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Psychological antecedents and risk on attitudes toward e-customization

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ABSTRACT

Consumers can experience relatively low prices with the dramatic diffusion of online shopping even with customized products, which are commonly more expensive than regular products, due to unique functions of customized product order processes in online environments. This paper investigates how two psychological antecedents, (1) need for uniqueness and (2) status aspiration, can influence consumers' attitude with regard to forming procedures toward e-customized products and how perceived risk, another psychological factor, on purchasing e-customized products plays a role of moderating factor. A self-administered online survey of 321 Japanese consumers is conducted to examine a proposed conceptual model with Structural Equation Modeling (SEM). The analysis using results indicates that the need for uniqueness directly impacts on attitude toward e-customized products while it mediates the effect of status aspiration. A multi-group analysis to test a moderating effect of the perceived risk on purchasing e-customized products highlights the significant effects of psychological factors. The result also provides potential guidelines to e-tailors on possibility of segmenting markets as well as promoting their customized products using these psychological criteria of their target consumers.

1. Introduction

Despite the fact that consumers feel more comfortable when shopping for standardized products than for customized products (Kımıloğlu, 2004), customized products are an increasingly common consumer choice and e-customized products have become more popular providing auxiliary benefits to customers in an online shopping environment with advanced internet technologies and configuration tools. While traditional customization has been an important part of consumer and retailing research for decades, there seems to be no clear conceptual boundaries with online customization for products (i.e., e-customization) (Duray, Ward, Milligan, & Berry, 2000) although empirical studies have dealt with issues of concerns of online customization to manufacturers and retailers such as customization levels, systems, enabling technologies, and process methodologies (Silveira, Borenstein, & Fogliatto, 2001), and online customization for web contents (Guo & Salvendy, 2009). Despite the fact that e-customization processes during online purchasing may require that they be educated about related skills for instance use of the Internet as well as have relevant knowledge about the product, still a growing number of customers seek for e-customized products. For example, when trying to purchase an e-customized laptop computer on Dell.com, customers should not only be accustomed to using the Internet, but also need to obtain knowledge to choose relevant features based on basic computer knowledge such as its operating system, hard drives, types of chips and main board, and so forth. Given that much research has concentrated on suppliers' perspectives on technology, there is a scarcity of research that deals with consumers' internal psychological properties that shape attitudes toward purchasing of e-customized products. The researchers for this study sense that factors fabricated due to the different medium, the Internet vs. in person, between traditional customization product order process and e-customized order product process must be one of the critical variables that would impact on attitude toward e-customized products and purchasing intention of e-customized products.

For online e-customized product shopping, consumers more likely seek for personalized search products than experience products (Moon, Chadee, & Tikoo, 2008) and sense higher benefits on purchasing customized products than standardized products when they have better perception and understanding into their own preferences (Franke, Keinz, & Steger, 2009), and they are able to express their preferences with higher product involvement.

Regardless of the complicated process and more expensive price, nonetheless, there is significant demand for customized products due to the unique characteristics of the products such as uniqueness (Chan, Berger, & Van Boven, 2012; Kastanakis & Balabanis, 2012; Zhan

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& He, 2012) or reflecting image/status (Kastanakis & Balabanis, 2012; Moon et al., 2008; Wiedmann, Hennigs, Varelmann, & Reeh, 2010).

Cutting edge online technologies are able to aid retailers to support personalized e-customized products' sales and provide these products to their customers better than ever with configuration tools for both mass and pure customization. Online retailers can maximize usage of business intelligent technologies with data mining in retaining existing customers and acquiring new customers. These technologies help them to improve services and enhance customer satisfaction (Rust & Espinoza, 2006) with aiding functions such as personalized search and recommendations based on their navigating, searching, purchasing, and transaction history (Ansari, Essegaier, & Kohli, 2000; Baglioni, Ferrara, & Romei, 2003; Schafer, Konstan, & Riedl, 2001) generating additional revenue.

