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COMPANIES IN THE CIRCULAR ECONOMY

Green marketing cradle-to-cradle: Remanufactured products in Asian markets

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Remanufacturing, a key circular economy practice, is a new way of sustainable thinking without depleting additional economic resources. Because remanufactured goods come from direct reuse of returned or already used goods, the environmental impacts of production are reduced and product longevity is extended; therefore, these products can be considered "green products." Are they appealing to the green consumers, however? Our questionnaire survey of more than 1,168 consumers from eight Asian countries shows that the "real" green market for remanufactured products is not yet ready. Reactions to green attributes of remanufactured products are disproportionate from Asian consumers with different consumption values. Status- and value-conscious consumers may buy into remanufactured products if they perceive them as greener. However, the findings suggest that environmentally conscious consumers do not show a high appreciation for the green concept of remanufactured products in Asia. The results highlight important takeaways for remanufacturers in the circular economy and those selling remanufactured products: to identify and define the right selling point of "greenness" to align with Asian consumers' inherent values.

KEYWORDS

Asia, circular economy, consumer adoption, remanufacturing

1 | INTRODUCTION

In the past decade, companies have increasingly recognized the need for sustainability in all aspects of their business practices (Berns et al., 2009), resulting in the pursuit of a circular economy model (Tse, Esposito, & Soufani, 2015). One key business practice in the circular economy model is remanufacturing, which refers to an industrial process whereby used products are restored to like-new condition for resale on the market (Atasu, Sarvary, & Van Wassenhove, 2008; Blackburn, Guide, Souza, & Van Wassenhove, 2004; Wei, Tang, & Sundin, 2015).

The business and environmental benefits of remanufacturing are many, including energy savings and lower manufacturing costs (Agrawal, Atasu, & Van Ittersum, 2015; Michaud & Llerena, 2006). Many firms have implemented recycling and remanufacturing practices, turning their businesses into a profit in the process (Atasu & Souza, 2013). In the process of remanufacturing, the remanufacturer disassembles and cleans the products that users return and then replaces or restores all missing, defective, worn, or broken parts

before reassembling and testing those rebuilt products (Lund, 1984). The product, now fully restored, goes back on the market for resale (Guide & Van Wassenhove, 2009), thus forming a loop of efficient resource use. Prior research has largely focused on the analysis of these activities from a supply standpoint, such as product acquisition for remanufacturing (Wei et al., 2015), design for remanufactured products (Hatcher, Ijomah, & Windmill, 2011), and inventory and production planning in a remanufacturing environment (Lage-Junior & Godinho-Filho, 2012; Vercraene, Gayon, & Flapper, 2014). However, the body of research from a demand or consumer standpoint is disproportionally sparse (Ovchinnikov, 2011), leading researchers to call for further empirical research (Guide & Van Wassenhove, 2009).

In recent years, a number of studies have examined the marketing activities and strategies for remanufactured products (Hamzaoui-Essoussi & Linton, 2010; Michaud & Llerena, 2011). Much of the existing literature has made assumptions and assertions about how consumers perceive remanufactured products. For example, Atasu et al. (2008) assume that consumers pay attention to the greenness of remanufactured products and have knowledge of such greenness.

With these assumptions, research has recommended that business practitioners develop green marketing strategies (e.g., Atasu et al., 2008; Atasu, Guide, & Van Wassenhove, 2010; Gaur, Amini, Banerjee, & Gupta, 2015; Hazen, Wu, Cegielski, Jones-Farmer, & Hall, 2012). Another line of research has examined green consumers' behavior, arguing for an attitude–behavior gap, in which consumers claim to be green but do not actually buy green products (e.g., Black, 2010; Department for Environment, Food and Rural Affairs, 2006; Young, Hwang, McDonald, & Oates, 2010). Findings from both qualitative and quantitative research on consumer motives for pro-environmental behaviors have been inconsistent, thus failing to explain consumer behavior in this area (Ewing, 2001; McEachern & McClean, 2002; Straughan & Roberts, 1999).

Recognizing the contradictory predictions, this study not only focuses on the green view of remanufactured products but also investigates whether consumers' green knowledge of remanufactured products actually promotes more buy-in of remanufactured products. Drawing from prior research, which suggests that green behavior is context based and shaped by people's inherent values (Chan, 2001; Mostafa, 2007; Tanner & Kast, 2003), we examine how consumers' reactions to green attributes of remanufactured products vary across different consumption values—namely, status consciousness, value consciousness, and environmental consciousness.

Based on survey data obtained from 1,168 consumers in eight Asian countries, our regression results reveal that not all consumers react to green attributes of remanufactured products equally. Status- and value-conscious consumers are more willing to purchase remanufactured products when they have a better understanding of the green nature of these products, while environmentally conscious consumers show a lower appreciation for such attributes. Such results illuminate that green marketing is necessary and workable for remanufactured products, if marketers are able to identify and define the right selling point of "greenness" to align with Asian consumers' inherent values.

In the following sections, we develop several hypotheses on the basis of existing literature on green behavior and consumption values. Then, we introduce our sample, measurements, and methods, after which we discuss our statistical analysis. We conclude by identifying the implication to business practitioners and researchers.

