Moderating Roles of Consumer Innovativeness in the Effect of Innovation Attributes on Brand Equity and Intention to Use: A Study in PT KAI Logistics

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Abstract

The present study aimed to find out the relationship between innovation attributes, consumer innovativeness, brand equity and intention to use KAI Logistics service, one subsidiary of PT KAI. The data were taken from 208 micro, small, and medium-scale businesses in Solo and Yogyakarta between May and July 2021, and analyzed using SmartPLS. This study found that innovation attributes significantly affected brand equity and intention to use. The result showed that consumer innovativeness and brand equity significantly affected the intention to use. Lastly, the study found that consumer innovativeness significantly moderated the effect of innovation attributes on brand equity and the intention to use railway Logistics services. This study provided KAI Logistic with feedbacks regarding policies and strategies to compete amid the covid-19 pandemic.

Keywords: Innovation Attributes, Consumer Innovativeness, Brand Equity, Intention to Use, Covid-19.

1. Introduction

The Covid-19 outbreak spread in Indonesia in early 2020 and hit almost all business sectors hard, including logistics and transportation sectors. The logistic and courier businesses began to revive in the middle of 2020 along with the increased digital activities, while other sectors were still dying due to the pandemic. According to Yamamoto & Karakose (2020), social lockdown and digital technology development account for a significant increase in the number of innovators. Entrepreneurs in the logistic sector should be able to adjust their business to the new business pattern during the Covid-19 pandemic. PT KAI Logistic sees promising opportunities for improving its freight transport revenue amid the pandemic by taking advantage of its transportation network. A freight train offers more benefits, including bigger capacity, lower cost, relatively faster duration, lower pollution, lower fuel consumption, and reduced road congestion. Annual report PT KAI Logistics (2020). Innovation is the company's main driver of long-term growth and survival amid dynamic and complex markets and uncertain economic situations (Abbas et al., 2019).

PT KAI Group is committed to providing excellent customer service. KAI Logistic Express Service combines its two predecessors, Rail Express and Kalog Express, to deliver new shipping experiences for customers. However, the most challenging part of this new service lies in its

marketing. In this regard, Innovation is a must-do for PT KAI Logistic to develop its services. Therefore, we are interested in applying Rogers's (2003) theory of innovation characteristics to describe consumer intention to use KAI logistics services.

Product innovation and brand equity are known as strategic assets that play a fundamental role in the development and success of the company (Sloteraaf & Pauwels, 2008). A brand with high equity has an established strength in a competitive market (Slottegraaf & Pauwels, 2008). Consumer perception refers to the perceived characteristics of an innovation and is known to affect brand equity (Keller, 1993) and purchase behavior (Ostlund, 1974). Brand equity is one of the factors known to influence customer decisions in choosing and buying a product. It has a positive relationship with purchase intention (Uthayakumar & Senthilnathan, 2011; Chang & Liu, 2009; Ashill & Sinha, 2004; Aaker 1991). Consumer innovativeness is reported to affect consumer sensitivity to innovation attributes (Abbas et al., 2019). More innovative consumers tend to adopt new products (Ho & Wu, 2011; Kandiraju, 2014). Consumer Innovativeness is reported to amplify the effect of perceived attributes of a new product on brand equity (Nørskov et al., 2015) and the effect of perceived attributes of a new product on consumer intention to adopt (Ho & Wu, 2011).

This study defines the relationship between innovation attributes, consumer innovativeness, brand equity, and intention to use PT KAI Logistic service. More specifically, this study scrutinizes the effect of innovation attributes on brand equity and intention to use rail logistics service, the effect of brand equity on intention to use rail logistics service, the effect of consumer innovativeness on intention to use, and the moderating effect of innovation attributes on brand equity and intention to use rail logistics service. To our knowledge, this is the first empirical study on the innovation attributes of PT KAI logistic service in Yogyakarta and Solo. From the academic point of view, the present study is helpful in defining the mechanism of innovation attributes as the factors influencing brand equity and intention to use and the moderating role of consumer innovativeness. From an empirical perspective, the result of the study may provide KAI Logistic with comprehensive feedback regarding policies and strategies to compete amid the covid-19 pandemic.

