

# Impact of consumer innovativeness on risk and new product adoption: a moderating role of Indonesia's demographic factors

*by Dinar Mutia*

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# 4 IMPACT OF CONSUMER INNOVATIVENESS ON RISK AND NEW PRODUCT ADOPTION: A MODERATING ROLE OF INDONESIA'S DEMOGRAPHIC FACTORS

## Abstract

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Consumer innovativeness is an important driver of economic progress and a country's position in global competition. This study aims to examine the moderating effect of demographic factors of Indonesian consumers on the impact of consumer innovativeness on perceived risk and new product adoption. The type of research chosen is a causal comparative study by using online and offline survey methods. Data were obtained from a sample of 1,000 consumers from 31 provinces. The results showed that the demographic variable became a moderating variable for the impact of consumer innovativeness on new product adoption, but did not play a role in the influence of consumer innovativeness on credit-purchase risk perception. With regard to the influence of consumer innovativeness on credit-purchase risk perception, only social class has a significant effect as a moderating variable. As for the effect of consumer innovativeness on a new product adoption, the variables of marital status, occupation, income, and social class have significant effects. The social class variable consistently becomes a moderating one in both equations. The results of this study are useful for marketers to focus more specifically on their target markets, especially on the diffusion of new product innovations based on demographic characteristics.

**Keywords** demography, consumer, innovativeness, risk, adoption, new product, purchase

**JEL Classification** J19, O33, M39

## INTRODUCTION

Development of the global market and rapid application of technology encourage marketers to continue to innovate and pay more attention to consumer linkages with new product acceptance (Jain & Dalal, 2015). Companies need to understand how the diffusion of new product innovations can successfully penetrate specific population segments (Hussain et al., 2014).

Recent studies tend to link consumer innovativeness with demographic factors (Dobre et al., 2009). The impact of demographic factors on consumer innovativeness, especially risk and new product adoption, has been debated (Bartels & Reinders, 2011). Demographic variables and attitude toward technology complement each other as predictors of the intention to embrace and use technology-based products and services (Rojas-Méndez & Parasuraman, 2015).

Demographic factors are considered to be the causes of this diversity. In several studies, demographic factors are directly associated with saving behavior and credit constraints (Blanc et al., 2015), credit card objects

(Hong et al., 2006; Athiyaman & Subramaniam, 2018; Da Silva et al., 2012; Kiarie et al., 2013), online purchase (Nawi et al., 2019), and insurance products (Thomas et al., 2005). Savage (1993) linked them with risk and fear of hazards, but he did not associate them with consumer innovativeness and new product adoption. Elliehausen (2010), Blanc et al. (2015) and Chavali and Mohanraj (2016) examined the impact of demographic factors on perceptions of making credit purchases and linked it to consumer innovativeness and new product adoption. However, very little is known about the relationship between consumer perceived risk and purchasing on credit (Goyal, 2008).

According to demographic factors, Indonesia is a large and potential new product market. By 2020, half of the total population of 270 million are young people (under 30); 34% will be millennials. It is predicted that in 2035, Generation Z will dominate the Indonesian millennial market (Alvara Strategic Research, 2019).

<sup>16</sup> Generation Z in Indonesia has a consumptive nature, spontaneous in spending money, and shopping online (Simangunsong, 2018) and always follow technological changes (Salim et al., 2019). This generation is also a creative and connected generation, marked by the character of innovative consumers, which is characterized by internet addiction, using smartphones and thin wallets/cashless money (Alvara Strategic Research, 2019). Cards are the dominant payment method when shopping online, and debit card usage tends to decline, replaced by digital wallet (E-commerce payments trends: Indonesia, 2019).

In Indonesia, consumers can choose to buy consumer products for cash or on credit. Some examples of products commonly purchased on credit include investment products and even other consumer goods. SOFIA (Survey on Financial Inclusion and Access) research in 2017 showed that more than 60% of respondents borrowed money and/or are currently having loans in the last 12 months, with 71% borrowed from outside the financial system. The consumer credit market in Indonesia tripled by 1,115,092 billion rupiah in the last 10 years, from 2010–2020 (Global Economy, 2020). Financial risk is an important factor that affects perceived risk (Putritama, 2019), and Indonesian consumers who are interested in buying products on credit have a risk taker characteristic (Adiyanto et al., 2017). However, not many link the Indonesian consumer credit market with the adoption of new products and consumer innovativeness.