In online environments, consumers have to take risks by revealing their personal information to customized product or service providers' website and whether they ordered the products or services they intended to order because of the complexity of the online e-customized product or service process. Assuming that taking a risk is one of the Internet's natural characteristics, it is also important to consider the effect of perceived risk on how consumers form their attitude toward e-customized products. With the feasible competitive advantage of e-customization, it is important to investigate which factors lead consumers to shop for e-customized even though customers are likely to confront some barriers such as a higher price, complicated processes, or uncertainty of receiving the right products and risk of online shopping itself.

2. Theoretical development and hypotheses

2.1. Consumer innovation adoption model

Gatignon and Robertson expand Rogers' view of diffusion theory and propose a conceptual model explaining diffusion of innovation, for which adoption processes may be influenced by personal influences, such as innovativeness and opinion leadership mediated by perceived uncertainty (Gatignon & Robertson, 1985; Robertson & Gatignon, 1986). This model has been a core concept to many consumer behavior studies (Crespo & Bosque, 2008a, 2008b; Crespo & Bosque, 2010; Schramm, Trainor, Shanker, & Hu, 2010) and has been applied to organization's adoption of new technology considering consumer's heterogeneity reflecting different characteristics, preferences, and needs (e.g., Adner & Levinthal, 2001). With regard to adoption at the individual consumer level, opinion leadership and market mavenship (Ruvio & Shoham, 2007), preference fit achieved and design effort (Franke, Schreier, & Kaiser, 2010), and general demographics (Faiers & Neame, 2006) have been identified. In addition, this model proposing to explain e-commerce technologies' (i.e., e-customization) adoption by consumers includes the simultaneous influence of attitudes, perceived risk, or innovativeness.

In this study, the authors adapted the Gatignon and Robertson's conceptual model (see Fig. 1) as a main conceptual framework because of the same reason that Crespo and Bosque (2008a,b) adopted this model, due to its overall nature and agreement with the main theories used to explain e-commerce adoption with its technology specifically in customer research domain.

The study expects to fill the research gap by suggesting two unique types of Japanese consumer characteristics, needs for uniqueness and status aspiration, explaining innovation adoption based on the diffusion of innovation model (Fig. 1) toward an online framework of customization. In addition, given the context of e-commerce, the authors further examined how perceived risk (which is uncertainty in Fig. 1) of online shopping moderates the hypothesized relations. Japanese consumers were chosen for this model testing, as Japan was the number one region for many decades known for their excellent craftsmanship supporting their manufacturing field, Japanese value craftsmanship highly in their purchasing decision, and the country is the second country followed by USA in terms of online sales (emarketer, 2012); it is necessary to have a sample that more commonly use e-customized products.

This research focus is not a comparison between two different cultures, rather to test a theory driven model. Therefore using a group of Japanese as a homogenous sample must be adequate for this study (Huang, Schrank, & Dubinsky, 2004; Mullen, 1995).

2.2. Need of uniqueness and e-customized products

Need for uniqueness is known as to what degree people put a value on scarcity, which varies from person to person (Kehret-Ward & Yalch, 1984). Internally, people tend to be satisfied when they find themselves to be unique and separable from others and externally, through posing independence, people can be evaluated positively since independence is considered a quality of strong character as well as autonomy. This perception of uniqueness from others is referred to as the "need for uniqueness" (Snyder & Fromkin, 1977, 1980) which is defined as a social desire of people who want to differentiate themselves by acquiring and possessing unique consumer products (Lynn and Harris, 1997; Snyder, 1992; Snyder & Fromkin, 1977, 1980).

Lynn and Harris (1997) explain acquisitive and possessive measurement by examining three antecedents, (1) need for uniqueness, (2) status aspiration and (3) materialism and reveal that all three antecedents are significantly related to desire to purchase unique