2. Literature Review and Hypotheses Development

2.1. Innovation Attributes

Innovation is widely accepted as a pivotal factor in developing a brand and maintaining a product's competitive advantage. Product innovation and brand equity are renowned as strategic assets playing important roles in a company's development and success (Slotegraaf & Pauwels, 2008). Product innovation is the main driver in exploring a new market, as it allows the brand to create a positive foundation and strengthen its position amid the competition, Beverland et al., (2010). Customer perception refers to characteristics a customer perceives related to innovation. This variable is reported to affect brand equity (Zhang et al.,2013; Keller, 1993; Aaker, 1991). The study conducted by Nørskov et al., (2015) on five innovation attributes shows that the failure or success of innovation may affect the brand's value.

Individuals' perception of the characteristics of innovation may significantly affect their acceptance. Characteristics perceived in innovation are viewed as an antecedent of adoption, Liao & Lu (2008). Discussion on customer perception exists in the literature of intention to use (Lee et al., 2011; Van Slyke et al., 2004; Van Slyke et al, 2002; Agarwal & Prasad, 1997). Innovation attributes refer to characteristics perceived from innovation. They provide a framework for potential adopters to evaluate innovation (Ostlund, 1974). Studies by Choshaly (2019); Ho & Wu (2011); and Bozbay & Yasin (2008) reveal that customers tend to adopt new products they consider having higher relative advantages, compatibility, trialability, and observability, in addition to lower complexity. These factors serve as the main consideration before making a purchase or adoption. Rogers (2003) defines the process diffusion of innovation as a "process to reduce uncertainties ". Rogers (2003) proposes several attributes of innovation that may help reduce uncertainties of innovation.

Hypothesis 1: Innovation attributes affect brand equity.
Hypothesis 2: Innovation attributes affect intention to use.

2.2. Brand Equity

Brand equity is one of the factors known to affect customer decisions in choosing and purchasing a product (Aaker, 1991). Kotler & Keller (2009) view brand equity as a value-added of a product and service. This value can be reflected in a customer's mindset, feeling, and attitude toward the brand, price, market, and profitability of the company. Studies by Khan et al.(2014); Uthayakumar & Senthilnathan (2011); Chang & Liu (2009) dan Ashill & Sinha (2004) proved that brand equity is positively associated with purchase intention. Brand awareness plays a pivotal role in determining customers' purchase intention, as it can build the customers' brand engagement. Brand association is also known to influence purchase intention, as it helps customers to gain information, compare to other brands, and create a positive attitude for the company and the customers. Perceived quality may also create value that becomes customers' reasons to buy a product. Meanwhile, brand loyalty may cause customers to be attached to a certain product. In addition to repurchase, loyal customers are immune to changes in the product price or changes.

Hypothesis 3: Brand equity affects intention to use.

2.3. Consumer Innovativeness

The term consumer innovativeness is firstly defined as a trait that influences how individuals view new ideas and independently decide whether or not to adopt the innovation, regardless of other people's experience (Midgley & Dowling, 1978). Consumers have their own perceptions and expectation toward an innovation (i.e., a new product or service). Therefore, to make an innovation acceptable, the attributes of the innovation should suit consumer perception and expectation. Araujo et al. (2016) found a positive, significant relationship between domain-specific innovativeness (DSI) and innovation adoption, considering that DSI refers to a group's tendency to purchase a new product. Innovative consumers are more likely to purchase a product and brand extension, which is not related to the present market (Klink & Smith, 2001). Consumer innovativeness is known to affect purchasing power (Zhang et al., 2020), intention to use (Huang et al., 2011; Kim et al.,2017; Tuu et al., 2021). Consumer innovation may develop