2 | ANTECEDENTS AND HYPOTHESES

Much of the extant literature on consumer perceptions of remanufactured products focuses on consumers' preferences for green or environmentally friendly products (Atasu et al., 2008; Ferguson & Souza, 2010). A sustainable lifestyle and an appreciation for green products are becoming social norms around the world, amid growing concerns about environmental damage and global climate change (Elkington, 1994). McDonald and Oates (2006) argue that everyone is potentially a "green" consumer, as given a choice between products with identical prices, consumers will often select products that least damage the environment.

In light of the body of literature linking remanufacturing to environmental benefits, researchers often assume that consumers who possess more green knowledge of remanufactured products will deem remanufactured products more attractive than regular products. Green knowledge of remanufactured products refers to the understanding of significant resource and energy savings and solid waste reduction, as well as decreasing pollution through the remanufacturing process (Michaud & Llerena, 2011). Research has shown that consumers tend to value remanufactured products less than new products unless they are informed about the respective environmental impacts (Michaud & Llerena, 2011). Therefore, the green value should enhance consumer perceived value of remanufactured products (Chen & Chang, 2012) and increase their purchase intention. Thus:

> **Hypothesis 1**: *As consumers' knowledge of remanufactured products' green attributes increases, their purchase intention for these products will also increase.*

Cognitive dissonance theory (Festinger, 1957) proposes that individuals take actions that minimize inconsistencies when they hold internal contradictions about themselves, their behavior, their choices, or their environment. In line with this, consumers need to trade off between appreciating "greenness" and other consumption values during the decision-making process. While other consumption values, such as social status or price, dictate behavior, they may interact with consumers' perceptions of greenness. If consumers can align their consumption values with the greenness of remanufactured products, they will be more likely to make real green purchases; otherwise, they may be less responsive to the greenness in remanufactured products. We focus on three common consumption values among consumers: social status consciousness, value consciousness, and environmental consciousness.

Status consciousness, also called face consciousness (Li, Zhang, & Sun, 2015; Liao & Wang, 2009) or prestige sensitivity (Lichtenstein, Ridgway, & Netemeyer, 1993), is usually linked with status or conspicuous consumption (O'Cass & McEwen, 2004). Status consciousness drives consumers' purchase of conspicuous products for social prestige, as these consumers are concerned about how others perceive them. These consumers typically focus on the acquisition of social value that could enhance their sense of self, social image, or something that represents their own personal sense of taste (Li et al., 2015). As a result, they buy expensive goods not merely because of quality perceptions but also because they find other people's perceptions socially positive (Lichtenstein et al., 1993). For these status-conscious consumers, the high price of conspicuous products serves as a signal of their social status. However, remanufactured products are normally priced 20% to 40% lower than equivalent new products (Hauser & Lund, 2003; Neto, 2008) and therefore seldom serve the purpose of signaling prominence and status to other people. As a result, we propose the following:

> **Hypothesis 2a**: *Status-conscious consumers are less likely to purchase remanufactured products than those with low status consciousness.*

Yet the green attributes from remanufactured products could carry significant social meaning and thus benefit consumers' social

status. In recent years, literature on status consumption has shown the pursuit of status motivates not only demonstrations of extravagance but also displays of charity and other prosocial behaviors (Sexton & Sexton, 2014). Griskevicius, Tybur, and Van den Bergh (2010) note that buying green products can be construed as a proactive and altruistic behavior, because some green products actually cost more than their conventional counterparts; green goods also carry a message that they benefit the environment for everyone. Altruism thus functions as a "costly signal" associated with social status. This prosocial behavior provides the consumer with various benefits, such as a higher reputation and the development of social relations, which help enhance his or her respect and trust in society (Vaughan, 2010). Griskevicius et al. (2010) show that activation of status motives led people to choose green products over more luxurious nongreen goods.

Such a pursuit of status is further reinforced by another rising norm: consumers who do not buy green products/services and instead rely on conventional products/services may be perceived as self-centered and as not having any interest in providing benefits to society. In contrast, people who buy green products are deemed more socially aware and concerned about providing benefits to society (Griskevicius et al., 2010). Alongside this development, research has shown that the consumption of green products is increasing among high-class people, as green consumption adds value to their standing in society (Dincer, Midilli, Hepbasli, & Karakoc, 2009). From this argument, we propose that when status-conscious consumers have more knowledge of environmental benefits in remanufactured products, they are more likely to purchase them to signal their prosocial behavior and higher social status.

> **Hypothesis 2b:** *Status-conscious consumers are more likely to purchase remanufactured products when they have more knowledge of the remanufactured products.*

Zeithaml (1988) argues that value is a consumer deliberation between price offered and quality expected. In other words, value represents a consumer's view of the trade-off between perceived benefit (quality) and perceived sacrifice (price) (Lovelock, 2001). Consistent with this value concept, value consciousness reflects "a concern for paying low prices, subject to some quality constraint" (Lichtenstein, Netemeyer, & Burton, 1990, p. 56). For the value-conscious consumer, if a product is judged to be low in value due to poor quality or high price, then there would be a more negative view toward purchasing remanufactured products, and purchase intention is thus low. On the other hand, if a product is judged to be high in value due to higher quality or lower price, then this judgment reflects a more positive attitude toward remanufactured products and would lead to a higher purchase intention (Chang & Wildt, 1994).

