

Research Article

# The Evolution of Technology in Digital Business Transformation and Its Impact on Consumer Behavior

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## ABSTRACT

Business actors in the digital era today are required to innovate and adapt to the ever-changing demands of consumers. To keep up with the competition and remain relevant in the market, digital transformation is needed to support business existence. This research aims to understand how the implementation of business digital transformation affects consumer behaviour and how the establishment of business strategies influences consumer behaviour. This type of research is descriptive with a quantitative approach. Quantitative research with a comparative approach. The research data sources include primary data obtained from the distribution of questionnaires and secondary data through e-commerce development data, household consumption data for 2000 – 2023, and community consumption component data with comparative data for 2008 and 2018, as well as determining business strategies. The research sample consisted of 100 respondents using an accidental sampling technique. The variance analysis in this study uses SEM-PLS, or Structural Equation Modeling with Partial Least Square. The research results show that digital transformation affects consumer behaviour. Transformation has the potential to positively impact productivity and drive inclusive economic growth and business sustainability. Business strategies influence consumer behaviour. A good plan allows companies to be more responsive to changes in consumer needs, create attractive differentiation, and leverage technology to provide a better experience. Therefore, having a clear and focused competitive strategy is crucial to ensure the company remains competitive and relevant in the ever-changing market.

**Keywords:** Digital business transformation; Technological evolution; Consumer behavior; Digital technology; Business innovation

## 1. INTRODUCTION

The development of MSMEs in Indonesia has experienced a significant increase, especially now that the government is focusing on reducing poverty and unemployment rates. One form of MSME development is the implementation of digital transformation that changes the global economy and society paradigm. This research is motivated by the efforts of adaptive business actors to adjust to environmental changes by transforming conventional processes into digital ones, thus encouraging entrepreneurs to create product and service innovations using innovative technology. Digitalization not only causes services to become digital but also changes how people think and manage businesses (Nugraha & Wahyuhastuti, 2017). The development of e-commerce is driven by the use of smartphones and the Internet, which is related to implementing digital transformation (Firmansyah, 2017). Based on the Press Release by Kominfo dated December 28, 2023, the government has accelerated the national digital transformation since 2020 to realize a sustainable economy through the digital economy. In 2030, it is estimated that the digital economy will reach USD210 billion to USD360 billion. The national digital economy is supported by the e-commerce, transportation and food, online travel, and online media sectors (Kominfo, 2024).

E-Commerce is an alternative for consumers to make online transactions to meet their needs (Zubaidah & Latief, 2022). The benefits obtained by business actors who transform into Go Online are expected to open up new market opportunities so that they can reach more consumers with the hope of increasing the percentage of sales (Wijoyo et al., 2021). The more intensive the promotional activities carried out by business actors through e-commerce, the greater the potential to attract consumer interest. The advancement of information technology marks an era that is increasingly connected to digital technology. Digital transformation is an innovative step for companies to adapt to environmental changes and meet future needs to survive and generate profits (Wahyuningsih, 2021). Digitalization in small and medium enterprises has been proven to increase efficiency by an average of up to 3.3% per year, primarily by reducing operational costs. (Koch et al., 2014).

Digitalization of business has changed consumer habits from offline transactions to online purchases. Consumer behaviour refers to searching, purchasing, using, evaluating and disposing of products or services to meet needs (Schiffman et al., 2011). This dynamic behaviour continues to evolve according to consumer needs and desires. Consumer behaviour characteristics change over time and are influenced by motivation, expectations, perceptions, cultural environment, geography, and others (Ningsih, 2010). As a result of these changes, business actors must adapt to consumer behaviour that continues to evolve or risk losing competitiveness. (Siregar, 2022) . Factors such as age, gender, educational background, occupation, and culture also influence consumer needs and wants. Therefore, Consumer behaviour can only be generalized to a specific population and time (Putra & Nursal, 2022). The digital revolution has influenced almost every aspect of human life. (Chopra et al., 2021) . Research shows consumer behaviour when shopping directly in stores in a study of traditional consumers and technology users (Shareef et al., 2016).