individual behavioral intention (Kim et al, 2017). Consumer innovativeness is also reported to intensify the effect of innovation attributes on brand equity (Nørskov et al., 2015). Within a new product adoption model developed by Holak & Lehmann (1990), perceived product attributes consumer character, and environmental variables simultaneously affect purchase intention. Consumer innovativeness may lead to more positive intention to accept innovation, (Ho & Wu, 2011). Consumer innovativeness plays a pivotal role in determining new product acceptance (or rejection) and adoption. In other words, it may determine the success or failure of a product (Sciffman & Kanuk, 2004). Consumer innovativeness is a construct that deals with how receptive consumers are to new products. Consumer innovativeness has been defined as a predisposition or propensity to buy or adopt new products or a preference for new and different experience.

Hypothesis 4: Consumer innovativeness affects intention to use.

Hypothesis 5: Consumer innovativeness moderates the effect of innovation attribute on brand equity

Hypothesis 6: Consumer innovativeness moderates the effect of innovation attributes on intention to use.
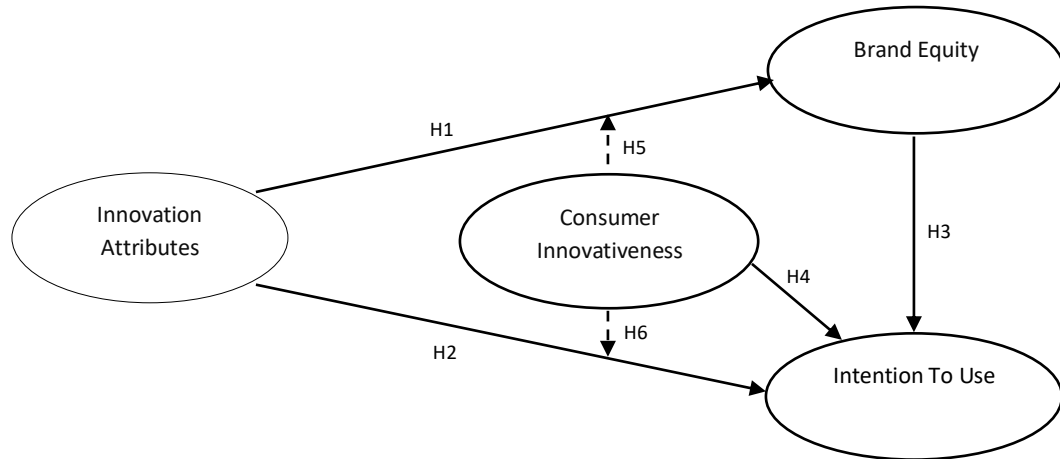

Figure 1. Research framework.

2.4. Intention To Use

Intention describes one's willingness to exhibit a behavior. One's present usage may affect consumers' intention to use in the future (Liao & Lu, 2008; Agarwal & Prasad, 1997). The previous study by Liao & Lu (2008) shows that the relationship between intention and actual behavior, in an e-learning website context, is in line with the predicted intention, meaning that higher intention may lead to stronger actual behavior.

3. Research Methods

3.1. Empirical Study

The respondents of the present study were micro, small, and medium-scale enterprise owners who used logistic services in Yogyakarta and Solo. They were recruited using the purposive sampling technique. The questionnaire was distributed online through social media to various MSME communities in Yogyakarta and Solo. These two cities were selected as the research site since many rail logistics service consumers come from these two cities. In addition, both cities are the center of the railway logistics business in KAI's operating region 6. The respondents were least 17 years of age when participating in this study. The age of 17 was determined as inclusion criteria as this age has been categorized as productive age. Another inclusion criterion was those who knew about KAI Logistic Express services. In this regard 208 MSME owners were involved, consisting of female (53.4%) and male (46.6%) owners with the monthly delivery intensity of seldom (14.4%), infrequently (58.7%), frequently (17.8%), and always (9.1%). Most of the respondents were known to live in Solo (55.8%).