We argue that value-conscious consumers tend to perceive high value for remanufactured products for two reasons. On the one hand, producers often claim that remanufactured products have the same objective quality, which refers to the verifiable actual technical superiority or excellence in the product (Hjorth-Anderson, 1984; Monroe & Krishnan, 1985), as new products (Carter & Ellram, 1998; Lund, 1984; Thierry, Salomon, van Nunen, & Van Wassenhove, 1995). To signal

the high quality of remanufactured products, many producers provide the same warranty as new products, implying that the producers have equal confidence about the quality of both versions of their products (Tereyağoğlu, 2016). They also reassure consumers that remanufactured product has been restored to essentially the same conditions as a new product (Neto, Bloemhof, & Corbett, 2016). These signals convey to consumers that remanufactured products possess acceptable quality, although with some possible constraints.

On the other hand, lower price can be a key determinant to greater value (Chang & Wildt, 1994; Zeithaml, 1988). Remanufactured products are often sold at a price lower than their equivalent new counterparts (Hauser & Lund, 2003; Neto, 2008). Dowlatshahi (2000) shows that the cost of remanufacturing is typically 40% to 60% of the cost of producing a new product. Therefore, consumers should perceive higher value from purchasing remanufactured products and as a result be more likely to purchase them. Thus:

> **Hypothesis 3a:** *Value-conscious consumers are more likely to purchase remanufactured products.*

Despite the producers' signals or claims of equal quality in remanufactured products, some consumers may suspect a lower quality of remanufactured products (Abbey, Meloy, Guide & Atalay, 2015; Hazen et al., 2012; Tseng, Lin, Lim, & Teehankee, 2015). Several factors may lead to such lower perceived quality. First, consumers distrust remanufactured products' quality due to the ambiguity surrounding the remanufacturing process (Hazen et al., 2012). For example, many consumers are unable to differentiate between remanufacturing, repair, and reconditioning (Ijomah, Childe, & Mcmahon, 2004). Consumers are unaware of how the product was used in the past and what steps were required by the remanufacturer to return the product to like-new condition (Hazen et al., 2012). Consumers may also not believe that the remanufacturer truly restored the product to like-new condition (Hazen et al., 2012). Hence, they are unsure of the remanufactured products' quality. Second, it is usually difficult to verify or assess whether the quality of a remanufactured product is as good as new before and even after the purchase (Michaud & Llerena, 2011; Zeithaml, 1988). As a result, consumers tend to use some extrinsic cues (Zeithaml, 1988), such as stereotype and price, to form their quality judgments. For example, a general stereotype may be that the product is labeled as "remanufactured" because it has been damaged; otherwise, it would have simply been sold as perfect (Neto et al., 2016). All these concerns will be intensified when value-conscious consumers perceive dissonance between low price and good quality (Farrell, 1980; Milgrom & Roberts, 1986). Consumers distrust the quality of remanufactured products that are excessively discounted (Lichtenstein & Burton, 1989; Ovchinnikov, 2011), as low price can be taken as a signal of low quality.

Such distrusts can be alleviated when consumers better understand remanufactured products and the remanufacturing process in two ways. First, consumers need to be made aware of the actual remanufacturing process and its concomitant quality outcome. Such knowledge will reduce ambiguity and distrust in remanufactured products. Second, consumers must be made aware that remanufactured products are greener because they minimize resource wastage and

consume less energy, with lower manufacturing costs achieved (Agrawal et al., 2015; Janse, Schuur, & de Brito, 2010; Michaud & Llerena, 2006). Such acquired "green" knowledge helps consumers justify the low price, thus harmonizing their cognitive dissonance about acceptable quality and low price. As a result, remanufactured products may become more attractive for value-conscious consumers. Thus:

> **Hypothesis 3b:** *Value-conscious consumers are more likely to purchase remanufactured products when they have more green knowledge of these products.*

The final consumption value focuses on environmental consciousness, or consumers' self-perceptions of holding environmental or green values (Vining & Ebreo, 2002). This consumption value differs from consumers' actual knowledge about green products (as in our Hypothesis 1) (Laroche, Bergeron, & Barbaro-Forleo, 2001). Green purchase behavior represents a complex form of ethical decision-making behavior and is considered a type of socially responsible behavior. As a socially responsible consumer, the green consumer "takes into account the public consequences of his or her private consumption and attempts to use his or her purchasing power to bring about social change" (Moisander, 2007). A green product is one that satisfies consumers' needs without damaging the environment and contributes toward a more sustainable world (Shamdasami, Chon-Lin, & Richmond, 1993). Many studies show that consciousness of social and environmental issues positively affects consumers' attitude and actual purchasing of green products (Smith, 2010). For example, Gaur et al. (2015) show that environmentally conscious consumers tend to be early adopters, have a stronger set of values toward the environment, and thus have a strong willingness to purchase remanufactured products.