One of the factors related to purchasing decisions via e-commerce is internet literacy related to website design, which includes interaction between consumers, navigation, order processing, and provision of information. (Wolfenbarger & Gilly, 2003) . Consumers first see the web design and then continue shopping by looking at the product and considering the price. A good website design is one factor that increases customer satisfaction (Shergill & Chen, 2005). Every business actor has a strategy for increasing sales through promotional activities. The intensive promotion carried out by the marketplace impacts the high purchasing power and level of consumerism in society related to impulse buying decisions (Sulistiyowati et al., 2022). According to (Abbasi, 2017), impulse buying is a spontaneous and unexpected consumer tendency in shopping behaviour, causing consumers to no longer have reason to make purchases.

Research on the evolution of technology and business digitalization and its impact on consumer behaviour has been widely conducted and is not new. The analysis methods used in previous studies also vary. (Ahmad et al., 2020) conducted research on the evolution of technology in the industrial era from 1.0 to Industry 4.0, which began with introducing changes and technological trends that influence consumer behaviour. Technological evolution motivates changes in consumer behaviour analysis in the consumer decision-making process. In line with research conducted by (Gujrati et al., 2023) concluded that social media has an important role in consumer behaviour that influences purchasing decisions. The digital market has captured a wider market share by exploring business models in a highly competitive market. The digitalization factor has changed consumer behaviour from traditional markets to online markets.

Different from research (Chopra et al., 2021) related to the current digital marketing trend by utilizing the help of influencers as a promotional media that can influence purchasing decisions. Strategic steps in marketing practitioners to reach relevant consumers by using the role of influencers with the right content distribution strategy. Other research (Conick, 2018) shows that influencer marketing is built to win consumer trust compared to traditional online advertising. Based on information about the above phenomenon, the study aims to know the resulting influence from the impact implementation of digital transformation towards behaviour consumers, influence determination strategy business to behaviour consumers, and influence implementation digital transformation and determination strategy business to behaviour consumers.

## 2. RESEARCH METHOD

The type of research used is descriptive with a quantitative approach. Quantitative. Operational measurement of variables through digital transformation data, business strategy and consumer behaviour. Descriptive data in this study are GDP data on the growth of Indonesian household consumption based on current prices according to expenditure (per cent), user trends and e-commerce penetration rates in Indonesia in 2017 - 2023, surveys on the impact of using digital platforms, comparison of consumer behaviour with comparative data on household consumption in 2000 - 2009 and 2010 - 2023, and data on household consumption components, as well as determining strategies in maintaining business existence. The data source for this study uses primary data from distributing questionnaires using a Likert scale. The sampling technique used was the *accidental sampling technique* with 100 respondents. The data analysis in the study used Partial Least Square (PLS). PLS is an SEM approach with a covariance basis that becomes based on variants (Ghozali, 2006). PLS analysis was used to count the direct and indirect influence on multi-path variables, testing the outer and inner models.

## 3. RESULTS AND DISCUSSION

### 3.1 Descriptive Test

The development of business digitalization has changed the way consumers behave, from offline transactions to online purchases. E-commerce is one of the alternatives for consumers in online transactions to meet their needs (Zubaidah &