3.2. Survey instrument and measurement

Variables in this study were measured using several items adapted from existing literature, which were modified to suit the railway logistics services context. Innovation attributes were measured using a questionnaire adapted from Choshaly (2019). Meanwhile, brand equity was measured by adopting Yoo and Donthu's (2001) and Yoo et al.'s (2000) questionnaires. Regarding consumer innovativeness, a questionnaire developed by Tellis et al. (2009) was employed. Lastly, Liao and Lu's (2008) questionnaire was adopted to measure intention to use. Variables in this study were measured using a 5-point Likert scale (from "strongly disagree" to "strongly agree").

4. Result

The research hypothesis was tested using a Structural Equation Model (SEM) approach based on Partial Least Square (PLS). PLS-SEM was chosen to test the hypothesis because it can handle several dependent and independent variables simultaneously (Sarstedt et al., 2017). The analysis technique using the PLS-SEM technique is carried out in two stages, first, evaluating the measurement model through construct validity and reliability tests. Second, evaluate the structural model to examine the direct and indirect effects of the developed model.

4.1. Validity and Reliability

To evaluate the measurement model, validity and reliability tests were conducted for each construct. In validating the construct, the convergent and discriminant validities were analyzed. A product passes convergent validity test when its factor loadings is higher than 0.5 (Hair et al., 2010) and average Variance Extracted (AVE) of higher than 0.5 (Fornell & Larcker, 1981). As displayed in table 1, the factor loadings and AVE of the constructs used in this study met the recommended criteria. Cronbach's Alpha and composite reliability are values used to examine the reliability of an instrument, it is deemed reliable if the score was higher than 0.60 (Malhotra, 2010). The instrument used in this study was considered reliable since each construct meets the criteria of reliability.

Table 1. Construct assessment

Latent Variable	Item	Factor Loadings	AVE	Cronbach's Alpha	Composite Reliability
X Innovation attributes	IA01	0.755	0.616	0.958	0.960
	IA02	0.849			
	IA03	0.793			
	IA04	0.782			
	IA05	0.789			
	IA06	0.832			
	IA07	0.814			
	IA08	0.743			
	IA09	0.831			
	IA10	0.783			
	IA11	0.730			
	IA12	0.735			
	IA13	0.837			
	IA14	0.706			
	IA15	0.777			
Z Consumer Innovativeness	CI01	0.742	0.633	0.932	0.939
	CI02	0.803			
	CI03	0.797			
	CI04	0.878			
	CI05	0.760			
	CI06	0.746			
	CI07	0.785			
	CI08	0.797			
	CI09	0.844			
Y1 Brand equity	BE01	0.764	0.625	0.952	0.952
	BE02	0.780			
	BE03	0.800			
	BE04	0.826			
	BE05	0.841			
	BE06	0.794			
	BE07	0.841			
	BE08	0.825			
	BE09	0.787			
	BE10	0.587			
	BE11	0.800			
	BE12	0.811			
Y2 Intention to use	ITU01	0.905	0.825	0.896	0.934
	ITU02	0.926			
	ITU03	0.894			

Source: Data 2021

To evaluate the discriminant validity, Fornell and Larcker's criterion was applied. A construct is considered having discriminant validity if its score is higher than the others' score. As shown

table 2, all constructs passes discriminant validity because the correlation value of each of these variables had the highest value compared to the scores of other variables.

Table 2. Fornell-Larcker Criterion

Variabel	Brand Equity	Consumer Innovativeness	Innovation Attributes	Purchase Intention
Brand Equity	0,735			
Consumer Innovativeness	0,330	0,740		
Innovation Attributes	0,463	0,680	0,726	
Purchase Intention	0,543	0,510	0,555	0,836

Source : Data 2021

4.2. Structural Model

Once the measurement model is evaluated, the structural model was analyzed to test the proposed hypotheses. To evaluate the structural model, the direct or indirect effect test were conducted between the variables proposed in hypotheses. The following table 3 is the results of the PLS-SEM analysis:

Table 3. Paths analysis results.