At the same time, other studies revealed an attitude–behavior gap (Blake, 1999) or a "green gap" (Black, 2010). This green gap does not translate a consumer's environmental consciousness into his/her actual green purchasing behavior (do Paço & Raposo, 2009; Follows & Jobber, 2000; Fraj & Martinez, 2007; Jansson, Marell, & Nordlund, 2011; Mostafa, 2007; Schlegelmilch, Bohlen, & Diamantopoulos, 1996; Young et al., 2010). These studies also suggest that it is often the nongreen factors, such as lack of product knowledge, premium price, limited availability, and inconvenience of the green products, that undermine the link between a consumer's environmental consciousness and his/her green purchase intention (Connell, 2010; Gleim, Smith, Andrews, & Cronin, 2013; Ohtomo & Hirose, 2007; Padel & Foster, 2005; Young et al., 2010). Summarizing the existing studies, we propose that, all else being equal, a consumer's environmental consciousness has a positive effect on his/her purchase intention for remanufactured products:

> **Hypothesis 4a:** *There is a significantly positive relationship between consumers' environmental consciousness and their purchase intention for remanufactured products.*

One key constraint that leads to this gap in green purchases is the lack of product knowledge (Kennedy, Beckly, McFarlane, & Nadeau, 2009). For example, Ohtomo and Hirose (2007) observe that if consumers lack knowledge about green products, an attitude–behavior gap arises between their environmental concerns and their actual purchasing behavior. In addition, Abbey et al. (2015) find that consumers who self-identify as being committed to environmentally friendly practices and products tend not to want to buy remanufactured products because these consumers did not fully appreciate or understand the green attributes. Other studies have reported lack of consumer trust in ethical claims and green characteristics of a product as key barriers to purchasing green products (Tsakiridou, Boutsouki, Zotos, & Mattas, 2008); consumers simply do not trust the green characteristics of the product, and they are not convinced that consumption of these products will lead to any environmental benefits. Yet a better appreciation for remanufactured products' green attributes can remove this constraint, thus leading to a higher purchase intention of remanufactured products among environmentally conscious consumers. Thus:

> **Hypothesis 4b:** *Environmentally conscious consumers are more likely to purchase remanufactured products when they have more knowledge of their green attributes.*

In sum, we argue that environmental conscious consumers may show positive purchase intentions toward remanufactured products, while such a positive link can be strengthened by their knowledge of remanufactured products' green attributes.

3 | METHODOLOGY

3.1 | Pilot study and sample

To test our hypotheses, we developed a questionnaire capturing consumers' consumption values, their purchase intention, and their perceptions of quality and risk in remanufactured electronic gadgets (specifically tablets, laptop, and smartphones), as well as other questions on demographic information. We first conducted a pilot study with a small sample of Singaporeans in English to test the clarity of questions, and then had one set of translators convert the questions into Mandarin, Bahasa Indonesian, Bahasa Melayu, Vietnamese, and the Thai language. Another set of translators then back-translated the questions into English to ensure consistency of meanings and terms. We posted all questionnaires online using Qualtrics and Survey Monkey, targeting consumers from eight Asian countries (China, India, Indonesia, Malaysia, Myanmar, Singapore, Thailand, and Vietnam) in April 2016.

The sampling technique used was nonprobabilistic sampling, with a combination of quota sampling and snowball sampling. Quota sampling ensured good representation in each country and across different age groups, and snowball sampling helped increase the number of respondents through the use of personal contacts and word of mouth.

The intensive data collection exercise ran for four weeks, with 1,408 responses obtained with the help of 20 research assistants. After we dropped missing data, 1,168 observations remained in our analysis. Table 1 reports the distribution of countries.

The distribution of the countries

Country	Number of respondents	Percentage
China	458	39.21
India	114	9.76
Indonesia	145	12.41
Malaysia	44	3.77
Myanmar	93	7.96
Singapore	183	15.67
Thailand	52	4.45
Vietnam	79	6.76
Total	1,168	100

3.2 | Measurements

3.2.1 | Purchase intention

Following Putrevu and Lord (1994), we used two items to measure purchase intention. The respondents were asked to indicate the extent to which they were interested in buying remanufactured products and how likely they would be to buy these products within the next 12 months, using a 5-point categorical rating scale (1 = not at all interested, 5 = very interested; 1 = not at all likely, 5 = definitely). Cronbach's alpha for these two items was .87, confirming the reliability of the construct. An exploratory factor analysis (EFA) confirmed that a single factor accounted for 88.56% of the variance.