<sup>29</sup> Several Indonesia researchers examined the impact of demographic factors on the risk tolerance in the context of investor decisions as stated by Nosita et al. (2020), and Leon and Angie (2019). In addition, Firmansyah (2016) has shown that consumer innovativeness and financial risk tolerance significantly influence consumer's intention to adopt a payment card. However, they did not examine the effect of consumer innovativeness on perception on credit-purchase risk and new product adoption and did not relate it to the role of demographic factors. Here it is important to examine the relationship between consumer innovativeness and perceived risk of credit purchase because the willingness to take risks is a characteristic of consumer innovativeness.

<sup>34</sup> It is important for companies to rely on the success of new product diffusion and survival in a fiercely competitive environment (Jain & Dalal, 2015). For business people, it is very important to know how consumers have innovative behavior; knowing about innovations, accepting an innovation, buying innovations, and finding new areas of use for a product are the different levels of innovative behavior (Karaarslan & Akdoğan, 2015). Innovators have an influence on the success and failure of new products related to the diffusion level of their innovation (Dobre et al., 2009).

## 1. LITERATURE REVIEW AND HYPOTHESES

Consumer innovativeness is a personal characteristic as reflected in human behavior (Dobre et

al., 2009). The definition of consumer innovativeness among researchers leads to a predisposition of consumers to new products, earlier than other consumers. Midgley and Dowling (1978) believe that the level of acceptance toward innovativeness

is the way individuals take new viewpoints and make innovative decisions without referring to other people's experience.

Consumer innovativeness is behavior that is present from birth and is constant (Hynes & Lo, 2006). Roerich (2004) and Lobaneko (2017) define consumer innovativeness as consumption of newness, which is associated with motives for innovation, namely desire for excitement, need for novelty, independent to other people's experience, and necessitates for uniqueness. Tellis et al. (2009), Lan et al. (2011), and Racela (2015) define it more closely with individual characteristics and have different lifestyles, namely individual's willingness to change, inclination to purchase new products, preference for novel and unique experience, tend to be influencer in making purchase decisions, and leaders in their peer groups. The more the consumer is innovative, the more willing he/she is to accept and purchase and use new products (Absari & Joudaki, 2018). Consumer innovativeness is also a heavy user and more frequently a person uses new products (Lee & Son, 2017) and technologies (Filová, 2015). These explanations show that consumer innovativeness is a behavior and is reflected in consumer behavior.

### 2 1.1. Consumer innovativeness – risk perception of credit purchase

In some situations, retailers offer products that can be purchased on credit. To encourage transactions, the seller creates a marketing strategy in the form of installment credit (Holmes & Shore, 1982). Decision making carries the effects of risk. Thus, the risk perception of credit purchase is actually a risk that consumers realize in relation to credit purchases. However, consumers want to manage these risks (Koparal & Çalik, 2014) because they cannot foresee the impact of these decisions (Goyal, 2008).

Perceived risk in purchasing decisions is defined as uncertainty in decision making and the consequences of these decisions. Perceived risk refers to the degree of risk that consumers perceive and their own tolerance for risk taking, which are factors that influence their purchase strategies (Goyal, 2008). Maciejewski (2011) states that consumer

risk is a possible consequence of decision making and this is an important aspect in the level of consumer perception.

Many aspects of consumers' budget limitations are related to consumer preferences for high-risk products and high-risk loans (Jorgensen, 2011). In particular, financial risk in purchasing on credit shows the probability of financial loss that consumers must manage (Okeke, 2013). The higher the level of perceived risk, the weaker the desire to use or choose credit purchase decisions and use credit cards (Chahal et al., 2014).

Consumer innovativeness also correlates to risk-taking behaviors; high-level innovators are also risk takers (Chih, 2018). As a group, they are motivated by stimulation, need, and novelty (Roerich, 2004). Thakur and Srivastava (2014) found that consumer innovativeness negatively affected buying-perceived risk. Commonly studies use risk-taking as an indicator of consumer innovativeness (Kim, 2008; Lyu et al., 2018). However, the perceived risk level in consumers is varied for the category of innovator (Sharma & Das, 2016).

### 1.2. Consumer innovativeness – new product adoption

Consumer innovativeness is an innate tendency to be attracted to the unique qualities of inherent propensity to desire to adopt innovations (Morton et al., 2016). New product adoption is the process of a mental set of consumers going through, beginning with first becoming aware of the new product's existence and ending with the decision to adopt the product for continued and regular use (Ngirwa, 2014). Consumer adoption behavior itself is influenced by perceived group size moderated by need for assimilation and need for distinctiveness (Timmor & Katz-Navon, 2008).

