Market\ Value + Total\ Book\ Value\ of\ Liabilities}{Total\ Book\ Value\ of\ Assets}$$

A Q ratio greater than 1 suggests the market highly values the firm's assets, indicating good performance and growth prospects. A ratio lower than one could imply that the firm's assets are underperforming relative to market expectations.

3.3.2. Independent Variables

3.3.2.1.Financial Constraints (FC)

Financial constraints refer to the limitations firms face in obtaining external financing, which affects their ability to invest in growth opportunities or digital innovation. For this study, Financial Constraints are measured using an index, such as the SA Index. This measurement is based on the method of Hadlock and Pierce [11] who argue that the measurement of the SA Index only requires firm size and firm age. In addition, this method will also help minimize endogeneity problems. Here is the formula for calculating the SA Index:

$$SA = -0.737 \times Size + 0.043 \times Size^2 - 0.04 \times Age$$

3.3.2.2. Firm Age (FA)

Firm Age is an important factor reflecting experience and history a company's. Older firms are generally assumed to have more established market reputations and better access to financing. Firm Age is typically measured as the number of years since the firm was founded and the current year, serving as a proxy for the firm's experience, resources, and institutional memory.

3.3.3. Mediating Variable

3.3.3.1. Digital Transformation (DT)

Digital transformation represents how firms adopt and integrate digital technologies in their operations. For this study, Digital Transformation is measured using the frequency of digital-related keywords found in the firm's annual reports or digital presence (such as websites, social media platforms, etc). The more frequently these digital keywords appear, the higher the degree of digital transformation. This variable acts as a mediator, exploring how financial constraints and firm age affect firm performance through the intermediary of technological adaptation.

3.3.4. Control Variables

3.3.4.1. Firm Size

Firm size is a control variable that takes into account the effect of the scale of operations on performance. Larger firms may have better access to resources, economies of scale, and diversification. Total assets usually measure firm size.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 5: 187-196, 2025
DOI: 10.55214/25768484.v9i5.6812

3.3.4.2. Profitability

The control variable, called profitability, measures how well a company makes money concerning its equity. The Return on Equity (ROE) ratio is used to measure profitability. Regardless of other factors, a higher ROE indicates greater profitability. This means that there is efficient management in using shareholder equity to generate profits and affect business performance.

3.3.4.3. Leverage

The percentage of a company's capital that comes from debt is known as leverage, which will impact the risk and growth potential of the business. Uncontrolled leverage can increase losses or increase profits. The Debt to Asset Ratio (DAR) is used to measure leverage. This ratio provides an overview of how much debt a business has concerning its total assets.

4. Result and Disscusion

Table 2.
Variable definition

Variable Definition		
Category	**Variables**	**Definition**
Independent Variable	Financial Constraints	SA Index
	Firm Age	Current year - Founding year
Dependent Variable	Firm Performance	Tobin's Q
Mediating Variable	Digital Transformation	Logarithm of the total frequency of digital transformation keywords plus 1
Control Variable	Firm Size	Total Asset
	Leverage	Debt Asset to Ratio (DAR)
	Profitability	Return on Equity (ROE)

This section presents statistical data from the research conducted, including:

Table 3.
Summary Statistics of Digital Transformation.

Keyword Search Item					
Key technologies		**Four Dimensions**		**Digitalization**	
IOT	6	Digital Strategy	641	Digital	5468
Teknologi	3446	Digital Applications	36	Digitalisasi	629
Artificial Intelligence	39	Digital Technologies	138	Software	291
Robotic	38	Digital Transformation	139	Hardware	135
Cloud	132			Applications	127
Big Data	40			Strategy	754

Table 4.
Descriptive Statistics.
Summarize financial constraints, firm age, firm performance, digital transformation, firm size, leverage, profitability