3.2.2 | Green knowledge of remanufactured products

Green knowledge here refers to consumers' knowledge about remanufactured products' economic benefits. There is no widely accepted measure for the environmental benefits of remanufactured products. Hence, we looked into the existing literature and found out most of the existing studies have agreed upon several environmental gains, such as conserving resources in terms of both raw material and energy (Michaud & Llerena, 2011; Sundin & Lee, 2012; Wang, Wiegerinck, Krikke, & Zhang, 2013), reducing waste (Michaud & Llerena, 2011), and decreasing pollution coming from carbon dioxide emission and toxic materials (Hill, 2010; Sundin & Lee, 2012). Based on these agreed-upon environmental benefits, we developed a four-item construct to measure consumers' knowledge of remanufactured products' green attributes. Respondents were asked to rate to what extent they agreed on four statements: "remanufactured product is environmentally friendly," "remanufactured product helps conserve resources," "remanufactured product can reduce waste," and "remanufactured product can decrease pollution." Cronbach's alpha for these four items was 0.83, confirming the reliability of the construct. EFA confirmed that a single factor accounted for 66.53% of the variance.

3.2.3 | Status consciousness

We measured status consciousness with the three items developed by Eastman, Goldsmith, and Flynn (1999). This measurement focuses on people's tendencies to purchase products that convey their social status. Respondents answered all items on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). The three items were "I would buy a product just because it has status," "I would pay more

for a product if it had status," and "I am interested in new products with status." Cronbach's alpha was .77, confirming the reliability of the construct.

3.2.4 | Value consciousness

We used three items from Lichtenstein et al.'s (1990) scale to measure value consciousness. Respondents answered all items on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). A sample item is "I am very concerned about low prices, but I am equally concerned about product quality." Cronbach's alpha was .70, confirming the reliability of the construct.

3.2.5 | Environmental consciousness

We adapted five items from Rashid (2007). Respondents again answered all items on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). A sample item is "The environment is one of the most important issues facing society today." Cronbach's alpha was .85, confirming the reliability of the construct. EFA confirmed that a single factor accounted for 63.17% of the variance.

We put all of the above main variables into the EFA, and the factor loading of those variables is presented in the Table 2. In addition to the main variables, we controlled for other determining factors that influence consumers' purchase intention. First, quality perceptions play a strong role in consumers' evaluations of remanufactured products (Debo, Toktay, & Van Wassenhove, 2005; Ferguson & Souza, 2010; Thierry et al., 1995). Research has found that perceived quality of remanufactured products influences their attractiveness and may also affect purchase intention (Abbey et al., 2015). As a result, we adapted five items from Hazen et al. (2012) (see the appendix). Cronbach's alpha was .81, confirming the reliability of the construct.

Second, research on perceived functional risks posits that when purchasing, consumers face uncertainty and potentially undesirable consequences (Taylor, 1974). Therefore, the more risks consumers perceive, the less likely they are to purchase (Roselius, 1971). We used three items adapted from Hamzaoui-Essoussi and Linton (2010) to measure functional risks (see the appendix). Cronbach's alpha was .79, confirming the reliability of the construct.

Third, an awareness of remanufactured products should reduce perceived risk and thus increase purchase intention. We used two items ("I understand what a remanufactured product is very well" and "I know well how a product is remanufactured") to measure awareness. Cronbach's alpha was .78, confirming the reliability of this construct. Fourth, a dummy variable controlled for usage experience, with 1 indicating that the respondent had used remanufactured products before and 0 otherwise. Finally, we controlled for respondents' gender and age. A dummy variable measured gender, with 1 indicating male and 0 indicating female. We identified three age groups of respondents: younger than age 25 years, between the ages of 25 and 40 years, and older than 40 years. The appendix provides a complete list of the constructs.

We also conducted Harman's one-factor test with all the measurement items in a factor analysis without rotation and achieved a solution that accounted for 68.94% of the total variance, with the first factor accounting for 26.11%. Because a single dominant factor

TABLE 2 Factor loadings of the main variables

	Component				
	Environment consciousness	Green knowledge of remanufactured products	Status consciousness	Value consciousness	Purchase intention
Environment consciousness 2	.857				
Environment consciousness 1	.812				
Environment consciousness 4	.797				
Environment consciousness 3	.790				
Environment consciousness 7	.610				
Perceived greenness 4		.815			
Perceived greenness 2		.811			
Perceived greenness 1		.782			
Perceived greenness 3		.778			
Social consciousness 2			.836		
Social consciousness1			.828		
Social consciousness 4			.805		
Value consciousness 1				.817	
Value consciousness 3				.770	
Value consciousness 2				.731	
Purchase intention 1					.924
Purchase intention 2					.922

did not emerge, we found common method bias to be an unlikely concern in this study (Podsakoff & Organ, 1986). We aggregated all the constructs and put the aggregated measures into regression in STATA 12, considering that the respondents from each country may be correlated (e.g., they may share similar consumption style, culture, government policy, etc.) while they will not be correlated with respondents in other countries. Hence, it is important to factor in the country effect. Instead of controlling the country dummies, we conducted ordinary least squares with standard errors clustered by country, through which we can identify the countries as groups in which unobservables are allowed to correlate (Cameron & Miller, 2015).