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Consumer innovativeness is related to the adoption of new products (Sharma & Das, 2016). New products are called related to new product adoption behavior (Nasution & Astuti, 2012). Most studies suggest that innovative consumers tend to adopt new products earlier than consumers who are less innovative (Ansari, 2014; Cowart et al., 2007; Tellis et al., 2009; Savas, 2017; Morton et al., 2016; Roerich, 2004; Neckel & Boeing, 2017; Lee

& Son, 2017; Al-Jundi, Shuhaiber, & Augustine, 2019). Less innovative consumers tend to consider many aspects of product attributes before buying a new product (Figueroa & De Meneses, 2013). Lee and Son (2017), Filová (2015), and Cowart et al. (2007) state that innovators are the fastest adopters of new products and tend to buy and explore new products voluntarily. Shi (2018) emphasizes this, stating that innovative consumers have a strong sense of innovation, tend to have a positive attitude to new things, and they are eager for new experiences.

### 1.3. Demographic aspects as a moderating variable

In several studies, consumer innovativeness is related to consumer demographics, but these studies are still debatable. For example, Rojas-Méndez and Parasuraman (2015) state that age is the most consistent predictor of intention to use new technology-based products. Frank et al. (2015) find that age negatively affects consumer innovativeness in Bolivia, but not in the USA and Japan. Hussain et al. (2014) show that age and income have no moderating effect on innovation level, while education and gender have no effect at all. Consumer innovativeness has a positive correlation with income, education, and marital status (Akdogan et al., 2018).

In many studies, demographic factors are used to profile consumer innovators (Ansari, 2014). Dobre et al. (2009) state that demographic factors relate and differentiate consumer innovativeness, consciousness of financial risk, and adoption of first innovation. Tellis et al. (2009) state that consumers' interest in new products varies substantially depending on demographics. Sulaiman (2012) states that categorical changes in demographic factors determine changes in risk tolerance. Midgley and Dowling (1978) propose a contingency model of innovativeness in which predispositions interact with socio-demographic variables. Tellis et al. (2009) say that demographic factors are helpful in measuring consumer innovativeness, and consumers' efficiency for new products varies substantially by product category and demographic.

The research aims to examine the moderating effect of demographic factors on the impact of

consumer innovativeness on the perceived risk of credit purchase and new product adoption of Indonesian consumers.

Based on these arguments, the hypotheses are:

*Ha1: Consumer innovativeness affects risk perception of credit purchase.*

*Ha2: Consumer innovativeness affects new product adoption.*

*Ha3: Demographic variables (gender, age, marital status, the role in the family, income, level of education, types of work, social class, and ethnicity) affect the influence of consumer innovativeness on risk perception of credit purchase.*

*Ha4: Demographic variables (gender, age, marital status, the role in the family, income, level of education, types of work, social class, and ethnicity) affect the influence of consumer innovativeness on new product adoption.*

## 2. METHOD

The type of research used in this study is a survey to look for causal relationships between variables. The variables in this study were consumer innovativeness, perceived risk of credit purchase, and new product adoption. Indicators of the three variables are developed by researchers themselves because indicator measurement of the three variables has many versions and lacks consensus (Chih et al., 2012; Tellis et al., 2009; Roerich, 2004). In relation to demographic aspects, Tellis et al. (2009) show that five of the ten demographic variables (age, income, mobility, education, gender, and family size) are related to consumer innovativeness. Savas (2017) added household size and family life cycle. In this study, the demographic variables used were gender, age, marital status, family role, ethnicity, education, income, occupation, and social class. Table 1 shows the indicators of the three variables.

This study conducted among 1,000 consumers in Indonesia. The selected respondents were