Hypothesis	Ordinal Sample (O)	Standard Error	T Statistic	P Value	Result
Innovation attributes → Brand equity	0.431	0.108	3.975	0.000	Innovation attributes significantly affects brand equity
Innovation attributes → Intention to use	0.343	0.141	2.428	0.016	Innovation attributes significantly affects intention to use
Brand equity → Intention to use	0.233	0.116	2.012	0.045	Brand equity significantly affects intention to use
Consumer innovativeness → Intention to use	0.352	0.113	3.118	0.002	Consumer innovativeness significantly affects intention to use
Moderating Effect 1 → Brand Equity	0.162	0.074	2.177	0.030	Consumer innovativeness moderates the effect of innovation attributes on brand equity
Moderating Effect 2 → Intention to use	0.168	0.069	2.431	0.015	Consumer innovativeness moderates the effect of innovation attributes on intention to use

Source : Data 2021

As stated in hypothesis 1, it was expected that innovation attributes affect brand equity. The analysis result (as displayed in table 3) indicates that innovation attributes affects brand equity (tstat=3.975, p-value = 0,000), meaning that H1 was supported. It was found that hypothesis 2 stating that innovation attributes affects intention to use was accepted. As displayed in the table, it significantly intention to use (tstat=2.428, p-value = 0,016). Hypothesis 3, It was predicted that brand equity affects intention to use and the analysis result supports the hypothesis. The analysis indicates it significantly affect intention to use (tstat=2.012, p-value = 0,045). Regarding the effect of consumer innovativeness on intention to use, the analysis showed that consumer innovativeness significantly affect intention to use (tstat=3,118, p-value = 0,002). In other words, H4 was accepted. Hypothesis 5 is also accepted, where it is found that consumer innovation has a significant effect in moderating the effect of innovation attributes on brand equity (tstat = 2.177, p-value = 0.030). The analysis result also indicates that consumer innovativeness has a significantly affects in moderating the effect of innovation attributes on intention tu use (tstat=2,431, p-value = 0,015), meaning that H6 is accepted.

5. Discussion

The present study provides several theoretical implications to the field of innovation attributes, consumer innovativeness, brand equity, and intention to use. The study was to find out the effect of innovation attributes on brand equity and intention to use rail logistics service, the effect of consumer innovativeness on intention to use rail logistics service, and the moderating effect of innovation attributes on brand equity and intention to use rail logistics service. The dimensions of innovation attributes in this study adopted those in previous studies conducted by Zhang et al., (2013); Nørskov et al., (2015); Liao & Lu, (2008); dan Choshaly (2019). Dimensions of brand equity adopted those in Uthayakumar & Senthilnathan (2011) and Yoo et al., (2000). Meanwhile, dimensions of consumer innovativeness adopted previous studies from Ho & Wu, (2011) and Tellis et al., (2009).

Consistent with Nørskov, et al (2015), this study found that innovation attributes dimensions affected brand equity, meaning that innovation attributes are associated with value creation that affects brand equity. The present study also confirms the significant relationship between innovation attributes and intention to use. It was found that innovation attributes affected consumers' intention to use the rail logistics service. Consumers' perception of relative advantage, compatibility, ease of use, demonstration result, and visibility were found to affect a consumer's intention to use, suporting previous findings reported by Choshaly (2019); Bozbay & Yasin (2018); and Ho & Wu (2011).

The effect of brand equity dimensions on intention to use rail logistics services, which is consistent with previous studies (e.g., Khan et al., 2014; Uthayakumar & Senthilnathan,2011; Chang & Liu, 2009; Ashill & Sinha, 2004) indicates that the value-added of a brand may determine a consumers' perception and attitude toward the brand, price, market, and profitability.