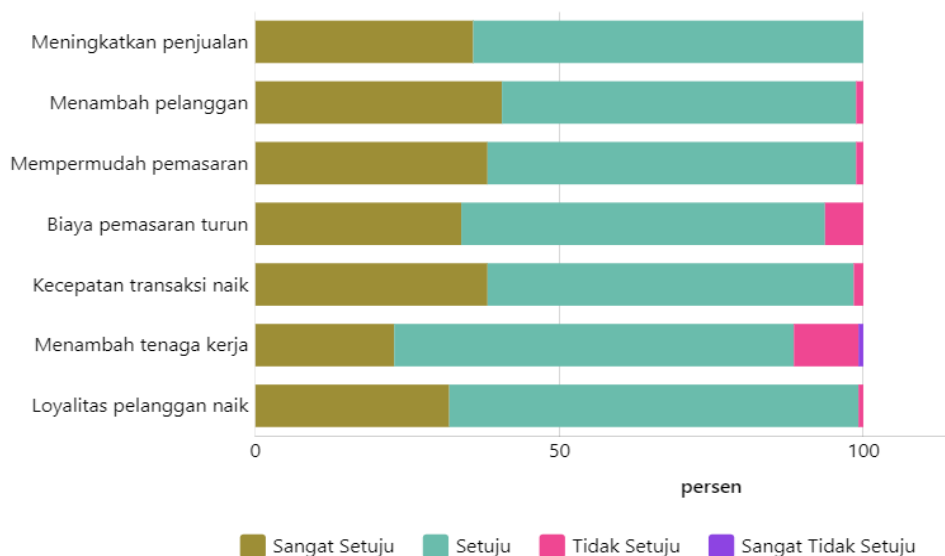
Latief, 2022). Implementing digital transformation is a process of company innovation in dealing with environmental changes and anticipating future demands to continue to exist and be profitable (Wahyuningsih, 2021).

**Table 1.** E-Commerce Users and Penetration Rate in Indonesia 2017-2023

No	Year	E-Commerce User Penetration (percent)	E-Commerce Users (soul)
1	2017	52.5	139,000,000
2	2018	57.6	154,100,000
3	2019	62.2	168,300,000
4	2020	66.3	181,500,000
5	2021	69.9	193,200,000
6	2022	72.9	203,500,000
7	2023	75.3	212,200,000

Sources: databoks.katadata.co.id

Several years later, the trend of Indonesian e-commerce users developed fast. Growth This will continue for several years to come. Statistics show that the number of e-commerce users in Indonesia continues to increase. In 2017, e-commerce users were recorded as many as 139 million, then increased by 10.8% to 154.1 million in 2018, increasing to 168.3 million in 2019 and reaching 212.2 million in 2023. The e-commerce penetration rate is also increasing significantly, reaching 75.3 % of the total market by 2023. Among various sectors, the fashion industry has become the most significant contributor to income in e-commerce, with total revenue reaching \$11.7 billion in the same year. Digitalization businesses can potentially increase the number of customers, simplify the marketing process, and reduce marketing costs. Digital transformation can also help MSMEs develop better. In addition, using digital platforms can speed up the transaction process, create new jobs, and increase customer loyalty. However, business digitalization also challenges some MSMEs that have not switched to a digital business model. Here, the survey results show the impact of using digital platforms on MSMEs.



**Figure 2.** Survey of the Impact of Using Digital Platforms

Survey results show that 64.17% of respondents agree, and 35.83% strongly agree that digital platforms can increase sales and expand market share. As many as 58.27% of respondents agree, and 40.55% strongly agree that digital platforms can increase customers. In addition, 60.63% of respondents agree, 38.19% strongly agree, and 1.18% disagree that digital platforms simplify goods' marketing and distribution process. Related savings cost marketing, 59.84% of respondents agree, 33.86% strongly agree, and 6.3% disagree agree that matter This can achieved through service expedition. As many as 60.24% of respondents agree, 38.19% strongly agree, and 1.57% disagree that digital platforms can speed up the amount of transaction purchases. In digital transformation, 65.75% of respondents agree, 22.83% strongly agree, 10.63% disagree, and 0.79% strongly agree. I disagree that businesses that switch to digitalization will open more opportunities for work. Lastly, 67.32% of respondents agree, 31.89% strongly agree, and 0.79% disagree agree that using digital platforms can increase loyalty to customers.

