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By Yonathan Palumian

The Influence of Product Class Knowledge and Environment Hostility to Relative Advantage with The Mediating Effect by Attitude Toward Change

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Abstract

Small and medium enterprises (SMEs) are one of the fastest growing industries in Indonesia. This study aims to explore the effect of Attitude Toward Change on Relative Advantage of SMEs. The sample of this study is entrepreneurs domiciled in East Java who have a role as decision-makers, especially entrepreneurs who make management changes with the adoption of technology, such as changes using Enterprise Resource Planning (ERP) or other simple software. Data collection in this study was done by distributing questionnaires online and offline via e-mail, telephone, WhatsApp, and SME exhibitions in Malang and Surabaya. The questionnaire data will be processed using Smart PLS version 4.0 for further analysis. The results of the study show that the existence of Product Class Knowledge is usually achieved because of the feeling of threat from other competitors in the business world, or commonly called Environment Hostility. This research also proves the importance of mediation of attitude towards change in achieving a relative advantage of SME.

Keywords: Technology Adoption, SMEs, Product Class Knowledge, Environment Hostility, Attitude Toward Change, Relative Advantage

INTRODUCTION

In recent years, there has been a significant transformation in the business operations of Small and Medium Enterprises (SMEs), which constitute the majority of companies globally, due to the widespread adoption of Information and Communications Technology (ICT) (Bargoni et al., 2024; Cassetta et al., 2020). This technological shift has revolutionized the way SMEs conduct their businesses, enabling them to reduce operational costs and enhance overall efficiency (Cassetta et al., 2020). The integration of ICT into their workflows has provided SMEs with substantial competitive advantages, allowing them to better compete with larger firms, that the use of ICT can lead to notable increases in productivity and efficiency for SMEs (Mushtaq et al., 2022). These benefits are realized through various mechanisms, such as implementing technical improvements, lowering transaction costs, and altering the production

function to be more effective and streamlined (Bargoni et al., 2024; Cassetta et al., 2020).

Small business success is greatly influenced by technology, especially in the retail and transportation industries (Bargoni et al., 2024). When taken as a whole, these studies show how technology may significantly improve small firms' productivity, reach, and resilience. Bargoni et al. (2024) reviewed the literature on technology adoption in small and medium-sized firms (SMEs), highlighting the significance of this process for the expansion of SMEs. In addition, digital innovation refers to new products, processes or business models that are realized or enabled by digital technologies (Fichman et al., 2014; Mendling et al., 2020). Mendling et al. (2020) and Mushtaq et al. (2022) highlight two important aspects, that are digital innovation is socio-technical, involving changes in technological systems (such as hardware and software) and social systems (such as processes,

structures and norms) due to digitization and for example, the implementation of Enterprise Resource Planning (ERP) in SMEs shows that digital innovation integrates a process perspective. This includes new technical processes as well as new social processes for all participants in the SMEs, such as managers and employees using ERP, changes in workflow, and more efficient inventory planning (Mendling et al., 2020)

Mangifera et al. (2022) offers a model for the effective adoption of IT in SMEs, highlighting the necessity of having a thorough grasp of the procedure and the unique difficulties these companies encounter. These studies highlight how important it is for SMEs to adopt technology and how specific tactics are needed to help them do so. According to Mangifera et al. (2022) citing from Fichman et al. (2014), "product, process, or business model that is perceived as new, requires some significant changes on the part of adopters and is embodied in or enabled by IT which is meant to be understood as digital innovation."

