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Explaining digital transformation in the food and beverage sector using a behavioral approach

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Abstract: Micro, small, and medium enterprises (MSMEs) have long been the backbones of the economies of developing countries, so efforts are needed to accelerate the recovery of their performance which has slumped due to the COVID-19 pandemic. One possible effort is for MSMEs to carry out digital transformation. This study investigates the relationships between various factors which contribute to digital transformation among the actors of micro, small, and medium enterprises (MSMEs) using the behavioral approach (TRI-TAM). Data was obtained from 360 MSME actors engaged in the food and beverage sector. For analysis purposes, CB-SEM was used. The study results revealed that an optimistic attitude, innovative actions, and perceived ease of use of digital technology will determine business actors' intentions to carry out digital transformation. Furthermore, their intentions are demonstrated to influence digital transformation behavior. As another result of an optimistic attitude, innovative actions have a positive effect on perceived ease of use of digital technology, while feelings of discomfort and insecurity have a negative effect. Policy recommendations that can be suggested to encourage digital transformation and produce environmentally friendly services and products include providing financial subsidies, tax incentives, training, and mentoring.

Keywords: digital transformation; perceived ease of use; perceived usefulness; optimism; innovation

1. Introduction

IIASA (2020) predicts that the economic downturn due to the COVID-19 pandemic will require at least three years of recovery time, especially for MSMEs which have been significantly affected. This relates to the characteristics of MSMEs with low resilience compared to large companies (Assefa and Yadavilli, 2020), limited cash reserves, and high-risk management (Morgan et al., 2020).

In Indonesia, a significant percentage of MSMEs, namely 99.99% of the total business units, absorbed 96.92% of the workforce and contributed to 60.51% of the GDP in 2019 (Nurprabowo and Meilani, 2023). However, the continuity of the businesses has been disrupted due to the COVID-19 pandemic. Therefore, it is necessary to accelerate the recovery of MSMEs so that they can perform better. One of the ways to do this is by carrying out digital transformation (Ceylan et al., 2020; Papadopoulos et al., 2020).

Digital transformation is defined as the process of digitizing resources that can lead to the transformation of the customer experience and operational processes (Verhoef et al., 2021). The digitalization of technology in MSME business processes has been proven to improve the efficiency and effectiveness of business processes

(Alam et al., 2022) and increase customer satisfaction (Morakanyane et al., 2017), which in turn can increase profits (Verhoef et al., 2021).

However, the results of a survey (Katadata Insight Center, 2020) on MSMEs in Indonesia showed that the MSME Digital Readiness Index only had a score of 3.6 (from a scale of 1–5), which means that MSMEs do not yet have optimal readiness for digitalization. Several studies have investigated the determinants of digitalization of MSMEs, and they found several determinants related to capacity, such as HR skills (Cichosz et al., 2020), Internet connectivity (Vogelsang et al., 2018), organizational support, and preparation for implementation (Osmundsen et al., 2018). However, based on the behavioral approach, the intention of MSME actors to carry out digital transformation may also be important in determining the realization of digital transformation. Based on the idea that even though MSME actors can carry out digital transformation, digital transformation will not be realized if there is no intention to do so.

This study combines two behavioral approaches (TRI-TAM) to explain the determinants of digital transformation among MSMEs. First, for the technology acceptance model (TAM), the intension to do digital transformation is determined by the level of acceptance as measured by the perceived usefulness and perceived ease of use. Second, the level of acceptance of digitalization among MSMEs cannot be separated from the readiness of MSME actors to utilize digital technology. Using the technology readiness index (TRI) framework, there are four factors related to readiness for technology adoption including optimism, innovation, discomfort, and insecurity.

The aim of this study is to (a) investigate the determinants of business actors' intention to carry out digital transformation and (b) examine the effects of business actors' intent to engage in digital transformation on digital transformation behavior among MSMEs in the food and beverage sector. It is hoped that the results of this study can provide more insights into how behavioral aspects influence the digital transformation of small firms. These insights can serve as valuable inputs in devising policies aimed at fostering digital transformation.