Industrialization has developed gradually, and digitalization is the result of this process that started from the first, second, third and fourth industrial revolutions. According to (Deguchi et al., 2020), The first industrial revolution occurred in England in the 18th century, driven by the mechanization of manufacturing equipment and increased productivity in textiles and other industries. The second industrial revolution occurred around the turn of the 20th century, with mass production based on the division of labour. In the 1970s, electronic technology began the third industrial revolution, and manufacturers switched to electricity generated from fossil fuels. At this time, manufacturers used robotic technology to increase productivity by automating some manufacturing processes. The information-knowledge data cycle was built as a sign of the fourth industrial revolution (4.0). At this stage, manufacturers collect data after product sales to determine consumers' wants and build relationships with them. In addition, with the help of artificial intelligence (AI), added value is created through mass customization in the era of Industry 4.0.

The shift from sector agriculture to industry or manufacturing has the potential to improve the quality of life worldwide, which is influenced by technological advances driven by the industrial revolution that continues to progress yearly. Every aspect of business, including the consumer lifestyle sector, is influenced by advances in digital technology. A consumptive lifestyle is when someone likes to spend money without considering what they are doing. Online shopping, ordering food online and product delivery on demand. Thus, it can help people meet their consumption needs efficiently. Digitalization hits almost all aspects of human life, from business, government, education, health, and socio-politics. However, digitalization in the business world has become a catalyst and driver that influences the progress of digitalization in other fields. Digitalization helps businesses produce more efficient and effective performance. According to (Schallmo et al., 2018), digitalization uses digital technology and data to improve business, improve revenue, transform business processes, and create a supportive digital business ecosystem.

Phase digital transformation began in 1990 to 2000; the world's people entered the digital era with the emergence of the internet, digital mobile phones, mobile data, laptops, notebooks and so on. This study uses measurements from household consumption data for 2000 - 2022 to see how the comparison of household consumption patterns is influenced by the evolution of technology in digital transformation. In addition, observations are also made on component data consumption public. For know shift components that become the choice priority public in shopping. Consumption data House Indonesian households comprehensively examine all household economic activities, especially production, consumption, investment, and income generated for households within a specific period. The following is household consumption data before the rise of e-commerce with consumption data calculations for 2000–2009. Based on Current Prices According to Expenditure (Percent) 2000 – 2009.

**Table 2.** Distribution of GDP Growth of Indonesian Household Consumption

Year	GDP Usage		Annual Growth Rate
	Food	Not Food	
2000	32.62	29.03	61.65
2001	32.56	30.59	63.15
2002	34.09	33.54	67.62
2003	34.60	33.54	68.14
2004	32.54	34.23	66.77
2005	30.60	33.76	64.36
2006	29.66	33.01	62.67
2007	30.06	33.48	63.54
2008	28.81	31.81	60.62
2009	27.86	30.84	58.70

Source: Central Statistics Agency, processed by researchers (2024)

Household consumption data for 2000 – 2009 states that the average household consumption behaviour pattern is 31.34 in GDP for food use and 32.38 for non-food use. The following is household consumption data for 2010 – 2023, focusing on observations of the development of e-commerce user trends in Indonesia. Based on Current Prices According to Expenditure (Percent) 2010 – 2023. According to data from the Central Statistics Agency (BPS), expenditure consumption on House stairs in Indonesia grew by 4.93% in 2022, increasing compared to growth of 2.02% in the previous year. Thus, the numbers are still lower compared to the average growth consumption of House stairs in 2012-2019 before the COVID-19 pandemic, which reached 5.13%. In 2022, consumption of House stairs in the transportation and communication sector grew by 9.3%, followed by restaurants and hotels by 6.58%, and clothing, footwear and suits the treatment by 4.28%. Meanwhile, food and drink consumption in restaurants grew by 3.42%, spending on housing and equipment and household stairs rose by 2.79%, and consumption in the health and education sector grew by 2.41%. Overall, the consumption House