Prior research underscores the critical role of owner-manager individual characteristics in the adoption of technology by small businesses, highlighting their significant influence on decision-making processes within these enterprises (Mangifera et al., 2022; Ramdani et al., 2022). This focus arises from the understanding that successfully adopting and implementing technology not only creates sustainable competitive advantages but also facilitates adaptation to swiftly evolving markets and their associated opportunities (Mendling et al., 2020). Furthermore, it enhances business operations and is pivotal in leveraging relevant

systems for customer-centric marketing practices (Mendling et al., 2020; Ramdani et al., 2021). Small businesses, in particular, stand to benefit immensely from embracing new technologies, as they often face substantial challenges in competing with larger firms. By integrating technologies such as enterprise resource planning (ERP), customer relationship management (CRM), and internet-based capabilities, small businesses can develop more efficient and effective business strategies and tactics (Ahmad et al., 2019). The advancement of e-business capabilities is especially crucial, as it is revolutionizing the ways companies buy, sell, and interact with customers, thereby becoming an integral component of their overall business strategies (Ahmad et al., 2019; Di Vaio et al., 2021). Consequently, the adoption and successful implementation of technology not only provide firms with sustainable competitive advantages but also enhance their ability to adapt to rapidly changing markets and improve their business operations (Cassetta et al., 2020).

LITERATURE REVIEW

Digital technologies make it easier for SMEs in various developing countries to achieve optimal business opportunities, such as quickly accessing broader markets or communicating or collaborating with stakeholders (Ramdani et al., 2022). These various uses play an essential role in supporting the growth of SMEs, which is raised by previous research by Marzuki et al. (2023), that led to a model called Small Business Adoption of Technological Innovations (SBTAM) that raises a model that is influenced by two aspects of research, the first one is

perception aspect of a product-based innovation, is based on Roger's diffusion of innovation model, for the second aspect is the discovery of the Technology Acceptance Model (TAM), which identifies several antecedents, such as external and internal environmental and psychological influences. The discovery of the TAM model was first proposed by Davis (1989), which was re-examined by Caniëls et al. (2015). However, in this study, the researchers used a different approach which focused on (1) owner characteristics, (2) owner's perceptions of technology, and (3) environmental factors, which were measured using several instruments as follows:

Owner's Characteristics according to Neumeyer et al. (2021), the existence of owner characteristics is shown in several ways instruments which can be a measuring tool regarding the owner's perception of product class knowledge and attitude toward change of SMEs who have different educational backgrounds and ages. Product class knowledge is the level of mindset of SME actors who adopt technology, where, in general, if business actors adopt sophisticated technological innovations, there will be a sense of limited knowledge of the adopters (Neumeyer et al., 2021; Ramdani et al., 2022). If SME actors do not have adequate product class knowledge, this will cause cognitive limitations in understanding problems or finding solutions in the innovation process (Neumeyer et al., 2021). Therefore, product class knowledge is closely related to the technology adoption process by SME actors (AlBar & Hoque, 2019; Neumeyer et al., 2021; Ramdani et al., 2022). Based on Neumeyer et al. (2021) has

proven that greater product knowledge leads to a higher possibility of adopting an innovation.

Attitude toward change is the attitude of acceptance by the adopter of an innovation towards new ideas and being brave in taking risks in implementing a business innovation will bring a change or result (Kent et al., 2019). In changes in technology adoption, a sense of attitude toward change in SME players is essential as one of the conditions for digitizing their business processes (Kent et al., 2019). With this, technology adoption is more accessible than SME players who do not have an attitude toward change. According Kent et al. (2019), having a positive attitude toward change involves accepting new ideas and taking risks in implementing business innovations, which leads to transformative results. This tendency is explained in "The Theory of Reasoned Action" the tendency if someone has a belief about something, the positive consequences and results will become the output they hope for (Lin et al., 2020)

Owner's perceptions of technology, this perception arises when someone decides to adopt technology regarding the benefit they will get when adopting the technological innovation (Blichfeldt & Faullant, 2021). Previous research also highlights the importance of owners' perceptions of technology on the technology adoption process, including perceptions of relative benefits and switching costs (AlBar & Hoque, 2019; Blichfeldt & Faullant, 2021; Cassetta et al., 2020). Relative advantage is a comparison between an innovation idea considered better and another innovation idea that is a substitute option or superior to business

competitors (Kumar Bhardwaj et al., 2021). In technology adoption, relative advantage measures the extent to which information technology is used as a mediator in improving business operational processes to become more efficient and effective (Blichfeldt & Faullant, 2021; Kumar Bhardwaj et al., 2021).