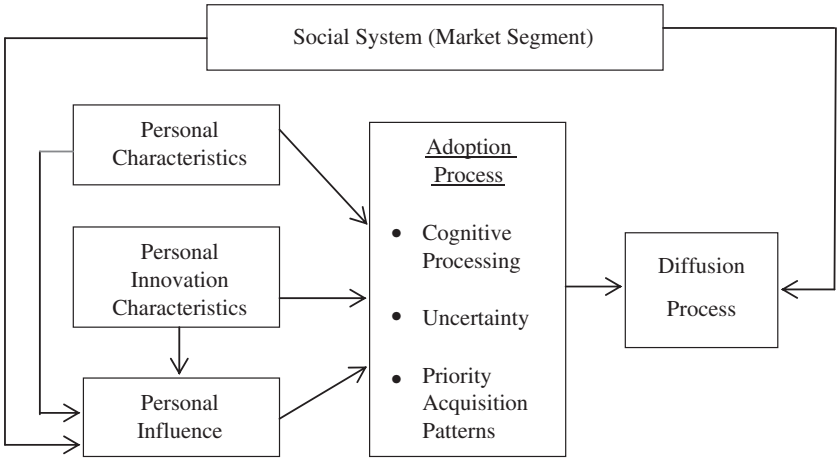

Fig. 1. Summary of consumer innovation adoption model (from Gatignon and Robertson, 1985).

products. In the present day, people defining themselves in relation to others tend to identify themselves by what they consume (Douglas, 1997) and ones seeking for more choices likely prefer to choose customized products over standardized products in order to identify and differentiate themselves from others (Moynagh & Worsley, 2001). The compelling reasons why people desire uniqueness and independence to differentiate themselves from others can be described with two pressures; enhancing internal and external images (Ruvio, Shoham, & Brenčič, 2008; Snyder, 1992).

In this study, based on diffusion innovative theory and existing literature reviews, the authors attempt to test whether need of uniqueness and self-aspiration which are positively related to desire to purchase unique consumer products in Lynn and Harris' study also have an effect in the same way in the e-commerce environment with e-customized products.

Owning scarce products differentiates a consumer from others while preventing others from imitating them easily; ones with a high need for uniqueness are more likely to adopt new products than individuals with a low need for uniqueness (Lynn, 1991). With this perspective, the inherent scarcity of e-customized products seems to be more attractive to consumers who have a higher need for uniqueness.

H1. Consumers' need for uniqueness positively influences attitude toward e-customized products.

2.3. Status aspiration

Another consumer characteristic that fabricates consumer desire for customized products is status aspiration which is defined as an individual characteristic reflecting the desire for dominance and leadership in social hierarchies by normally possessing and obtaining particular products to convey social status (Dawson & Cavell, 1987). Blumberg (1974) insisted that one's obtaining a scarce or unique product must be a more effective status symbol than possessing a standardized product. Some consumers like to be recognized distinctly from the majority in order to receive differentiated recognition (Scitovsky, 1992) and tend to consume products that could convey their status (O'Cass & Frost, 2002). Chaudhuri and Majumdar (2006) reinterpreted conspicuous or status pursuing consumption behavior along the lines of shifting social structures from pre-capitalist to post-modern. In this post modernism era, the middle class try to express their status by consuming unique products or experience partaking in pursuit of self-expression and self-image (Firat, Dholakia, & Venkatesh, 1995). People having higher status aspirations are more likely to pursue differentiation, e-customized products more than e-standard products from those who do not pursue to identify themselves by consuming unique products.

Need for uniqueness and status aspiration have consistently showed stronger relationships with desire for possession of scarce products or customized products with high coefficients in previous studies (Cassidy & Lynn, 1989; Lynn & Harris, 1997). As e-customized products having more alternatives and selections for high status aspiration customers to have a sense of distinctiveness, the relationship between consumers with high status aspiration and their attitude toward e-customized products will be positive.

H2. Consumer status aspiration positively influences attitudes toward e-customized products.

H3. Consumer status aspiration positively influences uniqueness seeking tendency.

2.4. Attitude and purchase intention of e-customized products

Consumers' intention to purchase products seems to be one of the necessary variables that reflects consumers' actual purchasing behavior. To explain purchase intention of e-customized products, the authors use the attitude–behavior theory which claims a positive relationship between attitude and behavior (Ajzen, 1985, 1991; Ajzen & Fishbein, 1980), and add attitudes toward e-customized products as a mediating variable between consumer psychological characteristics and purchase intention. Attitude–behavior theory has been widely used and is highly recommended to explain the consumer decision-making process, especially in technology adoption behavior (Yoh, Damhorst, Sapp, & Laczniak, 2003). Consumer purchase intention of e-customized products is preceded by the consumer attitudes toward the idea of proposing e-products, thus consumers' attitudes toward the object should be a main influence factor on intention to purchase.