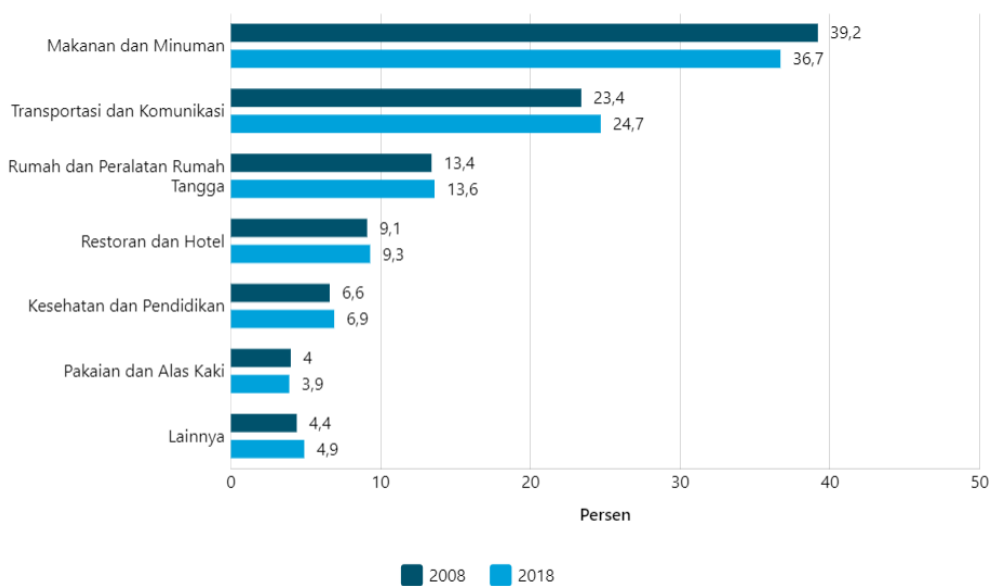
ladder contributes 2.61% against the growth economy nationally, reaching 5.31% in 2022. In addition, in 2021, the components contributed 51.87% to Indonesia's Domestic Gross Domestic Product (GDP).

**Table 3.** Distribution of GDP Growth of Indonesian Household Consumption

Year	GDP Usage							Annual Growth Rate
	Food and Drinks Other Than Restaurants	Clothing, Footwear and Care Services	Housing and Household Supplies	Health and Education	Transportation and Communication	Restaurants and Hotels	Other	
2010	3.85	4.77	4.79	4.69	4.07	4.13	6.32	4.26
2011	2.19	5.27	5.20	5.31	6.57	5.55	19.49	5.05
2012	3.77	6.48	5.87	5.83	6.76	7.17	7.07	5.49
2013	4.34	5.29	5.82	5.72	6.61	5.76	5.74	5.43
2014	4.48	4.61	4.59	5.77	5.79	6.68	5.13	5.15
2015	5.41	4.39	4.81	5.44	4.78	5.00	2.79	4.96
2016	5.34	3.36	4.68	5.47	5.23	5.44	2.42	5.01
2017	5.24	3.37	4.18	5.46	5.38	5.40	2.29	4.94
2018	5.22	4.30	4.63	5.00	5.47	5.63	2.38	5.05
2019	5.16	4.27	4.66	6.60	4.78	5.96	3.09	5.04
2020	0.51	-4.21	2.28	3.09	-9.57	-8.14	-0.65	-2.63
2021	1.46	-0.07	2.19	1.70	2.59	3.87	1.83	2.01
2022	3.46	4.31	2.79	2.41	9.38	6.57	2.70	4.94
2023	3.44	4.47	3.80	3.99	7.59	6.38	2.90	4.82

Sources: Central Statistics Agency, processed by researchers (2024)

Behaviour patterns consumption House ladder 2010-2023 based on development trend e-commerce users in Indonesia show that The Health component has the highest average GDP of 4.75 and the clothes have the lowest average GDP of 3.61. After the changes in the new normal era, the pattern consumption of House stairs in the field transportation and communication increased with a rate growth of 7.59 due to improvements in regulations that govern the transportation and strategy recovery industry. Besides, many people use related digital technologies with service online communication. Improvement This shows that the pattern shopping public has experienced a shift from non-leisure components (needs) mainly eating and drinking) to leisure components (recreation). Comparison of shifts in public consumption based on components (Comparative Data 2008 and 2018).