Environmental factors influencing the adoption of this technology encompass various dimensions, including the level of hostility toward the environment, which significantly impact attitudes toward change and the willingness to embrace new innovations (Dele-Ijagbulu et al., 2020). In this dynamic business environment, adopting technology allows SMEs to face changing market needs and reduce uncertainty, which is crucial for business continuity (Bargoni et al., 2024). Market uncertainty can usually be faced by implementing technological innovation with an orientation that focuses on consumer needs (Mendling et al., 2020; Ramdani et al., 2022). Therefore, handling uncertainty in the market is related to resolving environmental hostility, which is closely related to meeting consumer needs to be adapted to the current market. Environmental hostility is characterized by high-intensity competition from a business environment that has difficulty meeting increasingly diverse and complex consumer needs (Aftab et al., 2022; Blichfeldt & Faullant, 2021). This high level of business competition causes a stressful environment, uncertainty in the industry, and business survival (Aftab et al., 2022). Based on the previous research, the following hypotheses are obtained:

H1: Attitude Toward Change influences Relative Advantage.

H2: Environment Hostility influences Attitude Toward Change.

H3: Environment Hostility influences Relative Advantage.

H4: Product Class Knowledge influences Attitude Toward Change.

H5: Product Class Knowledge influences Relative Advantage.

H6: Product Class Knowledge has an influence on Relative Advantage through the mediation of Attitude Toward Change.

H7: Environment Hostility has an influence on Relative Advantage through the mediation of Attitude Toward Change.

RESEARCH METHOD

The approach in this study is to use quantitative methods that are explanatory causal in nature to see the relationship of influence between research variables. The population of this study is entrepreneurs domiciled in East Java who have a role as decision-makers, especially entrepreneurs who make management changes with the adoption of technology, such as changes using Enterprise Resource Planning (ERP) or other simple software. The sampling technique used in this study is judgment sampling, assuming that the entrepreneurs who fill out the questionnaire have a role in making decisions on SME operations so that they can operate more effectively and efficiently and have other perspectives in facing changes in the business world. The sample in this study was collected based on a list of SMEs from the East Java Culinary Entrepreneurs Association, the East

Java Micro Business Actors Forum, and the East Java SME Community. Data collection in this study was done by distributing questionnaires online and offline via e-mail, telephone, WhatsApp, and SME exhibitions in Malang and Surabaya. The assessment used in this study uses a Lickert scale of 1 (strongly disagree) to 5 (strongly agree). Based on 289 online and offline surveys, 184 respondents filled out the questionnaire. However, of the 184 respondents who filled out the questionnaire, only 141 respondents met the criteria with the requirements of entrepreneurs domiciled in East Java and SMEs that adopt technology for their business operations.

Table 1. Respondent's Profile

Respondent's Profile			
Description		Frequency	Percentage
Gender	Male	60	42,55%
	Female	81	57,45%
Age	18-25	75	53,19%
	26-35	48	34,04%
	36-45	17	12,06%
	46-55	1	0,71%
Education Level	High school or lower	22	15,60%
	Associate degree	13	9,22%
	Bachelor degree	106	75,18%
Respondent's SME Profile			
Description		Frequency	Percentage
Years owned SMEs	< 5 Years	68	48,23%
	5-10 Years	7	4,96%
	>10 Years	66	46,81%
SME's Sector	Culinary Sector	61	43,26%

	Fashion Sector	38	26,95%
	Creative Sector	27	19,15%
	Service Sector	15	10,64%
SME Sales Income (/Month)	< Rp. 1.000.000	5	3,55%
	Rp. 1.000.000 - 2.000.000	29	20,57%
	Rp. 2.000.000 - 3.000.000	44	31,21%
	> Rp. 3.000.000	63	44,68%

Source: Results of Data Processing (2024)