H4. Consumer attitudes toward e-customized products positively influence purchasing intention of e-customized product over the Internet.

2.5. Perceived risk in online shopping

Perceived risk has been studied to explain why consumers are reluctant to use the Internet for purchasing tasks (Pires, Stanton, & Eckford, 2004). In the diffusion innovative theory model, Gatignon and Robertson (1985) placed perceived uncertainty as the link between personal influences and the adoption process (Fig. 1). Distinguishing online retailers from traditional offline ones, Brynjolfsson and Smith (2000), in their work suggested that consumers are likely to feel uncertainty and unpredictability when purchasing from e-tailors.

Many researchers have examined different causes of uncertainty in online settings; Pavlou (2003) explained that behavioral and environmental uncertainties result from fear of economic risk of monetary loss (Lee, 1998), and other researchers perceived consumers uncertainty coming from seller performance risk, and privacy risk of revealing private information (Bhatnagar & Ghose, 2004) and personal risk of receiving incorrect products or services (Bhatnagar & Ghose, 2004; Laroche, Nepomuceno, & Richard, 2010). Heijden, Verhagen, and Creemers (2001) indicated that perceived risk stemming from trust has an indirect effect on shopping intention through attitudes and Im, Kim, and Han (2008) found that perceived risk is a significant moderating variable in technology adoption.

This perceived risk can be considered to be collaborative with uncertainty around innovative technology offerings like e-customization under the assumption that the risk stems from insufficient and unreliable information about that innovation. Especially with regard to innovative technologies such as the e-customization process, perceived risk has influence on consumers' decision making processes such as shaping attitudes toward adopting technologies or purchasing behavior (Im et al., 2008). The authors feel that summarizing these risks involved in online shopping nature and additionally using new technologies, the personal risk of receiving incorrect products or services (Bhatnagar & Ghose, 2004; Laroche et al., 2010) should be higher with purchasing e-customization products than purchasing standardized products online.

Given the previous research about the Internet shopping environment and new technology acceptance, this research expected that perceived risk was likely to have significant influence on the attitude formation process toward e-customized products. When there is high level of perceived risk, described by fear, skepticism, cynicism, wariness and watchfulness, and vigilance (McKnight, Kacmar, & Choudhury, 2004), even though consumers may have positive attitudes toward e-customized products, they are unlikely to maintain the purchase intention long enough to purchase the products. While customers are looking for customized products to satisfy their needs for uniqueness and social image, they still may feel a high level of risk concerning online transactions and receiving correct products and services that they ordered.

The roles of psychological antecedents to explain the attitude toward e-customized products are introduced to understand why consumers generate positive attitudes even though they may go through complex and risky procedures. Given the individual consumer's needs for uniqueness and for establishing their status, when perceiving the Internet as a relatively risky shopping medium and e-customization process as a risky process, the attitude toward e-customized products is likely to be determined by consumer psychological needs and characteristics.

According to planned behavior theory (Ajzen, 1991), perceived behavioral control, how much control an individual perceives to have over the success of engaging behavior, is one of the main characteristics determining attitude and directly influencing intention for the behavior. This theoretical background shows that consumers are likely to buy when perceiving a low level of risk (Featherman, Miyazaki, & Sprott, 2010; McKnight et al., 2004), regardless of how their attitudes toward the purchase are established and the influences of customer traits showing needs for customized products on the attitude seem to increase when the Internet user's distrust of e-commerce comes into play (McKnight et al., 2004). This corollary indicates that consumers with favorable attitude toward the purchase are unlikely to have good intention to purchase if there is a high level of perceived risk. In summary, the paper hypothesizes that perceived risk of Internet shopping moderates the anticipated positive relationship between attitude and intention of purchasing e-customized products.