2. Literature review

Digital transformation has become an exciting issue for practitioners and academicians recently. However, there has yet to be a consensus agreement regarding the definition of digital transformation (Morakanyane et al., 2017). Digital transformation emphasizes using technology to improve business processes (Fitzgerald et al., 2013). Various previous studies have demonstrated that the use of technology has a positive contribution on the performance of MSMEs (Alam et al., 2022; Verhoef et al., 2021). Therefore, the relationships between various factors in determining digital transformation among MSME actors are interesting to analyze.

The TRI model introduced by Parasuraman (2000) has four factors that influence readiness for technology adoption, namely optimism, innovation, discomfort, and insecurity. When MSMEs feel ready, their intention to carry out technological/digital transformation is high. The first two factors, optimism and innovation, drive intentions for digital transformation. Optimism is a positive view of technology (Parasuraman,

2000). In addition, it is a belief that technology provides more flexibility and efficiency (Pires et al., 2011), which is thought to impact digital transformation intentions. Meanwhile, innovation as the tendency, nature, and habit to be a pioneer in using the latest technology, is also expected to affect digital transformation intentions.

In contrast to the previous factors, discomfort and insecurity are obstacles to digital transformation (Parasuraman and Colby, 2014). When MSME actors feel pressured, have difficulties, and are skeptical about their abilities to use technology, even thinking about using technology will frustrate them. This will reduce the intention of MSME actors to adopt it. Thus, the hypotheses to be examined are as follows:

H1a. Optimism positively impacts the intention to do digital transformation among MSME actors.

H1b. Innovation positively affects the intention to perform digital transformation among MSME actors.

H1c. Discomfort negatively influences the intention to carry out digital transformation among MSME actors.

H1d. Insecurity negatively impacts the intention to implement digital transformation among MSME actors.

The level of readiness will likely also have an effect on the level of acceptance of a digital presence. In accordance with the TAM introduced by Davis (1989), there are two factors related to the level of digital acceptance, namely perceived usefulness and ease of use.

MSME actors who have high optimism and innovative power over digital transformation have the perception that digital transformation is easy to do. On the other hand, discomfort and insecurity, which are obstacles to digital transformation, are also expected to harm the perceived ease of use of digital transformation. MSME actors who feel uncomfortable and insecure about digital transformation will have reservations, because they will perceive it as being difficult to conduct. Based on the above arguments, the hypotheses to be tested are:

H2a. Optimism positively impacts the perceived ease of use of digital transformation among MSME actors.

H2b. Innovation positively affects the perceived ease of use of digital transformation among MSMEs.

H2c. discomfort negatively influences the perceived ease of use of digital transformation among MSME actors.

H2d. Insecurity negatively impacts the perceived ease of use of digital transformation among MSMEs.

In line with the above argument, the factors in TRI can also affect the perceived usefulness. In this study, perceived usefulness refers to a subjective probability in technology adoption because it can increase performance (Pires et al., 2011). In addition, perceived usefulness is also defined as a relative advantage where technological innovation is considered superior to traditional practices (Rogers, 2003). Consequently, MSME actors who have optimism and are used to change or innovation are expected to have a positive viewpoint on the usefulness of digital transformation. In contrast, the variables of discomfort and insecurity, which are obstacles to digital transformation, may also cause negative views about the perceived usefulness of

digital transformation. According to the explanation above, the hypotheses to be tested are:

H3a. Optimism positively impacts the perceived usefulness of digital transformation among MSME actors.

H3b. Innovation positively affects the perceived usefulness of digital transformation among MSMEs.

H3c. Discomfort negatively influences the perceived usefulness of digital transformation among MSME actors.

H3d. Insecurity negatively impacts the perceived usefulness of digital transformation among MSMEs.