Consumer innovativeness dimensions were found to affect intention to use rail logistics service, meaning that consumers may have different perceptions and expectations regarding innovation. An individual with an innovative personality may exhibit curiosity, ambitions, and reasonableness. Consumer innovativeness dimensions were found to amplify the effect of innovation attributes of a product on brand equity, in line with the study conducted by Nørskov

et al. (2015). Consumer innovativeness dimensions were also found to strengthen the effects of new product perception on consumer adoption intention, supporting Ho & Wu's (2011) finding. More innovative consumers are more likely to buy the product and brand extension.

R Squared (R^2) analysis was made to figure out the magnitude of the effect of exogenous variables on endogenous variables. It was found that innovation attributes and consumer innovativeness affected brand equity by 25.9%. Meanwhile, innovation attributes, brand equity, and consumer innovativeness were found to affect intention to use by 43.9%.

Several limitations were found in the present study and are necessary to be addressed in future studies. First, the questionnaires used in this study were distributed online due to the viral outbreak, resulting in a longer time to reach adequate number of responses. Second, we did not control respondents' characteristics, such as MSMEs categories and the average weight of delivery/month that possibly bring different results. Third, since this study was conducted in Yogyakarta and Solo, it was considered less representative to the entire prospective PT KAI Logistic Express consumers, considering that MSME characteristics in each region may vary. Fourth, the sampling process should be carried out properly through effective, intense communication and coordination.

6. Conclusion & Recommendation

The covid-19 pandemic adversely affects almost all business sectors, especially transportation and warehouse business. This study aimed to figure out effective strategies for KAI Logistik Express to compete amid the covid-19 pandemic by focusing on innovations of rail logistics service during the Covid-19 pandemic. More specifically, this study examined the effect of innovation attributes on brand equity and intention to use rail logistics service, the effect of brand equity on intention to use rail logistics service, the effect of consumer innovativeness on intention to use, and the moderating effect of innovation attributes on brand equity and intention to use rail logistics service. Innovation attributes are associated with value creation that may affect brand equity and consumers' perception of relative advantage, compatibility, ease of use, demonstration result, and visibility that may significantly affect intention to use. Consumer innovativeness is a construct that deals with how receptive consumers are to new products. It denotes predisposition or propensity to buy or adopt new products or a preference for new and different experience.

Following the result of the study, several effective strategies are recommended for KAI Logistik Express to compete amid the covid-19 pandemic. First, the company (i.e., KAI Logistik) should strengthen its service publicity through advertisements and intensify media information to deepen the customers' impression and draw more people's attention. To attract more users, it is necessary to use promotion and campaign media other than Instagram, such as Facebook, Twiter, Tiktok, and Youtube. KAI and KAI logistik should be prepared to face the increasingly massive railways logistic competition during the economic development in the Covid-19 pandemic in dynamic and complex markets, as well as uncertain economic situations. Innovative customers learn new products to reduce uncertainty about innovation through mass media, word of mouth, internet, and social networks (Al-Jundi et al., 2019; Ho & Wu, 2011; Rogers, 2003). Second, the company is recommended to consider opening business partners/agents as they provide added

value and expansion to the brand, allowing the KAI Logistik Express gains more public recognition. Offering MSME owners to become agents/partners of KAI Logistik could be followed by providing convenience in shipping goods and special prices. It is also recommended to consider providing delivery service features using KAI Logistics for purchases in widely known marketplaces such as shopee, tokopedia, lazada, etc. Third, it is important to develop an application for goods delivery, tariff check and tracking, which allows consumers to deliver their goods without leaving their homes and thus reducing the risk of virus transmission with the tagline "we'll make your life easier". This application offers door-to-door service, creating a competitive advantage in business competition. Despite its contribution, this study has a limitation. Future studies are recommended to involve other variables such as service quality, customer satisfaction, and perceived risk to obtain better understanding of KAI logistic customers' behavior.

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