4 | RESULTS

4.1 | Descriptive statistics

Table 3 lists the descriptive statistics and correlation matrix, and Table 4 shows the means of all the variables in each country. The data show that purchase intention for remanufactured products is low for all the sampled Asian countries (a score of less than 3 of 5). Thirty-five percent of the surveyed consumers had ever purchased remanufactured products. On their different values, consumers in India, Vietnam, Indonesia, and China reported higher ratings of their status consciousness. Consumers in Indonesia, Malaysia, and

TABLE 3 Descriptive statistics and correlation matrix (N = 1,168)

		1	2	3	4	5	6	7	8	9	10	11	12	13
1	Purchase intention	1.00												
2	Green knowledge	0.25*	1.00											
3	Status consciousness	0.13*	0.11*	1.00										
4	Value consciousness	0.13*	0.22*	0.03	1.00									
5	Environmental consciousness	−0.01	0.36*	0.03	0.31*	1.00								
6	Awareness	0.32*	0.14*	0.08*	0.15*	0.02	1.00							
7	Perceived quality	0.45*	0.30*	0.09*	0.06*	0.03	0.42*	1.00						
8	Perceived risk	−0.23*	0.01	0.0614*	0.04	0.19*	−0.07*	−0.21*	1.00					
9	Usage experience	0.30*	0.10*	0.00	0.0911*	−0.01	0.20*	0.27*	−0.24*	1.00				
10	agegroup1 (<25)	0.05*	−0.01	0.07*	0.07*	−0.17*	0.07*	0.02	−0.04	0.03	1.00			
11	agegroup2 (25–40)	−0.03	−0.03	−0.06*	−0.08*	0.02	−0.04	0.04	0.03	−0.03	−0.63*	1.00		
12	agegroup3 (>40)	−0.04	0.04	−0.02	0.00	0.18*	−0.04	−0.06*	0.01	−0.01	−0.55*	−0.31*	1.00	
13	Gender	0.05*	−0.03	0.04	−0.03	0.01	0.03	0.02	0.00	0.02	−0.17*	0.08*	0.12*	1.00
	Mean	2.58	3.48	3.24	3.89	4.01	2.99	3.07	3.33	0.29	0.53	0.26	0.21	0.46
	Std. Dev.	0.94	0.71	0.83	0.72	0.67	0.90	0.65	0.74	0.46	0.50	0.44	0.41	0.50

*p < .1.

TABLE 4 Mean of the tested variables for each sampled country

	Purchase intention	Green knowledge	Status consciousness	Value consciousness	Environmental consciousness	Awareness	Perceived quality	Perceived risk	Usage experience
China	2.46	3.50	3.35	3.78	4.18	2.84	2.92	3.55	0.20
India	2.72	3.58	2.96	3.74	3.85	3.09	3.18	3.16	0.36
Indonesia	2.54	3.50	3.31	4.18	4.02	3.10	2.95	3.20	0.32
Malaysia	2.64	3.48	3.20	4.16	3.90	2.84	3.15	3.20	0.64
Myanmar	2.91	3.28	3.27	3.79	3.82	3.31	3.32	2.97	0.42
Singapore	2.65	3.38	2.95	4.02	3.94	3.05	3.25	3.14	0.31
Thailand	2.16	3.49	3.49	3.71	3.80	2.71	2.93	3.40	0.23
Vietnam	2.87	3.55	3.32	3.88	3.79	3.15	3.27	3.38	0.32
Asian Average	2.62	3.47	3.23	3.91	3.91	3.01	3.12	3.25	0.35

Singapore reported higher value consciousness, while those in China, Indonesia, Malaysia, and Singapore reported higher environmental consciousness. In terms of the green perception of remanufactured products, consumers in India, Vietnam, China, and Indonesia see more green attributes than those in other countries.

4.2 | Regression results

Table 5 reports the effects of consumers' green perceptions of remanufactured products and their consumption values determining their purchase intention. In Model 1, we included only the control variables, while in Model 2, we added the main effects of the four variables. In Models 3, 4, and 5, we added the interaction terms one by one. In Model 6, we added all the main effects and their interactions.

Hypothesis 1 predicts that as consumers' green knowledge of remanufactured products increases, purchase intention for these products will also increase; in support, Model 2 shows that green knowledge of remanufactured products is positively significant ($\beta = .16, p < .05$).