Someone who perceives a system as relatively simple and uncomplicated to use will be more inclined to use it (Chatterjee et al., 2021). Likewise, MSME actors who perceive digital transformation as easy will likely believe that digital transformation is helpful for developing their businesses. Therefore, the hypothesis to be verified is as follows:

H4. Perceived ease of use positively affects the perceived usefulness of digital transformation among MSME actors.

Perceived ease of use, as shown by the user's assumption that there are no obstacles or complications (Venkatesh and Xu, 2012) and not much effort must be made by someone to use the technology, will in turn influence the intention to use the digital technology (Park, 2009). Someone who feels that new technology is easy to operate will intend to engage in digital transformation.

Likewise, individuals who believe technology can improve their performance will also encourage the use of the technology (Tantiponganant and Laksitamas, 2014). Concerning digital transformation, MSMEs that believe that digital transformation is able to improve their business performance have a higher intention to carry out digital transformation. Several studies have demonstrated the efffect of perceived usefulness to intend to employ technology (Chatterjee et al., 2021; Kim and Chiu, 2019; Wu et al., 2018). Thus, the hypotheses to be confirmed are:

H5a. The perceived ease of use of digital transformation positively impacts the intention to engage in digital transformation among MSMEs.

H5b. The perceived usefulness of digital transformation positively affects the intention to carry out digital transformation among MSME actors.

An intention refers to an individual's willingness to try hard to perform a behavior (Ajzen, 1991), and it is a motivational factor influencing a person's behavior in certain actions (Keegan and Rowley, 2017). Next, the intention to do digital transformation among MSME actors is strongly suspected of being a determining factor for MSME actors to conduct digital transformation. Thus, the hypothesis to be formulated is as follows:

H6. The intention to carry out digital transformation positively impacts digital transformation behavior among MSME actors.

Based on the hypotheses above, the conceptual framework is presented in **Figure 1**.
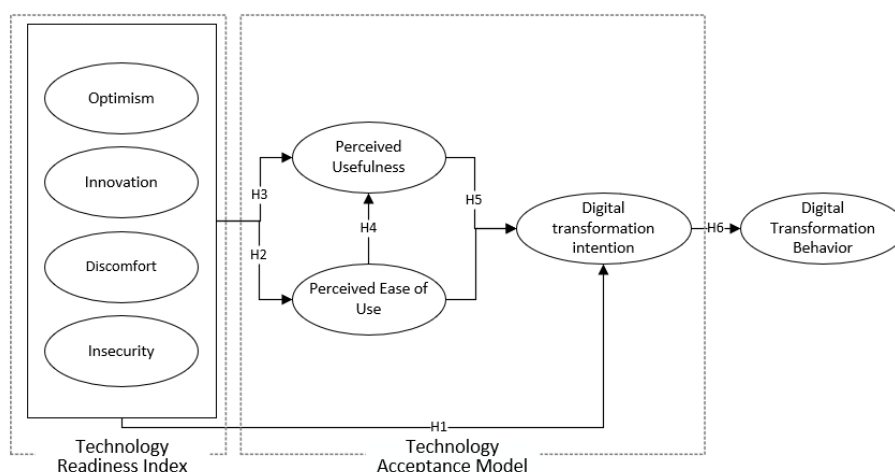
Figure 1. Conceptual farmwork.

3. Methodology

3.1. Measurement

This study used an instrument consisting of two parts. The first part was a description of the demographic factors, including gender, age, educational level, and company-specific factors, such as the age of the business and asset value. The second part measured the variables using a 7-point Likert scale. It started from 1 as a completely disagree response to 7 as a strongly agree response.

The measurement began with the digital transformation behavioral variables. It is the process of digitizing resources that allow the transformation of the buyer experience and operational process, as measured by the four items developed by Teng et al. (2022).

The measurement of digital transformation intention, an individual's desire to use digital technology, was developed from a study by Taylor and Baker (2014), which consisted of four items.