Variables	**Observations**	**Mean**	**SD**	**Min.**	**Max.**
Financial Constraints	210	556,679	526,062	-5,23	1740,17
Firm Age	210	54,738	25,824	17	118
Firm Performance	210	5,966	18,615	0,235	203
Digital Transformation	210	6,052	2,922	1	18
Firm Size	210	105,5	60,766	1	210
Leverage	210	33,610	19,082	1	76
Profitability	210	85,229	46,837	1	171

Based on descriptive statistics, financial constraints have an average of 556.68 with significant variations, while the average firm age is 54.74 years with a range of 17-118 years. Firm performance

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 5: 187-196, 2025
DOI: 10.55214/25768484.v9i5.6812

averages 5.97, indicating high-performance disparities. Digital transformation averages 6.05, reflecting varying technology adoption. Firm size averages 105.5, and leverage averages 33.61, indicating varying operations and debt policy scales. Profitability averages 85.23, with significant variations. These data indicate differences in company characteristics that can affect performance, digital transformation, and financial condition.

Table 5.
Regression.

The impact of financial constraints on firm performance						
Financial Constraints	**Coefficient**	**Std. error.**	**t**	**P>|t|**	**[95% conf. interval]**	
Firm Performance	-7,160532	1,89558	-3,78	0.000***	-10,89754	-3,423521
_Cons	599,4003	36,97353	16,21	0.000***	526,5094	672,2912

Note: ***, **, and, * indicate 1%, 5%, and 10% significance levels.

The regression results show a significant negative relationship between firm performance and financial constraints, with a coefficient of -7.160532 and a p-value of 0.000. Although the R-squared is only 0.0642, indicating that only 6.42% of the variation in financial constraints can be explained by firm performance, this relationship is still significant. The constant of 599.4003 indicates the value of financial constraints when firm performance is zero. Overall, improving firm performance can reduce financial constraints, although the explanation is limited.

This table shows that the greater the financial constraint experienced by the company, the worse the firm's performance. This finding supports the first hypothesis (H1), which states that financial constraints negatively affect firm performance.

Table 6.
Digital transformation as a mediating variable between financial constraints and firm performance.

Firm_Performance	**Coefficient**	**Std error**	**t**	**P> ItI**	**[95% conf. interval]**	
Financial_Constraints	-0.0090316	0.0023661	-3.82	0.000***	-0.0136962	0.0043669
Digital_Transformation	0.6555624	0.425977	1.54	0.125	-0.1842471	1.495372
_Cons	7.026.173	3.130.532	2.24	0.026**	0.8543604	13.19799

Note: ***, **, and, * indicate 1%, 5%, and 10% significance levels.

The regression results show that financial constraints negatively and significantly affect firm performance (coefficient = -0.0090; p = 0.000), while digital transformation has a positive but insignificant effect (coefficient = 0.6556; p = 0.125). The constant of 7.0262 is significant (p = 0.026). The model test with F-statistic 8.37 (p = 0.0003) shows a significant model, although R-squared is only 0.0748, so most of the variation in firm performance has not been explained by this model.

The second hypothesis (H2) is not supported by the data. This indicates that digital transformation has not effectively reduced the negative impact of financial constraints on firm performance. One potential reason is the lack of investment in effective digital technology, such as implementing integrated digital systems, using big data analytics, or developing adequate technological infrastructure to support the company's operational processes and strategic decision-making.

Table 7.
The impact of firm age on firm performance with control variables.

Firm_Age	**Coefficient**	**Std error**	**t**	**P> ItI**	**[95% conf. interval]**	
Firm_Performance	-0.1788773	0.10057	-1.78	0.077*	-0.3771614	0.0194068
Firm_Size	-0.036797	0.0305706	-1.20	0.230	-0.0970702	0.0234761
Leverage	0.1023026	0.0912948	1.12	0.264	-0.0776947	0.2822990
Profitability	0.1315776	0.0369096	3.56	0.000***	0.0588065	0.2043487
_Cons	4.503.489	6.054.742	7.44	0.000***	3.309.734	5.697.244