TABLE 5 Regression Model ($N = 1168$)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Status consciousness × Green knowledge			0.06+ (0.03)			0.06 (0.03)
Value consciousness × Green knowledge				0.08* (0.03)		0.10** (0.02)
Environmental consciousness × Green knowledge					−0.02 (0.02)	−0.06 (0.02)
Green knowledge		0.16* (0.06)	0.17* (0.06)	0.15+ (0.07)	0.17* (0.07)	0.17+ (0.07)
Status consciousness		0.09 (0.07)	0.09 (0.06)	0.09 (0.06)	0.09 (0.06)	0.09 (0.06)
Value consciousness		0.1+ (0.05)	0.09 (0.05)	0.11+ (0.05)	0.09 (0.05)	0.11+ (0.05)
Environmental consciousness		−0.06+ (0.03)	−0.08* (0.03)	−0.08+ (0.04)	−0.09* (0.04)	−0.1* (0.04)
Awareness	0.15** (0.03)	0.13** (0.03)	0.13** (0.03)	0.13** (0.02)	0.13** (0.03)	0.13** (0.03)
Perceived quality	0.47*** (0.05)	0.42** (0.07)	0.41** (0.07)	0.41*** (0.07)	0.41** (0.07)	0.41*** (0.07)
Perceived risk	−0.15*** (0.02)	−0.15** (0.02)	−0.16** (0.03)	−0.16** (0.03)	−0.16** (0.03)	−0.17** (0.03)
Usage experience	0.29* (0.1)	0.3* (0.11)	0.3* (0.12)	0.29* (0.11)	0.3* (0.11)	0.29* (0.11)
Age group (<25)	0.09 (0.06)	0.04 (0.06)	0.03 (0.07)	0.04 (0.07)	0.03 (0.07)	0.03 (0.07)
Age group (25–40)	−0.01 (0.07)	−0.02 (0.06)	−0.01 (0.07)	0 (0.06)	0 (0.07)	0 (0.06)
Gender	0.09+ (0.05)	0.09 (0.06)	0.08 (0.05)	0.09 (0.05)	0.08 (0.06)	0.09 (0.05)
Constant	1.03** (0.23)	1.16** (0.23)	1.33** (0.25)	1.28** (0.25)	1.35** (0.28)	1.35** (0.25)
R^2	0.26	0.29	0.29	0.30	0.29	0.30

***$p < .001$; **$p < .01$; *$p < .05$; +$p < 0.1$; numbers in parentheses are standard errors.

Hypothesis 2a predicts that status-conscious consumers are less likely to purchase remanufactured products. Status consciousness is not significant in Model 2 (β = .09, p > .1); thus, Hypothesis 2a is not supported. Model 3 interacts status consciousness with green knowledge of remanufactured products; the interaction is positively significant at the marginal level (β = .06, p < .1). Hypothesis 2b, which states that status-conscious consumers are more likely to purchase remanufactured products when they have more green knowledge of these products, is supported.

Hypothesis 3a predicts that value-conscious consumers are more likely to purchase remanufactured products; in support, Model 2 shows that value consciousness is positively significant (β = .10, p < .1). Hypothesis 3b predicts that value-conscious consumers are more likely to purchase remanufactured products when they perceive these products as green. The main effect of value consciousness is positively significant (β = .11, p < .1), and the interaction between value consciousness and green knowledge of remanufactured product is significantly positive (β = .08, p < .05) in Model 4, in support of Hypothesis 3b.

Hypothesis 4a predicts a positive relationship between consumers' environmental consciousness and their purchase intention for remanufactured products. Model 2 shows a moderately significant but negative relationship between the main effect of environmental consciousness and purchase intention, thus going against Hypothesis 4a. Hypothesis 4b predicts that environmentally conscious consumers are more likely to purchase remanufactured products when they are more knowledgeable about their green attributes. The main effect of environmental consciousness still shows a significant and negative association (β = −.09, p < .05) in Model 5, but the interaction between green knowledge of remanufactured products and environmental consciousness is not significant. The results did not support the prediction in H4b. Instead, the results do suggest that environment-conscious consumers seem to be less likely to purchase remanufactured products. Additionally, the effect of environmental consciousness is unconditional; it does not vary across consumers with different green knowledge levels. Such results are against most of the arguments and findings in green marketing literature (Atasu et al., 2008; Chen & Chang, 2012; Michaud & Llerena, 2011), yet similar to the findings of Royne, Thieme, Levy, Oakley, and Alderson (2016). In the empirical test of Royne et al. (2016) based on the survey data from United States, they argued that green consumers particularly care about the sustainability of both of the environment and their own health more than nongreen consumers. They revealed a negative relationship between green consumers' concern for health and their recycling behaviors, indicating that green consumers who ranked concerns with health matters as more important engaged in fewer recycling behaviors. They attributed such a negative relationship to green consumers' fears related to contamination and increased risk of disease spread.[1] In another study by Abbey et al. (2015), the authors found that consumers who self-identified as being committed to environmentally friendly practices and products did not necessarily have a significantly more positive perception for remanufactured products because consumers perceive them as dirty or disgusting due to their prior ownership—despite the thorough sterilization process that products undergo as part of the remanufacturing process. In their experiment, they found that these irrational

negative perceptions persisted despite educating all participants in the experimental study about the remanufacturing process. In a nutshell, environment-conscious consumers have more than one concern (Royne et al., 2016). They care not only about the sustainability of the environment but also their own health. Such concerns surrounding health prevent consumers from accepting remanufactured products, as they may have linked remanufacturing products with disgust and contamination. In this case, their knowledge that remanufactured products help reduce waste, protect our environment, and save energy will not alleviate their health concern, and hence cannot increase their purchase intention for remanufactured products.

In addition to the main variables, we found that perceived quality was positively related to purchase intention for remanufactured products, while perceived functional risk was negatively related to purchase intention for remanufactured products in all the models, as expected. Awareness of remanufactured products significantly increased purchase intention shown across all the models. Usage experience was positively related to purchase intention for remanufactured products, suggesting that past experience may give consumers more confidence in using remanufactured products. Neither gender nor age showed any significance, suggesting that purchase intentions do not vary across these groups in Asia.