Perceived usefulness refers to one's belief that digital transformation can improve work performance. The indicators were developed from the study of Davis (1989) and Silva et al. (2022). Meanwhile, perceived ease of use is one's belief that digital technology does not require minimum effort. The indicators were developed from the research of Davis (1989) and Slavković et al. (2023). The two variables each had five items.

The four variables were components of TRI. The indicators were adopted from the studies of Parasuraman and Colby (2014) and Na et al. (2021). Optimism, innovation, and insecurity each used four indicators, while discomfort applied five measurement indicators of the variables studied, as presented in full in **Table 1**.

Table 1. Instruments.

Variable	Description
Digital Transformation Behavior	One has used digital technology for a long time compared to similar businesses; it is used in various operations, and digital technology is used to improve customer service and make intense use of digital technology.
Digital Transformation Intention	One has wanted to use digital technology for a long time compared to other similar businesses, to apply digital technology in various operations, and to utilize digital technology to improve customer service and make intense use of digital technology.
Optimism	One contributes to the quality of life, possesses mobility, has productivity, and maintains more control.
Innovation	Other people often ask for advice on using digital technology; are the earliest to adopt technology; can teach others because they use it first; and try to keep up with the latest digital technological developments.
Discomfort	It complicates work; is not designed for ordinary people; has existing guidelines that are often difficult to understand; lowers the quality of relationships with consumers; and is challenging to find individuals who want to be taught about it.
Insecurity	It is vulnerable to transaction fraud, prone to hacking, difficult to repair if something goes wrong, and unsafe for personal data.
Perceived Usefulness	It can increase sales, customer service, marketing outreach, customer loyalty, and business competitiveness.
Perceived Ease of Use	It is the ease of obtaining the application needed; it is easy to learn to operate the application; it is skilled at operating; it does not drain the mind; and it is not difficult to operate the new technology.

This study conducted a pre-test involving 40 respondents to ensure the quality of the measurements. Then, it tested the validity and reliability. As a result, all the indicators are valid because they have a loading factor > 0.7, and all the constructs are reliable with a Cronbach's alpha (CA) > 0.70.

3.2. Sample

This study used primary data from a survey of MSMEs in Semarang, Surakarta, and Salatiga in Central Java, Indonesia. These cities were chosen as the locus of the research because they have many MSME centers. Furthermore, this research focused on MSMEs engaged in the food and beverage sector, because it is one of the sectors that have survived the COVID-19 pandemic.

The sample size was determined through two stages, namely: (1) a Slovin formula with an *e* value of 10% was used so that a total sample of 288 was obtained and (2) to ensure that the data met the minimum requirements for the number of respondents needed, the total was increased by 25% in the field research, so that the total number of respondents had 360 respondents. Then a proportional allocation of samples was carried out from each city that became the research area with 120 respondents each.

Table 2 reveals that most of the respondents in this study were women (52.2%) with an age range between 30–50 years old (48.9%), and they had the last education level of high school/vocational high school (52.2%). Regarding the business characteristics, most were established for less than five years (37.2%) and had assets of up to Rp50 million (92.8%).

Table 2. Respondents' characteristics.

Characteristics	N (%)
Gender	
Female	52.2
Male	47.8
Age (years)	
< 30	26.7
30–50	48.9
> 50	24.4
Education	
Did not go to school/ did not finish elementary school	0.8
Elementary school	11.1
Middle school	11.4
High school/vocational high school	52.2
Higher education	24.5
Firm age (years)	
<5	37.2
5–10	28.4
>10	34.4
Asset value	
Up until Rp50 million	92.8
From Rp50 million—Rp500 million	7.2

3.3. Estimation

Based on the research objectives that had been formulated to test the causality between the variables, the estimation model was devised as follows:

$$PE = \beta 1 OP + \beta 2 IN + \beta 3 DF + \beta 4 IS + \delta 1 \tag{1}$$
$$PU = \beta 5 OP + \beta 6 IN + \beta 7 DF + \beta 8 IS + \beta 9 PE + \delta 2 \tag{2}$$
$$DTI = \beta 10 OP + \beta 11 IN + \beta 12 DF + \beta 13 IS + \beta 14 PU + \beta 15 PE + \delta 3 \tag{3}$$
$$DTB = \beta 16 DTI + \delta 4 \tag{4}$$

where,

PE = Perceived ease of use
PU = Perceived usefulness
OP = Optimism
IN = Innovation
DF = Discomfort
IS =Insecurity
DTI = Digital transformation intention
DTB = Digital transformation behavior