Note: ***, **, and, * indicate 1%, 5%, and 10% significance levels.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 5: 187-196, 2025
DOI: 10.55214/25768484.v9i5.6812

The results of the analysis show that firm performance (coefficient = -0.1789; p = 0.077), firm size (coefficient = -0.0368; p = 0.230), and leverage (coefficient = 0.1023; p = 0.264) have a relationship with firm age but are not statistically significant. In contrast, profitability is positively and significantly related to firm age (coefficient = 0.1316; p = 0.000). The model test shows an F-statistic of 4.63 (p = 0.0013), with an R-squared of 0.0828. Although the model is significant overall, only 8.28% of the variation in firm age is explained by these variables.

The third hypothesis (H3), according to which a firm's performance tends to deteriorate with age, is supported by this study. This is in line with earlier research that indicated a strong negative correlation between firm age and performance, such as The Impact of Age on Firm Performance. These relationships point to a concept in the literature, indicating that larger companies are frequently struggling with innovation. These challenges include operational inefficiencies like challenging organizational structures, bureaucratic obstructions that impede decision-making, and trouble luring in fresh, creative talent.

Table 8.
Heteroscedasticity.

Firm_Performance	Coefficient	Std error	t	P> ItI	[95% conf. interval]	
Financial_Constraints	-0.0093228	0.002364	-3.94	0.000***	-0.0139835	-0.0046622
Firm_Age	-0.0950779	0.0481568	-1.97	0.050**	-0.1900185	-0.0001372
_Cons	1.636.041	3.277.431	4.99	0.000***	9.898.981	2.282.183

Note: ***, **, and, * indicate 1%, 5%, and 10% significance levels

The regression results show that the model is significant overall (F = 9.18; p = 0.0002), with financial constraints (coefficient = -0.0093; p = 0.000) and firm age (coefficient = -0.0951; p = 0.050) hurting firm performance. The intercept is 16.36 (p = 0.000). The R-squared value of 0.0815 indicates that only 8.15% of the variation in firm performance is explained by this model, so other factors affect firm performance.

Table 9.
Multicolinearity.

Variable	VIF	1/VIF
Financial_Constraints	1.01	0.994143
Firm_Age	1.01	0.994143
Mean VIF	1.01	

The results of the multicollinearity test show that the VIF (Variance Inflation Factor) for both variables, financial_constraints and firm_age, is 1.01 each. A VIF value close to 1 indicates no significant multicollinearity problem between the two variables. Usually, a VIF value above 10 indicates serious multicollinearity, so these two variables do not have a high correlation that can affect the regression results.

5. Conclusion

The results of this study indicate that financial constraints have a significant negative impact on the performance of companies in Indonesia's non-cyclical consumer sector. Difficulty in obtaining funding limits the ability of companies to invest in long-term strategies, including digital transformation. Although, in theory, digital transformation can be a factor that improves firm performance, in this study, the mediating role of digital transformation was not proven significant. This indicates that digital transformation is not the only solution to improve firm performance, especially in conditions where organizational readiness, access to infrastructure, and policy support are still major obstacles.

Several factors that can explain this finding are limited access to technological infrastructure, low organizational readiness, and limited digital expertise within the company. Many companies in the non-cyclical consumer sector are still more focused on product innovation than on changing their business

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 5: 187-196, 2025
DOI: 10.55214/25768484.v9i5.6812

models as a whole. This causes digital transformation to often only be implemented partially without a strategy that is truly integrated with long-term business goals. In addition, older companies, although they have more stable experience and resources, tend to be slower to adopt technological changes than younger companies and are more flexible in responding to market dynamics.

From the external side, government regulations and policies also play an important role in the success of digital transformation. Currently, incentives provided to encourage technology adoption in the non-cyclical consumer sector are still limited. In fact, without adequate policy support, companies with financial constraints will find it increasingly difficult to invest in digitalization. The efficacy of digital transformation in this industry is made worse by differences in the efficiency of digital infrastructure throughout Indonesia's various regions.