**Table 1.** Indicators of variables

Variables		Indicators
<b>Consumer innovativeness</b>		
1.	Internally oriented and independent of the norms of the belonging group (Dobre et al., 2009)	Live full of freedom; Be true to principles; Value free
2.	Open to new ideas and changes (Dobre et al., 2009; Tellis et al., 2009; Shi, 2018)	Being open to inputs
3.	Less dogmatic (Dobre et al., 2009; Parker & Sarvary, 1996; Alkailani & Kumar, 2016)	Indonesian local brand; adherence to customs and culture
4.	Think logically and critically (Karaarslan & Akdoğan, 2015)	Logical and rational Positive thinking
5.	Media proneness (Savas, 2017)	Ease of getting information
6.	Autonomy in innovative decision (Roehrich, 2004; Midgley & Dowling, 1978; Lobaneko, 2017)	' <i>Gemi, nastiti, ati-ati</i> ' (thrifty, careful in managing money)
7.	Internet shopper, reflects their acceptance of technology and innovation (Sharma & Das, 2016)	Believe in internet purchases Modern life
8.	Willingness to give advice, responsibility and proactivity (Filová, 2015)	Responsible individual
9.	Negative effort, nostalgia, suspicion, and frugality (Tellis et al., 2009)	Positive thinking
<b>Perceived risk of credit purchase</b>		
1.	Tolerant to risk (Dobre et al., 2009; Tellis et al., 2009; Roehrich, 2004; Sharma & Das, 2016; Lan et al., 2011)	Willing to take risks Open to offers of credit
2.	Openness, enthusiasm and reluctance (Tellis et al., 2009; Shi, 2018; Dobre et al., 2009; Alkailani & Kumar, 2016)	Live full of passion; Think and act conservatively; Being easy to adapt
<b>New product adoption</b>		
1.	Enjoying novelty for both hedonic and social reasons (Karaarslan & Akdoğan, 2015; Tellis et al., 2009; Nasution & Astuti, 2012; Lee & Son, 2017; Lobaneko, 2017; Hussain et al., 2014; Roehrich, 2004)	
2.	Variety seeking (Tellis et al., 2009; Nasution & Astuti, 2012)	<ul style="list-style-type: none"> <li>• Shop in multiple stores for a variety of products</li> <li>• Shop for various product brands to get variety</li> </ul>
3.	Opinion leadership (Tellis et al., 2009; Savas, 2017; Lee & Son, 2017; Lan et al., 2011)	Be the first to buy new products; It is a lot of fun to buy something new
4.	Have and actively increase knowledge about the product (Nasution & Astuti, 2012; Lee & Son, 2017)	Be the first to buy new products

Indonesian consumers over 17 years old from 31 provinces (out of 34 provinces) and 42 ethnicities. Respondents from the largest ethnic groups in Indonesia are those from Java, Batak, Sundanese, Madurese, Chinese, Buginese, and Balinese. Most of the respondents are of Javanese ethnicity and live on the island of Java. 60% of the Indonesian population lives in Java and 50% is of Javanese ethnicity.

Samples were taken using the network method or snowball sampling. Researchers took a sample from a network of researchers throughout Indonesia. Questionnaires were distributed in 2019, before the Covid-19 pandemic. Data were collected by surveys distributed both online and offline in hard copy with the help of a network of researchers. The survey contained closed questions. The scale of measurement uses a 5-point Likert scale. The data analysis method was moderating regression analysis.

### 3. RESULTS

Before the analysis, the data was transformed into centered data on the independent and moderating variables to equalize the scale between the variables. Classical assumption tests were then conducted, namely the normality, multicollinearity, and heteroscedasticity tests. The autocorrelation test was not carried out because the data used were time series. All the prerequisites for the assumption of the normality test, multicollinearity, and heteroscedasticity are fulfilled.

Validity and reliability tests were carried out to ensure that the instruments used are valid and reliable. The validity test of the instrument was the Spearman Brown Correlation, which correlates the items with the total per variable. Validity and reliability tests show that all items are significant at the level of  $\alpha = 0.05$ . The Alpha Cronbach reliability test showed that all items were reliable at  $\alpha = 0.05$  level.

### 3.1. Descriptive data

This study found that 54.6% of the respondents were male and 44.4% were female. The group with the largest age range is young people 17-35 years as much as 57% and aged >36 years as much as 43%. Based on the marital status of the respondents, it was found that 57.9% were married, 29.4% were husbands, 27.5% were wives and 39.6% were children. As many as 68.4% of respondents had a higher education background above the diploma and the rest had an education from elementary to senior high school. Based on the ethnic origin, 60.9% are those from the Javanese ethnic group.

Based on social class and income aspects, 80.2% are those with income > IDR 2,400,000 – IDR 7,200,000, and the remaining 19.8% have income > IDR 7,200,000. This is in line with the respondent's social class where 56.8% are the lower social class, 40.7% the middle social class and only 2.1% the upper social class. Based on the aspect of work, 73.8% are those who work as daily workers, technicians, operators, students, and housewives.

Data analysis used Moderating Regression Analysis (MRA). First, compare the three equations, namely: equations a, b, and c. Equation a tests the effect of the consumer innovativeness variable on perceived risk of credit purchase or new product adoption. Equation b examines the effect of consumer innovativeness and demographic variables on perceived risk of credit purchase or new product adoption. Equation c examines the effect of the interaction of demographic variables.