The estimation model above tested CB-SEM. Before testing the hypotheses, the construct validities were first evaluated, which involved convergent and discriminant validity and then construct reliability testing. The tests applied the classical assumption and goodness-of-fit tests.

4. Results

4.1. Descriptive statistics

Table 3 presents the descriptive statistics for each research variable. Digital transformation behavior, intention, optimism, perceived convenience, and usefulness have an average value of more than 5. It means that the respondents highly perceive the five variables above. The variables of innovation and perceived insecurity have a moderate perception because they range from 3–4.99. One variable has a low perception, namely discomfort, or it can be interpreted that the respondents do not feel uncomfortable with digital technology.

Table 3. Descriptive statistics.

Variable	Average	Skewness	Kurtosis	Std. Dev
DTB	5.017	–0.934	0.119	1.523
DTI	5.568	–1.747	2.807	1.342
OP	5.733	–1.554	3.203	1.053
IN	4.141	–0.184	–1.118	1.592
DF	2.964	0.808	–0.490	1.406
IS	3.306	0.527	–1.208	1.689
PE	5.261	–1.191	0.458	1.423
PU	5.987	–1.977	6.397	0.843

Notes: *A score of 1–2.99 reveals a low perception; a score of 3–4.99 represents an average perception; and a score of 5–7 depicts a high perception.

4.2. Validity and reliability test

Table 4 shows the convergent validity test that all indicators have a loading factor > 0.7. The discriminant validity test also indicates that the correlation values for all variables are greater than the AVE values. Thus, the indicators can be declared valid. The test also reveals that the construct is reliable, as indicated by the Cronbach's alpha (CA) value > 0.70 and the composite reliability (CR) value > 0.80.

Table 4. Validity and reliability assessments.

Variable	Items	Loading	CA	CR	AVE
DTB	DTB1	0.794	0.884	0.920	0.743
	DTB2	0.894			
	DTB3	0.854			
	DTB4	0.902			
DTI	DTI1	0.889	0.941	0.957	0.849
	DTI2	0.936			
	DTI3	0.937			
	DTI4	0.922			
OP	OP1	0.842	0.873	0.913	0.725
	OP2	0.893			
	OP3	0.826			
	OP4	0.842			

Table 4. (*Continued*).

Variable	Items	Loading	CA	CR	AVE
IN	IN1	0.779			
	IN2	0.801	0.858	0.901	0.696
	IN3	0.881			
	IN4	0.872			
DF	DF1	0.842			
	DF2	0.858			
	DF3	0.892	0.898	0.925	0.711
	DF4	0.812			
	DF5	0.809			
IS	IS1	0.925			
	IS2	0.934	0.936	0.954	0.839
	IS3	0.873			
	IS4	0.930			
PE	PE1	0.847			
	PE2	0.949			
	PE3	0.953	0.955	0.966	0.850
	PE4	0.916			
	PE5	0.938			
PU	PU1	0.854			
	PU2	0.840			
	PU3	0.808	0.882	0.914	0.680
	PU4	0.760			
	PU5	0.857			

Then, the goodness-of-fit test results are presented in **Table 5**. The SRMR index depicts a value of 0.060 or lower than 0.1. In addition, the R-Square (R^2) value is 0.557 or greater than 0.1, and the Q-Square (Q^2) value is 0.405 or greater than 0. Thus, the model can be declared as being fit.

Table 5. Goodness-of-fit.