These results have significant impacts for different parties. For digital transformation to have a bigger impact on business performance, firms must establish a stronger financial control plan. Another significant aspect of this transformation's success is improving the company's capabilities for utilizing and controlling digital technology. A company's growth and competitiveness may be affected by a lack of funding and a deficiency of digital readiness, as a result, investors must think about these factors before investing. In the meantime, the government needs to improve incentives and speed up the development of digital infrastructure to make it easier for companies, especially those with limited funds, to implement technology successfully.

Overall, the advantages of digital transformation in Indonesia's non-cyclical consumer sector have not yet been completely realized, even though it has huge potential to increase company profitability and competitiveness. Companies, investors, and the government need to collaborate closely to overcome funding challenges, improve organizational preparedness, and build an environment that supports sustainable digital transformation to get the best results.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

Copyright:

References

[1] S. Utami, *The impact of economic crises on the non-cyclical consumer sector: A defensive strategy*. Jakarta, Indonesia: Springer, 2020.

[2] A. Surtiningsih and L. Wijaksana, *Opportunities and challenges for non-cyclical consumer companies in unstable economic conditions*. Jakarta, Indonesia: Gramedia Pustaka Utama, 2015.

[3] I. H. Cheng, C. A. Hennessy, and T. M. Whited, "External financing and the dynamics of cash holdings," *Review of Financial Studies*, vol. 27, no. 3, pp. 671–710, 2014.

[4] C. A. Hennessy and T. M. Whited, "How costly is external financing? Evidence from a structural estimation," *The Journal of Finance*, vol. 62, no. 4, pp. 1705–1745, 2007.

[5] M. A. Putra, "Impact of digital transformation and big data analytic capabilities on the Indonesian bank profitability," *Journal of Economics, Business, & Accountancy Ventura*, vol. 25, no. 2, pp. 135-144, 2022. https://doi.org/10.14414/jebav.v25i2.3121

[6] B. Kaplan, P. Waste, T. Wood-Harper, and J. DeGross, "Digital transformation: The application of digital technology across various aspects of society," *Journal of Information Technology*, vol. 19, no. 2, pp. 111–123, 2004.

[7] Y. Yoo, R. J. Boland, K. Lyytinen, and A. Majchrzak, "Organizing for innovation in digital transformation: A framework and insights," *Journal of Strategic Information Systems*, vol. 21, no. 3, pp. 235–247, 2012.

[8] H. Liu and C. Xu, "Do Sin Firms Commit Accounting Sins?," *Journal of Accounting, Business and Management*, vol. 30, no. 2, pp. 1-18, 2023.

[9] D. J. Teece, G. Pisano, and A. Shuen, "Dynamic capabilities and strategic management," *Strategic Management Journal*, vol. 18, no. 7, pp. 509–533, 1997.

[10] F. Men, F. Dong, Y. Liu, and H. Yang, "Research on the impact of digital transformation on the product R&D performance of automobile enterprises from the perspective of the innovation ecosystem," *Sustainability*, vol. 15, no. 7, p. 6265, 2023. https://doi.org/10.3390/su15076265
[11] C. J. Hadlock and J. R. Pierce, "New evidence on measuring financial constraints: Moving beyond the KZ index," *Review of Financial Studies*, vol. 23, no. 5, pp. 1909-1940, 2010. https://doi.org/10.1093/rfs/hhq009
[12] S.-S. Chen and Y. Wang, "Financial constraints and share repurchases," *Journal of Financial Economics*, vol. 105, no. 2, pp. 311-331, 2012. https://doi.org/10.1016/j.jfineco.2012.03.003
[13] J. B. Barney, "Firm resources and sustained competitive advantage," *Journal of Management*, vol. 17, no. 1, pp. 99–120, 1991. https://doi.org/10.1177/014920639101700108

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 5: 187-196, 2025
DOI: 10.55214/25768484.v9i5.6812