**Equation 1. Consumer innovativeness on the perceived risk of credit purchase**

**Equation 1a:** Before the interaction.

$$Y = 2.290 + 0.301 \text{ Consumer innovativeness}$$

$$R = 0.652$$

$$R^2 = 0.425$$

$$F = 689.734$$

$$\text{Sig} = 0.000.$$

**Equation 1b:** Before the interaction with consumer innovativeness and demographic factors as independent variables.

$$\text{Perceived risk of credit purchase} = 18.675 + 0.290\text{CI}^{**} - 0.348 \text{ Sex}^{**} - 0.002 \text{ age} - 0.324 \text{ marital status} - 0.166 \text{ family status} + 0.052 \text{ occupation}^{*} + 0.095 \text{ education}^{*} - 0.024 \text{ income} + 0.705 \text{ tribe}^{**} + 0.376^{**} \text{ social class}$$

$$R = 0.689$$

$$R^2 = 0.475$$

$$F = 79.469$$

$$\text{Sig} = 0.000.$$

**Equation 1c:** After the interaction of consumer innovativeness with demographic variables.

$$\text{Perceived risk of credit purchase} = 18.675^{**} + 0.285\text{CI}^{**} - 0.359 \text{ Sex}^{**} - 0.014 \text{ age} - 0.339 \text{ marital status} - 0.157 \text{ family status} + 0.046 \text{ occupation}^{*} + 0.098 \text{ education}^{**} - 0.017 \text{ income} + 0.759 \text{ tribe}^{**} + 0.394 \text{ social class}^{**} + 0.011 \text{ Sex}^{*}\text{CI} - 0.010 \text{ age}^{*}\text{CI} + 0.030 \text{ marital status}^{*}\text{CI} + 0.005 \text{ family status}^{*}\text{CI} + 0.005 \text{ occupation}^{*}\text{CI} - 0.008 \text{ education}^{*}\text{CI} + 0.002 \text{ Income}^{*}\text{CI} - 0.003 \text{ tribe}^{*}\text{CI} + 0.049 \text{ social class}^{*}\text{CI}^{**}$$

$$R = 0.695$$

$$R^2 = 0.483$$

$$F = 42.751$$

$$\text{Sig} = 0.000.$$

Based on the results of the three equations (before and after the moderating variable interaction), consumer innovativeness has a significant effect on perceived risk of credit purchase. Thus, hypothesis *Ha1* is accepted. Based on the results of the Fit model, it is known that before the interaction (1a), after adding the demographic variables (1b), and after the demographic variables interact with consumer innovativeness as a moderating variable (1c), the existence of demographic variables slightly increases the values of R, R2 and F. It can be said that the demographic variable is a

slightly moderating variable for the effect of consumer innovativeness on perceived risk of credit purchase. Thus, hypothesis *Ha3* is not accepted. Based on the partial test results, the variables that have a significant direct effect are consumer innovativeness, gender, occupation, education, ethnicity, and social class. After the demographic variable is included as a moderating variable, only the social class variable has a significant effect.

**Equation 2. Consumer innovativeness on new product adoption**

**Equation 2a:** Before the interaction.

$$Y = 0.450 + 0.191 \text{ Consumer innovativeness}$$

$$R = 0.290$$

$$R^2 = 0.084$$

$$F = 85.604$$

$$\text{Sig} = 0.000.$$

**Equation 2b:** Before consumer innovativeness interacts with demographic variables.

$$\text{New product adoption} = 14.952^{**} + 0.205 \text{ CI}^{**} - 0.105 \text{ Sex} - 0.331 \text{ age}^{**} - 0.207 \text{ marital status} + 0.096 \text{ family status} - 0.075 \text{ occupation} + 0.272 \text{ education}^{**} - 0.044 \text{ income} + 1.161 \text{ Tribe}^{**} + 0.574 \text{ social class}^{**}$$

$$R = 0.378^a$$

$$R^2 = 0.143$$

$$F = 14.699$$

$$\text{Sig} = 0.000.$$

**Equation 2c:** After consumer innovativeness interacts with demographic variables.

$$\text{New product adoption} = 14.867^{**} + 0.226 \text{ CI}^{**} - 0.164 \text{ Sex} - 0.317 \text{ age}^{**} - 0.234 \text{ marital status} + 0.196 \text{ family status} - 0.085 \text{ occupation} + 0.285 \text{ education}^{**} - 0.058 \text{ income} + 1.234 \text{ Tribe}^{**} + 0.549 \text{ social class}^{**} - 0.076 \text{ Sex} \times \text{CI} - 0.022 \text{ age} \times \text{CI} - 0.202 \text{ marital status} \times \text{CI}^{**} + 0.036 \text{ family status} \times \text{CI} + 0.016$$