H5. With higher perceived risk in online transactions, effects of need for uniqueness on attitudes for e-customized products are strengthened.

H6. With higher perceived risk in online transactions, effects of status aspiration on attitudes for e-customized products are strengthened.

H7. With higher perceived risk in online transactions, the relationship between attitudes on e-customized products and purchasing intention of e-customized products through the Internet are attenuated.

3. Method

3.1. Sample characteristics

A self-administered online survey was conducted in two metropolitan universities in Japan with e-mail invitations. With regard to the accuracy of the questionnaire, the authors developed an English-language questionnaire that was first translated into Japanese and cross checked by two bilingual translators before distributing the survey. The completed questionnaires in Japanese were returned and then translated back into English by the same bilingual translators. The questionnaires and results in English and Japanese are cross-validated by two invited researchers who are experts in consumer research (Fig. 2).

The questionnaires were distributed with opening scenarios of e-customized products purchasing with examples of two products: online customized clothes and shoes. A total of 321 useful questionnaires from students, staff, and faculty members were collected, reaching a 35.60 percentage response rate. Overall, demographics of the sample presented that 65.30% of the subjects are female, 300 respondents comprising 93% of the group are under 24 years old. The sample is relatively young and well educated; most had some college or university experience. This attribute is consistent with the nature of recent online shoppers' demographics (Palumbo & Herbig, 1998; Peng, Wang, & Cai, 2008; Williamson, 2006).

3.2. Measurement

Eight items measuring need for uniqueness are adopted from Lynn and Harris (1997) with its reliability being above 0.78 and eleven items measuring status aspiration come from Cassidy and Lynn's (1989) study. Ring and Van de Ven (1994) suggest that these facets of risk around online transactions can be combined with various consumers' intentions while maintaining generalizability. With this agreement, this research includes a uni-dimensional perspective on perceived risk adapted from Jarvenpaa, Tractinsky, and Vitale's (2000) work which measures four incorporated items. The measures for attitude and purchasing intention toward e-customized products are modified from Jarvenpaa et al. (2000).

An exploratory factor analysis was performed to test factorial structures of antecedents. Each of the six items for each construct showed factor loadings greater than 0.50. The results of correlation analysis after refining of the factor analysis result, the means, standard deviation, and the result of correlation analysis are presented in Table 1. In order to assess reliability, Cronbach's alpha was calculated and all alpha values greater than 0.70 were shown which is good for basic research (Nunnally, 1978).

4. Results

4.1. Structural equations analysis

Prior to the structural equation analysis, the basic descriptive analysis revealed that the sample confirmed the assumptions of normality, collinearity, and outliers' presence. In addition to the descriptive analysis, an exploratory and confirmatory factor analysis revealed that the indicators are loaded strongly on the designated constructs. Most of the constructs had factor loading greater than 0.70 and there was no indication of cross loading factors. As there was no single recommended measure of fit for SEM, a variety of model fit measures were applied to determine the model's appropriateness. Provided in Table 2, the χ^2/df value for this model was 2.432, which is below the generally desired cut-off value of 3.0. Additionally, in terms of Goodness of Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI), the values in this model indicated 0.932 and 0.900

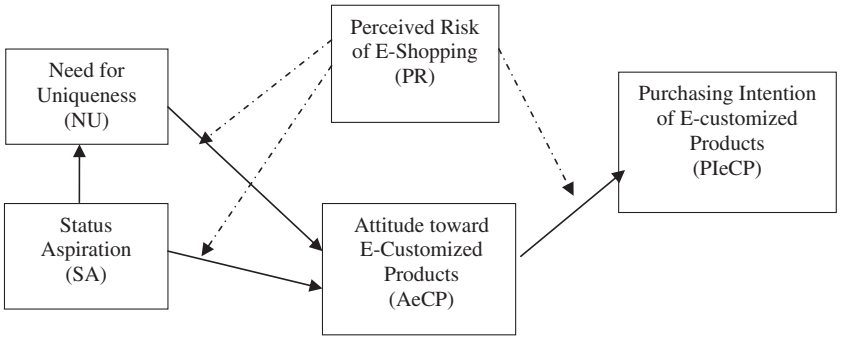

Fig. 2. Conceptual model of psychological antecedents of consumers' purchasing intention of e-customized products.