**Figure 2.** Percentage of Community Consumption Based on Components  
Source: databoks.katadata.co.id

Consumption of public transportation and communication takes note of the improvement that was highest from 2008 to 2018 compared with others. According to the Ministry of National Development Planning/ Bappenas, changes reflect a shift in shopping for the public from non-leisure needs, such as food and Drink, towards leisure needs, such as recreation. Bappenas noted that transportation and communication consumption increased from 23.4% to 24.7%, while consumption For restaurants and hotels rose from 9.1% to 9.3%. On the other hand, consumption Of food and Drink shows a decline to 36.7%. Increase allocation shopping for recreation. This is in line with the growth of internet users, which has reached 112 million people. This trend is visible in growing online transactions by two digits yearly ( yoy ). The Ministry of PPN reported that Indonesia's e-commerce market for goods consumption is experiencing significant growth, reaching US\$ 7.06 billion in 2017. The Indonesian market is currently experiencing a shift from Industry 4.0 to Society 5.0, where understanding consumer behaviour patterns is significant for marketing. Some examples of consumer behaviour patterns in the Society 5.0 era are that consumers will buy goods and services online more often and use the internet more often to buy goods and services. The perpetrator business is expected to understand how to make the product worth it to consumers.

### 3.2 Measurement Model (Outer Model)

The validity test convergent has the objective of knowing how much of a significant influence the indicator is on a variable with an outer loading value received of > 0.5. The validity test discriminant used for the objective is to know how significant the indicator's influence is on the variable itself and variables other with an accepted cross-loading value of > 0.7. Validity test results convergent is as follows:

**Table 4.** Results of Outer Loading and Cross Loading Values

Indicators	Digital Transformation	Strategy Business	Behavior Consumer	Information
TD1	0.625			Valid
TD2	0.774			Valid
TD3	0.823			Valid
TD4	0.605			Valid
SB1		0.894		Valid
SB2		0.784		Valid
SB3		0.773		Valid
PK1			0.721	Valid
PK2			0.685	Valid
PK3			0.884	Valid
PK4			0.792	Valid

Based on table on that outer loading value accepted because of mark is > 0.5. While For cross loading value is accepted , because value > 0.7.

**Table 5.** Construct Reliability Test Results

	Cronbach's Alpha	rho-A	Composite Reliability	Average Variance Extracted (AVE)
Digital Transformation	0.621	0.714	0.811	0.615
Strategy Business	0.766	0.730	0.874	0.622
Behavior Consumer	0.748	0.811	0.868	0.689

Based on **Table 5**, assessed Cronbach's Alpha throughout construct > 0.6, where the mark limit Cronbach's Alpha value that can be accepted is bigger than 0.6. Thus, all constructs have met construct reliability.

**Table 6.** R Square Test Results

	R Square	R Square Adjusted
Behavior Consumer	0.561	0.577

Based on the results obtained in the **Table 6**, the R Square value of the variable Behavior Consumer amounts to 0.561. The magnitude mark explains that the percentage of consumer behaviour can be explained by digital transformation and strategy business of 56.1%, and the remaining 43.9% is explained by other variables not included in the study. If the t-statistic is bigger than 1.96 or the p-value is smaller than 0.05, then the inner model analysis can be considered significant.

**Table 7.** Testing Hypothesis

	Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics	P values	Decision
H1	Digital Transformation -> Behavior Consumer	0.521	0.542	0.075	7,548	0.000	Accepted
H2	Strategy Business -> Behavior Consumer	0.385	0.379	0.066	4.291	0.016	Accepted