Criteria	Parameters	Rule of thumb
Standardized Root Mean Square Residual (SRMR)	0.060	SRMR < 0.1
R-Square (R^2)	0.557	$R^2 > 0.1$
Q-Square (Q^2)	0.405	$Q^2 > 0$

4.3. Hypotesis testing

Table 6 demonstrates that the optimism and innovation hypothesis testing results positively affect the intention to do digital transformation ($\gamma = 0.356$, $\alpha = 0.000$; $\gamma = 0.180$, $\alpha = 0.001$). Meanwhile, discomfort and insecurity do not have a significant effect on intention to do digital transformation ($\gamma = 0.037$, $\alpha = 0.577$; $\gamma = 0.045$, $\alpha = 0.329$). Then, based on the formulated hypotheses, optimism and innovation positively

influence the perceived ease of use of digital technology ($\gamma = 0.170$, $\alpha = 0.000$; $\gamma = 0.243$, $\alpha = 0.000$). Two other factors, discomfort and insecurity, negatively affect the perceived ease of use of digital technology ($\gamma = -0.488$, $\alpha = 0.000$; $\gamma = -0.100$, $\alpha = 0.001$).

The test results also reveal that optimism positively influences ($\gamma = 0.485$, $\alpha = 0.000$), while discomfort negatively influences perceived usefulness ($\gamma = -0.219$, $\alpha = 0.001$). Thus, both hypotheses are accepted. The innovation and discomfort variables are not shown to significantly influence perceived usefulness ($\gamma = 0.084$, $\alpha = 0.113$; $\gamma = 0.066$, $\alpha = 0.142$). Besides that, perceived ease of use does not significantly affect perceived usefulness ($\gamma = 0.061$, $\alpha = 0.424$). At the same time, perceived usefulness does not greatly influence the intention to do digital transformation ($\gamma = 0.051$, $\alpha = 450$). Despite that, perceived ease of use positively affects the intention to do digital transformation ($\gamma = 0.316$, $\alpha = 000$). The last hypothesis (H$_6$), which is the intention to do digital transformation on digital transformation behavior, has a positive influence in this study ($\gamma = 0.305$, $\alpha = 000$).

Table 6. Results of the hypothesis testing.

Relationship	Path Coefficient	*P*-Value
OP → PE	0.170	0.000***
IN → PE	0.243	0.000***
DF → PE	−0.488	0.000***
IS → PE	−0.100	0.008***
OP → PU	0.485	0.000***
IN → PU	0.084	0.113
KN → PU	−0.219	0.001***
ISC → PU	0.066	0.142
PE → PU	0.061	0.424
OP → DTI	0.356	0.000***
IN → DTI	0.180	0.001***
DF → DTI	0.037	0.577
IS → DTI	0.045	0.329
PU → TDI	0.051	0.450
PEU → TDI	0.316	0.000***
TDI → TDB	0.305	0.000***

Note: *** significant at $\alpha = 1\%$.

5. Discussion

This study aimed to combine two behavioral approaches, TRI and TAM or TRI-TAM, to explain the determinants of digital transformation among MSMEs. The results of the study depict that among MSMEs, especially in the food and beverage sector, the dimensions of TRI positively influence the intention to carry out digital transformation. This is based on the model developed by Parasuraman (2000) that optimism and innovation drive the intention to do digital transformation. However, the other two dimensions, discomfort and insecurity, hindered the intention to carry out

digital transformation and did not prove influential in this study. It is suspected that the use of digital technology has become necessary amid very tight competition among MSMEs (Ta and Lin, 2023), especially during the pandemic.

All the dimensions of TRI influence the perceived ease of use. MSME actors with high optimism and innovation generally perceive that transformation is easy. Conversely, MSME actors who feel discomfort will perceive that digital transformation is not easy to do. However, different results show how the dimensions of TRI influence the perceived usefulness. Optimism has a positive effect and discomfort has a negative effect on the perceived usefulness of digital transformation, but innovation and insecurity are not verified to affect the perceived usefulness. Other findings of this study also cannot prove there is a positive effect of perceived ease of use on perceived usefulness.