$$\text{occupation} \times \text{CI} - 0.025 \text{ education} \times \text{CI} + 0.026 \text{ income} \times \text{CI} + 0.059 \text{ tribe} \times \text{CI} + 0.091 \text{ social class} \times \text{CI}^{**}$$

$$R = 0.407^a$$

$$R^2 = 0.166$$

$$F = 9.118$$

$$\text{Sig} = 0.000.$$

Based on the results of the three equations (before and after the moderating variable interaction), consumer innovativeness has a significant effect on perceived risk of credit purchase. Thus, hypothesis *Ha1* is accepted. Based on the results of the Fit model, it is known that before the interaction (2a) and after adding demographic variables (1b), the existence of demographic variables increases the values of R, R2 and F. After the demographic variables interact with consumer innovativeness as a moderating variable (1c), there are differences in the increase in the values of R, R2 and F, so it can be said that the demographic variable may have a part in the moderating role of the influence of consumer innovativeness in new product adoption. This means that these variables significantly affect the level of influence of the consumer innovativeness variable on the new product adoption. Thus, hypothesis *Ha4* is accepted.

## 4. DISCUSSION

Based on the initial test results, it can be explained that the variables that directly and significantly affect the influence of consumer innovativeness on perceived risk of credit purchase are consumer innovativeness, gender, occupation, education, ethnicity, and social class. Consumer innovativeness has a positive and significant direct effect, so this means that the higher the consumer innovativeness level, the higher the perception on credit-purchase risk. This result is in line with Dobre et al. (2009) but different from Sharma and Das (2016). The variables of age, marital status, family-role status, and income did not affect the relationship between consumer innovativeness and perceived risk of credit purchase. This result is slightly different from the research of Nosita et al. (2020), which showed that marital status, income, and ed-



ucation had a significant effect, while gender and age had no significant effect on risk tolerance.

The second test results show that the variables that significantly affect the new product adoption variable before the moderating variable interaction are consumer innovativeness, age, education, ethnicity, and social class. According to Rojas-Méndez and Parasuraman (2015), demographic factors are very important related to willingness to adopt new technology. Tello et al. (2018) stated that demographics influenced individual adoption habits.

After the interaction of the demographic moderating variables, social class is the only variable that has a significant impact on the effect of consumer innovativeness toward perceived risk of credit purchase. Meanwhile, after the moderating variable interaction, the demographic moderating variables that have a significant effect on the influence of consumer innovativeness toward new product adoption are marital status, occupation, income, and social class.

Social class has a positive and significant effect, both directly and as a moderating variable. This means that the lower the social class, the higher the level of perceived risk of credit purchase and new product adoption. These results appear to confirm the research of Blanc et al. (2015) and Savage (1993), which state that the social class components, such as the lower class, income, level of education, and unemployed household, have high credit constraints. This result differs from the study by Nosita et al. (2020) in the context of risk tolerance for Indonesian consumers and Athiyaman and Subramaniam (2018) in the context of credit card applications.

The age variable, before and after the interaction, has a negative and significant effect. This means that younger consumers tend to prefer new product adoption. However, as a moderating variable, age does not have a significant effect. This is in line with Morton et al. (2016), Savas (2017), and Rojas-Méndez and Parasuraman (2015) that age affects the adoption of new product innovations. Young consumer groups are significantly more socially motivated to buy innovations and different products than older respondents (Vandecasteele & Geuens, 2008; Thomas et al., 2005).

Furthermore, of the consumer innovativeness, gender, occupation, education, ethnicity, and social class variables that directly affect perceived risk in credit-purchase, only gender has a negative and significant effect. This means that male consumers have a higher perception on credit-purchase risk than women. These results are in line with Chavali and Mohanraj (2016), although on a different object, which is investment. Kiarie et al. (2013) state that women are more risk averse. Frank et al. (2015) state that male consumers tend to have more innate willingness to pay for innovation compared to female consumers.

Besides, the marital status variable plays a negative and significant moderating role; and the 'unmarried' status has a greater influence on the effect of consumer innovativeness on the new product adoption. In Savas (2017) and Morton et al. (2016), marital status is not a variable that influences new product adoption and there is no difference in innovation based on marital status.