Table 1
Means, standard deviation, construct inter-correlations and Cronbach's α.

Variable name/no. items	Mean	Standard deviation	NU	SA	AeCP	PIeCP	PR	Cronbach's
NU/8	3.60	1.18	1					.812
SA/6	2.88	1.18	.578**	1				.840
AeCP/4	3.80	1.10	.644**	.480**	1			.862
PIeCP/3	3.25	1.18	.643**	.523**	.800	1		.722
PR/4	4.89	1.00	−.035	−.123*	−.213	−.218**	1	.744

NU: needs for uniqueness; SA: status aspiration; ACP: attitude on e-customized products; PIeCP: purchasing intention on e-customized products; PR: perceived risk on customized products.
**Correlation is significant at the 0.05 level (2-tailed).

respectively, displaying greater than the satisfactory level of 0.9 for the GFI and 0.8 for AGFI. However, with regard to Root Mean Square Error of Approximation (RMSEA) the fit index was 0.067, which is below the recommended cut-off level of 0.08. Still with these multiple fit indices indicating a reasonable fit for this model, the results of the structural model analysis can be considered to show a good fit of the proposed model to the data.

In terms of the basic model, the relationship between need for uniqueness (NU) and attitude toward e-customized products (AeCP) is statistically significant ($\beta = 0.706$; t-value = 8.715), as hypothesized. With regard to the relations connected to status aspiration (SA), the relationship with NU is significant ($\beta = 0.025$; t-value = 7.362); however, its influence on attitudes toward e-customized products is not significant ($\beta = 0.025$), with a 0.05 significance level and a relatively low t-value of 0.411. Lastly, AeCP had a strong and significant impact ($\beta = 1.592$; t-value = 13.558) on purchasing intention on e-customized products (PIeCP). In conclusion, hypotheses 1, 3, and 4 are supported and hypothesis 2 is not supported.

4.2. Moderating effects of perceived risk

In order to examine the hypothesized moderating effects of perceived risk, the whole sample is divided into two groups, high and low, using a median split method for a multi-group analysis. As recommended in Jöreskog and Sörbom's (1993) procedures, tests are conducted with four models (i.e. A, B, C, and D) to investigate if coefficients of the proposed paths are significantly different across two groups (see Table 2). Respectively, model A let all factor loadings as well as all paths' coefficients to be constrained as the same across two groups, model B had only factor loadings constrained, model C let both factor loadings and coefficients are free and the last model D has only coefficients constrained (Dabholkar & Bagozzi, 2002). The results of model comparison analysis indicate that there is a significant difference between model A and model D, showing relatively similar fit indices. Additionally, the significant difference between model A and model B shows the difference caused by factor loadings considering $\Delta\chi^2/\Delta df$ value (20.601, $p < 0.000$).

Regarding Table 3, among all proposed relations in the basic model, the effect of perceived risk strengthened the relationships between two constructs, NU and AeCP and also SA and AeCP, except for the relationship between AeCP and PIeCP, which drastically decrease supporting hypothesized moderating effects of perceived risk. Hypotheses with perceived risk as a moderating effect are all supported.

5. Conclusions and implications

With the dramatic diffusion of the Internet, consumers can purchase e-customized products within a reasonable time frame at a relatively reasonable price. At the same time, suppliers can provide e-customized products with relatively low costs while satisfying consumers' needs and be able to keep track on existing customers' trends and needs through online tools which also helps choose future markets. Kaplan and Haenlein (2006) defined e-customization as a strategy that creates value through interactions between suppliers and consumers and companies provide customized products to differentiate their products and services and to gain customer loyalty while generating sales lead (Hogue, 2012).