Table 1 shows that of the 141 respondents who filled out the research questionnaire, 81 (57.45%) were male entrepreneurs, while 60 (42.55%) were female entrepreneurs. Table 1 shows that the dominant entrepreneurs are aged around 18-25 years, with as many as 75 respondents (53.19%), followed by entrepreneurs aged 26-35 years, as many as 48 respondents (34.04%), and the remaining entrepreneurs aged around 36-55 years. Entrepreneurs who filled out this questionnaire predominantly have a bachelor's degree, with as many as 106 respondents (75.18%). As for the profile of SME respondents, 68 respondents (48.23%) were established their SMEs for less than 5 years. Table 1 shows that the dominant SME's sector is engaged in the culinary sector by as many as 61 respondents (43.26%). SMEs that are the object of research in this study also dominantly have a sales income of more than 3

million rupiahs in a month. The collected questionnaire data will be processed using Smart PLS version 4.0 for further analysis.

RESULTS AND DISCUSSION

This research uses two measurement model tests, both the inner model and the outer model. The inner model test can test each validity and reliability level of the indicator, which is the right measure for the research variables. After the inner model process, it continues with the outer model process to determine the correlation relationship between research variables.

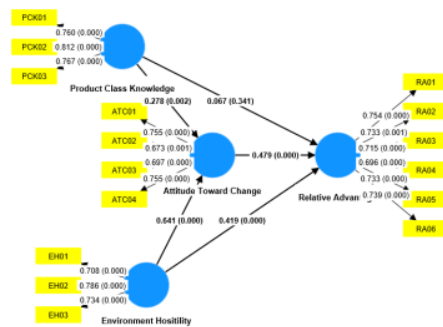


Figure 1. Research's Framework and Path Analysis Test Result

Source: Results of Data Processing (2024)

Table 2 Indicator's Discriminant Validity Test

Items	ATC	EH	PCK	RA
ATC1	0.753	0.674	0.497	0.693
ATC2	0.675	0.606	0.523	0.613
ATC3	0.700	0.506	0.476	0.530
ATC4	0.753	0.541	0.450	0.644
EH1	0.556	0.708	0.375	0.558
EH2	0.668	0.786	0.542	0.674
EH3	0.585	0.734	0.454	0.658
PCK1	0.480	0.490	0.760	0.500

PCK2	0.607	0.545	0.812	0.544
PCK3	0.484	0.406	0.767	0.476
RA1	0.666	0.629	0.475	0.754
RA2	0.588	0.602	0.468	0.733
RA3	0.585	0.570	0.425	0.715
RA4	0.654	0.552	0.513	0.696
RA5	0.593	0.673	0.452	0.733
RA6	0.688	0.682	0.509	0.739

Source: Results of Data Processing (2024)

The measurement of variables that can be said to be reliable and valid can be measured from the outer model if the outer model is required to have a loading factor value greater than 0.50 and a factor loading higher than the cross-loading value (Hair et al., 2019). From Table 2 and Figure 1, all indicators have a factor loading value greater than 0.50 and a cross-loading value for each indicator higher than the other values. Therefore, these data show that each indicator measuring the variables in the study is considered valid and reliable.

Table 3 Reliability, R², Q² Test Result

Variables	CR	AVE	R ²	Q ²
Attitude Toward Change	0.787	0.552	-	-
Environment Hostility	0.823	0.608	-	-
Product Class Knowledge	0.812	0.520	0.710	0.338
Relative Advantage	0.872	0.531	0.815	0.400

Source: Results of Data Processing (2024)

In addition to factor loading measures, other measures show that the indicators used can consistently measure the variables. Table 3 shows the reliability test of each variable across multiple measures, namely Composite Reliability and Average Variance Extracted (AVE). Based on the data processed by

SmartPLS 4.0, the indicator block is considered reliable if the value of Composite Reliability is > 0.70 and AVE > 0.50 (Hair et al., 2014). This study also measures the value of R^2 using the R^2 evaluation category proposed by Hair et al. (2014), which is divided into three categories, namely the substantial R^2 category with a value of >0.75, the moderate R^2 category with a value of 0.50-0.75, and the weak R^2 category with a value of 0.25-0.50. In Table 3 it can be seen that the R^2 value of the variable Attitude Towards Change is 0.710, which is in the moderate category. The R^2 value Relative Advantage variable has an R^2 value of 0.815, which is included in the substantial category. This means that 81.5% of the Relative Advantage can be explained by three other variables: Environmental Hostility, Product Class Knowledge, and Attitude Towards Change. In addition to the measurements described in this study, the predictive relevance (Q^2) value is also measured using Smart PLS 4.0 software on the relevance of the research framework to its application in the real world. Table 3 shows that all dependent variables, namely Attitude Towards Change and Relative Advantage, have a Q^2 value greater than 0. These variables can be considered qualified for their predictive relevance value.