The three components of social class show interesting results. The occupation variable becomes a moderating variable that significantly affects the influence of consumer innovativeness on the new product adoption. This means that non-managerial work affects the influence of consumer innovativeness on the new product adoption. The education variable has a positive and significant direct effect on new product adoption, but it is not significant as a moderating variable. This means that the lower the education, the higher the preference for new product adoption. Rojas-Méndez and Parasuraman (2015) stated that less educated people prefer the adoption of new products more because of the company's interpersonal way of communication. The income variable becomes a moderating variable, which is positive and significant. This means that the lower the income, the higher the influence of consumer innovativeness on the new product adoption. Savas (2017) shows the same thing, while Lee and Son's (2017) research shows that income is not related to consumer innovativeness.

Parker and Sarvary (1996) and Tellis et al. (2009) also state that differences in nationality and cultural differences will lead to varying levels of consumer innovativeness. In this study, the differenc-

es between the Javanese and non-Javanese have a positive and significant direct effect on new product adoption. The non-Javanese tend to have a more level of new product adoption. However, the difference in ethnicity is not important as a moderating variable.

In general, the results of this study indicate that the demographic variable becomes a moderating variable of the effect of consumer innovativeness on new product adoption, but does not play a role in perceived risk of credit purchase. The results of this study are in line with Sharma and Das (2016), as well as Elliehausen (2010), but are in contrast to Chih (2018) that highly innovative consumers are less sensitive to purchase risk or risk takers. The results of this study do not support the research results of Cowart et al. (2007), Tellis et al. (2009) and Rojas-Méndez and Parasuraman (2015), which state that innovation is more inclined towards individuals who adopt new products earlier.

Academics and practitioners have paid a lot of attention to consumers' adoption of new products (Kim, 2008). In practical terms, this research implies that identifying innovators is essential for proper segmentation and market analysis to make it more competitive in the market (Hussain et al., 2014). For example, there is a large gap between millennial and non-millennial generations of Indonesia related to consumer innovativeness in adopting new products due to perceived risk aspects. Currently in Indonesia, the millennial market is the locomotive of the market, and female consumers are the first locomotive for technology-affiliated products (IPSOS Flair Collection, 2019). Tellis et al. (2009) stated that the relationship between demographics and consumer innovativeness can help marketers focus more on their target market.

Apart from individual consumer reasons, company success is also determined by consumer response to products, which is motivated by con-

sumer adoption (Tomaseti et al., 2004). Racela (2015) states that consumer decision making will become increasingly complex when consumers are faced with innovative products. Marketers need to implement the right strategy based on the product life cycle that is on target in the innovator segment, offering discounts to early adopters at product launch, adequate information, and quality products (Al-Jundi et al., 2019).

Research on consumer innovativeness and new product adoption has several implications for further studies. One of the emerging topics is the differences between individuals and categorization of people's responses to new things (Absari & Joudaki, 2018) and psychographic (Savas, 2017). Dobre et al. (2009) suggest that consumer innovativeness research can be linked to the product life cycle at the introduction and innovation levels.

Consumer innovativeness also needs to be linked to differences in culture and nationality, for example with Hofstede's nationality (Jain & Dalal, 2015). To expand research in Indonesia, consumer innovativeness can be explored more deeply in various ethnic groups in Indonesia in order to describe the diversity of characteristics of Indonesian consumers. The difference between the three variables with many ethnicities requires further study.

This study has several limitations. Indonesia is a very large and heterogeneous multicultural country. The study portrays only consumers in general and to a lesser extent reflects the demographic aspects of all consumers from hundreds of ethnic groups and regions in Indonesia, not just Javanese versus non-Javanese. This research is also part of a large multi-year study related to social class segmentation, culture, and consumer decision making style, so the focus on variables needs to be further explored. Future research, especially in Indonesia, is suggested to fill the limitations of this research.

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## CONCLUSION

Innovative consumers become companies' capital valuable for introducing new products, as they can spread innovation (Cowart et al., 2007; Figueroa & De Meneses, 2013). When testing the direct effect, consumer innovativeness, occupation, education, ethnicity, and social class have a positive and significant effect, while gender has a negative effect on perception on credit-purchase risk. Among all these variables, only the social

class variable acts as a moderating variable for the effect of consumer innovativeness on the perception of credit-purchase risk. The next test results show that the demographic variables that have a significant direct effect on new product adoption before moderating interactions are age, education, ethnicity, and social class. After the interaction, the variables of marital status, occupation, income, and social class have a significant effect.

In general, the results of this study indicate that the demographic variable becomes a moderating variable in relation to the effect of consumer innovativeness on new product adoption compared to the perception of credit-purchase risk. These are new findings for consumer studies in which demographic differences contribute to the level of innovativeness of Indonesian consumers. This leads to a willingness to adopt new products compared to perceived risk. This is the basis that the diffusion of new product innovations has great potential.