### 3.3 Discussion

#### 3.3.1 Influence Digital Transformation Towards Behavior Consumer

Based on the hypothesis test results, we first conclude that the variable Digital Transformation influences the behaviour of consumers. The results show that digital transformation often brings a disruptive change in the method of business walking and needs several adjustments for the company to Keep going, maintain, and improve its competitiveness. Business model changes can maximize benefits from various technologies adopted in digital transformation, such as social media, which has become a medium for communicating with consumers. Technology revolutionizes the method by which the perpetrator industry operates a business, including in aspects of marketing, and changes the pattern of behaviour of consumers when making decisions and purchases. Changes This is seen in the shift pattern in shopping society, from needs based on eating and drinking (non-leisure) to natural recreation (leisure) activities. Accelerating digital transformation in the field economy can become an important strategy to ensure productive economic productivity and move toward the economy's growth. Corporate digital transformation changes how consumers interact with the brand, speeds up making decisions and purchases, and upgrades consumer expectations to convenience, personalization, and responsiveness behaviour: More consumers, technology-based demand, company. Keep going, innovate, adapt, change the dynamic environment, and compete competitively. This research results align with the study (Putri & Marlien, 2022) that digital marketing variables influence positive and significant behaviour on consumers' decision to purchase online, considering wider market reach. Besides, the study (Rozinah & Meiriki, 2020) states that digital marketing has helped MSME actors market products, expanded their market share and reduce cost production costs. Research conducted (Pradiani, 2017) also stated that digital marketing makes it easier in the transaction process. Digital marketing provides profit in the marketing process, including convenience, and costs incurred are higher than those of conventional/traditional businesses.

#### 3.3.2 Influence Strategy Business to Behavior Consumer

Based on the hypothesis test results, it can be concluded that variable strategy in business influences the behaviour of consumers. The results show that a company needs to set a strategy to compete properly because it can influence the behaviour of consumers because it is related to changes in market dynamics and the company's long-term goals. A good strategy allows companies to be more responsive to the needs of consumers, create attractive differentiation, and take advantage of technology to give more experience. Proactive approaches, such as mentoring, product curation, training, power work, and financing, are required to support MSMEs in adapting to development digitalization. With the acceleration of digital transformation, the role of MSMEs can be optimized by improving productivity and driving a growth-inclusive economy. Therefore, owning a clear and focused competition strategy is very important to ensure that the company is appropriate, competitive, and relevant in an ever-changing market. Research results This is in line with a study (Arnold et al., 2022) that states that a deep understanding of the impact of e-commerce on consumer behaviour and strategy is relevant to business so that the company can take the steps required to remain competitive in the digital era. This study's theoretical implications align with the theory of digital marketing, especially the use of online and social marketing. Online and social marketing, according to (Kotler, 2017), is a marketing communication activity that uses electronic media to attract consumers or companies in various forms (pictures, videos, writing, etc.) to increase awareness and company image and sales. This theory is reinforced by the theory of behaviourism (behavioural theory) proposed by John B. Watson, which is the basis of the theory of consumer behaviour because, in today's era in the community, people are very quickly influenced by circumstances because they follow trends so that they are trapped in excessive consumption patterns that are not by needs. This is driven by the desire to show social status and prestige.

## 4. CONCLUSION

The rapid digital transformation trend worldwide, including in Indonesia, has changed people's behaviour in various sectors such as personal life, public administration, industrial structure, and employment. This trend could accelerate

Indonesia's economic progress, with digitalization significantly helping people maintain business continuity. Digital transformation is essential for MSMEs to support economic recovery. Proactive strategies such as mentoring, product curation, employee training, and financing must be implemented to accelerate the adaptation of MSME digitalization. Making the digital economy, especially MSMEs, the main driver of Indonesia's economic growth is very important amidst the challenges of the global economic recession and the impact of geopolitical conflicts. The Ministry and digital platforms can provide training and mentoring to improve digital literacy among MSME actors. MSME actors are also encouraged to join startup communities and digital platforms. In addition, protecting MSME businesses through cyber security is essential in using information technology. Technology has changed how industries do business, including marketing, and consumers make purchasing decisions. People's shopping patterns have changed from non-leisure components (basic needs such as eating and drinking) to leisure components (recreation). Accelerating digital transformation is one way to ensure that the productive economic sector continues to develop to support economic growth. With the acceleration of digital transformation, MSMEs can optimize their role by continuing to direct their efforts towards increasing productivity and inclusive economic growth.

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