Under the development of e-customization, much research has been done on building efficient e-customization processes for suppliers. Since there is scarcity of e-customization research exploring cognitive approaches to consumers' e-customized product consumption, this research attempted to investigate meaningful psychological constructs (i.e. needs for uniqueness and status aspiration), which were anticipated to play a role in consumers' purchase of e-customized products. Ultimately, scarcity and uniqueness have been necessary reflecting conspicuous and status or prestige seeking consumption. The products that consumers utilize to distinguish themselves may be scarce and unique enough to be distinguishable from other standardized mass products. Consumers' desire for uniqueness can be fulfilled with consuming e-customized products and in these days, however, consumers

Table 2
Structural equation results for moderating effect models.

Basic model		χ^2	df	RMSEA	GFI	AGFI	CFI	$\chi^2/_{df}$	p[a]
		150.800	62	0.067	0.932	0.900	0.951	2.432	0.000
Moderating variable		χ^2	df	RMSEA	CFI	$\Delta\chi^2/\Delta df$	Δdf	p	TLI
Perceived risk (PR)	A	485.247	138	0.089	0.810	20.601/4 = 5.15[a]	4[a]	0.000[a]	0.004[a]
	B	464.646	134	0.088	0.819				
	C	328.028	125	0.071	0.889				
	D	451.695	129	0.088	0.824	33.552/9 = 3.728[b]	9[b]	0.000[b]	0.001[b]

[a] Assuming model B to be correct, the results of model A.
[b] Assuming model D to be correct, the results of model A.

Table 3
Structural equation results for hypotheses.

Hypothesized path	Basic model		Moderating model			
			High (n = 126)		Low (n = 197)	
	Estimates	C. R.	Estimates	C. R.	Estimates	C. R.
SA → NU	0.706***	8.175	0.868***	5.756	0.661***	6.228
NU → AeCP	0.602***	7.362	0.635***	3.344	0.590**	5.843
SA → AeCP	0.025*	0.411	−0.050	−0.274	0.017*	0.291
AeCP → PIeCP	1.592	13.558	0.142***	5.248	1.730***	8.629

NU: needs for uniqueness; SA: status aspiration; AeCP: attitude on e-customized products; PIeCP: purchasing intention on e-customized products; PR: perceived risk on e-customized products; C. R.: critical ratio.
*** $p < 0.01$.
** $p < 0.5$.
* $p < 0.1$.

no longer have to rely on expensive prestige brands to acquire unique and scarce products.

According to the results presented in the previous section, it appears that the need for uniqueness has a significant influence on customers' attitudes toward e-customized products, while status aspiration has a limited influence on customers' attitudes toward e-customized products, and its effect is mediated by the need for uniqueness.

When it comes to the moderating effect of perceived risk, consumers perceiving a higher level of risk for purchasing products on the Internet are more likely depending on psychological needs when forming attitudes toward e-customized products than consumers with a lower level of perceived risk. On the other hand, people who perceive a lower level of risk for online purchases tend to engage in a strong relationship between attitudes and purchase intention toward e-customized products. This indicates that people who perceive a high risk are not likely to purchase e-customized products even when they have positive attitudes toward e-customized products. In contrast, for people with a low purchase risk to purchase e-customized products on the Internet, their positive attitudes toward e-customized products may directly associate with purchase behavior of e-customized products.

This research showed that the need for uniqueness and the status aspiration have a significant impact on forming favorable attitudes toward e-customized products. By enlightening the psychological antecedents of adoption of e-customization products, this study fills up the deficiency of the psychological approaches related to e-customization. This psychological approach is crucial to help marketers construct marketing strategies including segmentation defining their target consumers. More recently, marketers have put more importance on psychological segmentation criteria such as motivation, attitudes, perceptions, and personality rather than on demographic characteristics. Thus, the authors urge the researchers to consider the influences of psychological factors on e-customized products or services which need to be investigated from consumers' perspectives. Besides consumers' perception toward online shopping becoming a significant psychological factor, the moderating role of perceived risk on shopping on the Internet suggests that researchers and practitioners need to learn to decrease consumers' perceived risk by presenting the evidences of strong security controls of their websites and designing user-friendly websites which should be emphasized especially dealing with e-customized products as it adds one more risk issue, receiving incorrect products. Online marketers need to enhance ease of ordering and build trustworthy relationships with consumers by adopting effective privacy and security policies on the way of earning their royalty. Given the amount of explanatory power in predicting purchasing intention of e-customized products with two psychological antecedents, the utility of the model seems promising as the model evolves and further develops.