Based on testing the moderating role, only the social class variable has a significant effect, as a moderating variable, on the influence of consumer innovativeness on perception of credit-purchase risk and new product adoption. Differences in social class of consumers and their components, namely education, income, and work, should be of concern to marketers, as it relates to the characteristics of consumer innovativeness, adoption of new products and risks.

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## APPENDIX A

Table A1. Moderating regression analysis test results

Source: Author's own research (2020).

Variable	Before interaction			After interaction		
	$\beta$	t	Sig	$\beta$	t	Sig
<b>Equation 1. Y = Perceived risk of credit purchase</b>						
Equation 1a. Constant	2.290	3.656	0.000	-	-	-
Consumer innovativeness	0.301	26.263	0.000	-	-	-
Equation 1b. Constant	18.675	286.034	0.000**	18.675	280.396	0.000**
Consumer innovativeness	0.290	25.021	0.000**	0.285	22.208	0.000**
Sex	-0.348	-2.090	0.037**	-0.359	-2.138	0.033**
Age	-0.002	-0.020	0.984	-0.014	-0.174	0.862
Marital status	-0.324	-1.132	0.258	-0.339	-1.185	0.236
Family status	-0.166	-1.047	0.295	-0.157	-0.982	0.326
Occupation	0.052	1.957	0.051*	0.046	1.703	0.089*
Education	0.095	1.918	0.055*	0.098	1.973	0.049**
Income	-0.024	-0.611	0.541	-0.017	-0.434	0.664
Tribe	0.705	4.900	0.000**	0.759	5.238	0.000**
Social class	0.376	2.849	0.004**	0.394	2.948	0.003**
<b>Equation 1c</b>						
Sex*Consumer innovativeness	-	-	-	0.011	0.394	0.694
Age*Consumer innovativeness	-	-	-	-0.010	-0.681	0.496
Marital status*Consumer innovativeness	-	-	-	0.030	0.702	0.483
Family status*Consumer innovativeness	-	-	-	0.005	0.213	0.832
Occupation*Consumer innovativeness	-	-	-	0.005	1.151	0.250
Education*Consumer innovativeness	-	-	-	-0.008	-0.800	0.424
Income*Consumer innovativeness	-	-	-	0.002	0.208	0.835
Tribe*Consumer innovativeness	-	-	-	-0.003	-0.119	0.905
Social Class*Consumer innovativeness	-	-	-	0.049	2.148	0.032**
<b>Equation 2. Y = New product adoption</b>						
Equation 2a. Constant	0.450	4.018	0.000			
Consumer innovativeness	0.191	9.252	0.000			
Equation 2b. Constant	14.952	125.248	0.000**	14.867	122.512	0.000**
Consumer innovativeness	0.205	9.502	0.000**	0.226	9.594	0.000**
Sex	-0.105	-0.344	0.731	-0.164	-0.538	0.591
Age	-0.331	-2.281	0.023**	-0.317	-2.190	0.029**
Marital status	-0.207	-0.391	0.696	-0.234	-0.445	0.656
Family status	0.096	0.324	0.746	0.196	0.661	0.509
Occupation	-0.075	-1.554	0.121	-0.085	-1.746	0.081*
Education	0.272	2.992	0.003**	0.285	3.127	0.002**
Income	-0.044	-0.629	0.530	-0.058	-0.830	0.407
Tribe	1.161	4.433	0.000**	1.234	4.707	0.000**
Social class	0.574	2.371	0.018**	0.549	2.257	0.024**
<b>Equation 2c</b>						
Sex*Consumer innovativeness	-	-	-	-0.076	-1.514	0.130
Age*Consumer innovativeness	-	-	-	-0.022	-0.817	0.414
Marital status*Consumer innovativeness	-	-	-	-0.202	-2.493	0.013**
Family status*Consumer innovativeness	-	-	-	0.036	0.796	0.426
Occupation*Consumer innovativeness	-	-	-	0.016	1.826	0.068*
Education*Consumer innovativeness	-	-	-	-0.025	-1.309	0.191
Income*Consumer innovativeness	-	-	-	0.026	1.899	0.058*
Tribe*Consumer innovativeness	-	-	-	0.059	1.241	0.215
Social Class*Consumer innovativeness	-	-	-	0.091	2.143	0.032**

Note: \*\* significant at  $\alpha = 0.05$ ; \* significant at  $\alpha = 0.10$ .

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