From TAM's point of view, this study demonstrates that only the perceived ease of use positively influences the intention to carry out digital transformation. This result aligns with previous studies, which found that the user's perception of there being no obstacles or complications is essential in technology adoption (Venkatesh and Xu, 2012). However, this study failed to prove that perceived usefulness influences one's intention to do digital transformation. Consequently, this study does not support the findings of previous studies (Kim and Chiu, 2019; Wu et al., 2018), which have demonstrated that perceived usefulness influences the intention to carry out digital transformation. Referring to the results of the descriptive statistics, the perceived usefulness variable has the highest average score. Consequently, it is strongly suspected that most MSMEs are aware of the critical role of digital technology for business development regardless of whether they intend to adopt it or not in their business processes. Previous research also shows that in the digital era, perceived usefulness has a low effect on the intention to apply digital transformation compared to perceived ease of use (Alsheikh and Bojei, 2014).

This study culminated in the finding that the intention to carry out digital transformation has affected digital transformation behavior after the COVID-19 pandemic. Behavioral intention is a motivating factor influencing certain behaviors (Keegan and Rowley, 2017) and the intention to engage in digital transformation. The digital transformation carried out by food and beverage MSME actors is in the form of using certain applications for delivery orders (Go-food/Grab-food), ease of payment transactions (Go-pay, Ovo, Dana, QRIS), and promotional activities (YouTube, TikTok, Instagram, Twitter, Facebook, WhatsApp). This digital transformation is an answer to the lifestyle trend of consumers who want practical and fast services. However, amidst consumers who are increasingly aware of the importance of being eco-friendly, MSMEs should be able to integrate digital transformation and eco-friendly interests. MSME actors can produce environmentally friendly services and products, while digital technology can help expand their market reach.

Furthermore, future research should focus on the extent to which digital transformation plays a role in increasing the willingness and ability of MSMEs to implement business sustainability practices. Considering that currently stakeholders are demanding that business actors, including MSMEs, implement business sustainability consistently. Business actors, are required to not only prioritize economic performance but also align it with social and environmental performance.

6. Conclusion

This study analyzed the determinants of digital transformation behavior using a behavioral approach involving 360 MSME respondents in the food and beverage sector. From the perspective of TRI, digital transformation intention among small firms will occur if business actors have an optimistic attitude and have innovative thinking, so that they are willing to adopt the latest technological developments. This is in line with the results of studies that suggest the two dimensions of TRI, optimism and innovation, positively influence the intention to do digital transformation. Meanwhile, from the perspective of TAM, the business actor's perception of whether digital technology is easy to use or not will determine the business actor's intention to continuously use digital technology for various business operations, such as for payment services and product delivery. Furthermore, the results of the study identified that MSME actors' perceived ease of use of digital technology is influenced not only by their optimistic attitude and innovative thinking, but it is also due to their sense of comfort and security regarding the existence of digital technology. Then as predicted, by using a behavioral approach, intention is the determining factor for behavior, so intention to engage in digital transformation will determine whether entrepreneurs will carry out digital transformation to maintain and develop their businesses amidst fierce competition in the food and beverage sector.

This study contributes to the behavioral approach literature in that although not all of the determinant variables are confirmed, the behavioral approach (TRI-TAM) is still relevant for explaining the factors that shape digital transformation behavior in MSMEs engaged in the food and beverage sector. This study also offers policy and managerial implications. Local governments involved in developing MSMEs can encourage MSMEs to implement digital transformation by using behavioral variables. Furthermore, the local governments need to direct MSME actors to produce environmentally friendly services and products. The local governments can provide financial subsidies and tax breaks for MSMEs who want to use digital technology which will have a positive effect on reducing the negative impacts towards the environment. In addition, the local governments can design training and mentoring programs. Meanwhile, MSME actors should make breakthroughs to produce environmentally friendly services and products so that if integrated with digital transformation, it will become a sustainable strategy to improve their business performance.

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