Table 4 Direct and Indirect Effect Test Results

Hypot hesis	Path	Path Coefficient	T statistics	P values	Deci sion
H1	ATC→ RA	0.479	6.584	0.00 0	Acce pt

H2	EH→ ATC	0.641	5.969	0.00 0	Acce pt
H3	EH→ RA	0.419	4.316	0.00 0	Acce pt
H4	PCK→ ATC	0.278	3.063	0.00 2	Acce pt
H5	PCK→ RA	0.067	0.952	0.34 1	Decl ine
H6	PCK→ ATC→ RA	0.133	2.746	0.00 6	Acce pt
H7	EH→ ATC→ RA	0.307	4.636	0.00 0	Acce pt

Source: Results of Data Processing (2024)

The next analysis of the data collected is to test the hypotheses derived from the research framework. The research hypothesis accepted in this study is based on a significance level of 5%, $t\text{-value} > 1.96$ or $p\text{-value} < 0.05$. The hypothesis is accepted if the $t\text{-value}$ is greater than 1.96 or the $p\text{-value}$ is smaller than 0. (Hair et al., 2014). Based on Table 4, it can be seen that of all the hypotheses that have the strongest influence as seen from the highest path coefficient is H2, that Attitude Toward Change will adopt technology in SME operations is the influence between Environment Hostility and Attitude toward change. As stated in previous research from Aftab et al. (2022), that higher Environmental Hostility causes high-intensity competition in a business environment, causing a change in innovation or Attitude towards change to beat business competitors.

This study also proves that Product Class Knowledge without Attitude Toward Change has no effect on Relative Advantage. The results of this hypothesis test are supported by several previous studies such as according to Neumeyer

et al. (2021) and Ramdani et al. (2022) have proven that greater product knowledge leads to a higher probability of Attitude towards a change to adopt a technology adoption or innovation. The attitude of acceptance by adopters of innovation towards new ideas and taking risks in implementing a business innovation will bring about a change or result (Aftab et al., 2022; Neumeyer et al., 2020; Ramdani et al., 2021). In technology adoption change, a sense of attitude towards change in SMEs is very important as one of the conditions for digitizing their business processes (AlBar & Hoque, 2019; Cassetta et al., 2020). With this, technology adoption is easier than for SMEs that do not have an attitude toward change (Aftab et al., 2022). Therefore, in technology adoption, relative advantage measures the extent to which information technology is used as a mediator in improving business operational processes to be more efficient and effective, and all that is obtained from the existence of greater product class knowledge (Blichfeldt & Faullant, 2021; Cassetta et al., 2020).

CONCLUSION

This research shows how important a positive attitude towards change is for adopting technology in Small and Medium Enterprises (SMEs). This attitude helps create a relative advantage, making SME operations more efficient and effective. The results indicate that product class knowledge can improve this advantage when there is a strong desire to make SMEs more efficient, driven by an attitude towards change. The study also finds that this attitude is often triggered by competition, known

as environmental hostility. This research highlights that a willingness to change is crucial for SMEs to gain a competitive edge.

A new aspect of this research is its focus on how product class knowledge and attitude towards change work together to drive technology adoption and create an advantage. This adds a fresh perspective to existing studies, showing how specific knowledge and attitudes can boost SME performance. However, this study has limitations. It was conducted only in the East Java region and focused on local SMEs. Future research should include larger companies and expand to other regions or all of Indonesia. By doing so, future studies can provide a better understanding of technology adoption and competitive advantage in different business contexts.

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