6. Limitations and future research

To our knowledge, this paper is the first to examine consumers' psychological antecedents for purchasing e-customized products on the Internet at the same time proposing a model testing the psychological antecedents.

First, this study proposes the model tested using a Japanese sample group which considered a less individualistic but a collectivism country (Abe, Bagozzi, & Sadarangani, 1996; Moon et al., 2008); however, the model needs to be reassessed using additional samples to generalize the findings on more individualistic countries such as USA. It is also possible that this sample coming from Japan could have limited the ability to detect some findings although there is evidence that individual difference, rather than cultural difference determines the extent (e.g., Suh, Diener, Oishi, & Triandis, 1998).

The second limitation of this study is the scenario using only shoes and clothing, considered relatively low cost and tangible products. Whether the products are customized or standardized, the price difference could be minimal and receiving incorrect products would not be a big problem to many people. Studies testing this model using different products in different price ranges and for different companies (with high royalty vs. low royalty) need to be done.

Another limitation of this study was the data collection method which can be subject to errors; it was collected through self-administered questionnaires measuring customers' perception and intention as oppose to collection of their actual purchasing behavior. As an effort to minimize large errors of survey method nature, the researchers presented scenarios for participants to imitate a real life purchasing behavior.

The fourth limitation is using a relatively homogenous sample. The researchers attempted to target a wide range of age groups, but most of the participants were young university students than other associates of the universities. However, the purpose of this study was accomplished because to test a theory driven model, the best sample is a homogenous sample (Huang et al., 2004; Mullen, 1995). The objective of this study was not to test Japanese consumers' e-customization product consumption, but testing the proposed model, using a sample that, on a regular basis, purchases customized products online.

Future studies need to be done testing this proposed model using different types of products, and applying this study broadly, cross-cultural effects on e-customized products need to be examined with different samples from different regions and cultures as well as for different occupations and income levels. Specifically, moderating effects of perceived risk on e-shopping in a relationship with those two psychological factors need more research as consumers in individualism countries are predicted to purchase more e-customized products and willing to pay more than consumers in collectivistic countries (Moon et al., 2008).

Appendix A

Measure	Resources	Items
Need for uniqueness	Lynn and Harris (1997)	I am very attracted to rare objects. I tend to be a fashion leader rather than a fashion follower. I am more likely to buy a product if it is scarce. I would prefer to have things custom-made than to have them ready-made. I enjoy having things that others do not. I rarely pass up the opportunity to order custom features on the products I buy. I like to try new products and services before others do. I enjoy shopping at stores that carry merchandise which is different and unusual.
Status aspiration	Cassidy and Lynn (1989)	I would like an important job where people looked up to me. I like talking to people who are important. I want to be an important person in the community. I really admire people who have fought their way to the top. If I had enough money I would not work. Even if I won a great deal of money on the pools I would prefer to continue to work. If unemployment benefit was really high I would still prefer to work. I like to be admired for my achievements. I dislike being the center of attention. I like to have people come to me for advice. I find satisfaction in having influence over others because of my position in the community.
Perceived risk	Jarvenpaa et al. (2000)	How would you characterize the decision of whether to buy customized products from online retailer? (significant opportunity/significant risk) How would you characterize the decision of whether to buy customized products from online retailer? (high potential for loss/high potential for gain) How would you characterize the decision of whether to buy customized products from online retailer? (very positive situation/very negative situation) What is the likelihood of your making a good bargain by buying customized products from online retailer? (very unlikely/very likely)
Purchasing intention	Jarvenpaa et al. (2000)	How likely is it that you would return to this online retailer? (very likely/very unlikely) How likely is it that you would consider purchasing e-customized products from this online retailer in the next 3 months? (very likely/very unlikely) How likely is it that you would consider purchasing e-customized products from this online retailer in the next year? (very likely/very unlikely) For this purchase, how likely is it that you buy from this online retailer? (very unlikely/very likely)

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