We conducted a robustness test by grouping the sample Asian countries into two subgroups, that is, China and Southeast Asia (including India, Indonesia, Thailand, Myanmar, Malaysia, and Singapore), according to their geographic proximity. The same regression was conducted for the two subgroups, and the results were very similar to those of our main test. Due to space concern and similarity, we did not report the results here.

5 | DISCUSSION AND CONCLUSION

Prominent benefits of the circular economy include its lengthening of product longevity and resource conservation for future generations. Remanufacturing constitutes a typical business practice that helps achieve these benefits. As such, remanufacturing has gained traction among business leaders and policymakers. Increasingly more companies are involved in remanufacturing, not only to comply with legislative requirements but also to make use of this golden business opportunity to exert a positive impact on the economy (Guide & Van Wassenhove, 2009; Subramanian, Ferguson, & Toktay, 2013). In this sense, remanufacturing is one of the most attractive strategies for companies.

For this strategy to succeed, consumers need to buy into remanufactured products. Nevertheless, research examining consumer markets and perceptions of remanufactured products is only in its nascent stage (Abbey et al., 2015; Michaud & Llerena, 2011). So far, empirical evidence has not supported the effectiveness of green marketing, though many studies have called for the use of greenness as a marketing appeal for remanufactured products (Atasu et al., 2008, 2010; Gaur et al., 2015; Hazen et al., 2012; Subramanian et al., 2013).

We found that green marketing or green appeal may not always be effective in the Asian market. Specifically, we found that, in general, status-conscious consumers are not interested in purchasing
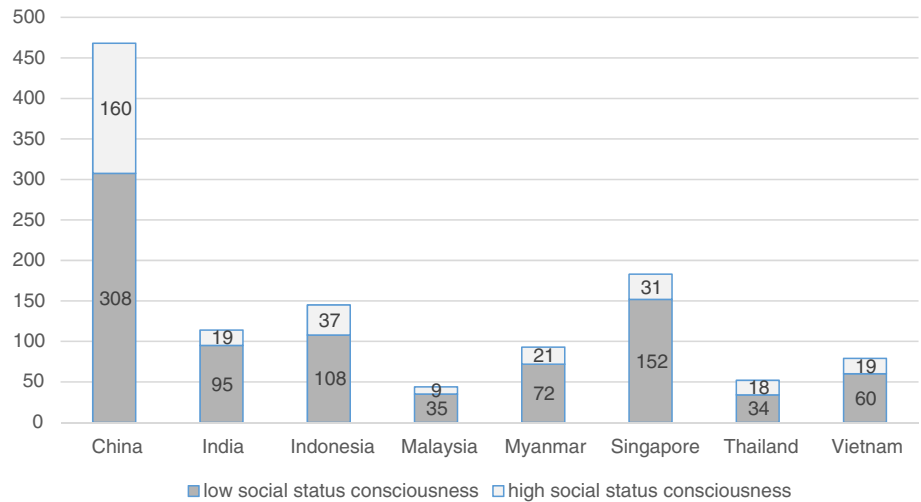
FIGURE 1 Asian consumers with high and low status consciousness.

remanufactured products because they consider such products inferior goods, indicated by their lower price. However, upon perceiving green attributes of remanufactured products, their purchase intention increases, as they are able to showcase their prosocial behavior and altruism by purchasing these products.

Our results also indicate that value-conscious consumers are more willing to purchase remanufactured products. Their purchase intention is further reinforced when they perceive remanufactured products as green. Surprisingly, environmentally conscious consumers do not translate their appreciation for remanufactured products' green attributes into purchase intention. It may be that Asian consumers who claim to be green are not really green at all, in that they do not prioritize environmental benefits when purchasing. Our findings are consistent with those from previous studies that green consumers tend to overstate their green behavior and the number of green products they purchase (Terra Choice Group, 2010). These findings indicate that companies focusing only on the green segment in Asia will likely experience disappointing sales results.

We conclude with three important takeaways for business practitioners involved in remanufacturing and selling of green products in Asia. We argue that green marketing is still quite necessary and can

be worked into the Asian market to promote remanufactured products if marketers can identify the right selling point of "greenness" and align it with Asian consumers' values. In other words, "greenness" must be packaged in different ways to attract consumers with different values.

First, status or face consciousness, resulting in consumers' status consumption, constitutes a nonnegligible element in Asia (Earley, 1997; Wilson, 1992). Asian consumers purchase luxury goods to showcase their social status, achievement, wealth, and prestige (Heaney, Goldsmith, & Jusoh, 2005; Shukla, 2015). Our data tell a similar story. As Figure 1 shows, of the surveyed consumers, 35% of consumers in Thailand and China and 25% of consumers in Indonesia and Vietnam perceive themselves as having high social status consciousness (with rating at least 4 of 5). Our results suggest that companies should not expect this group of consumers to buy remanufactured products without any marketing effort. However, marketers could use green marketing to appeal to them by redefining "green" as a prosocial behavior. To make green marketing work, companies could invite celebrities to endorse their remanufactured products, thus associating purchases with altruistic and prosocial behavior that is beneficial for the environment and society.
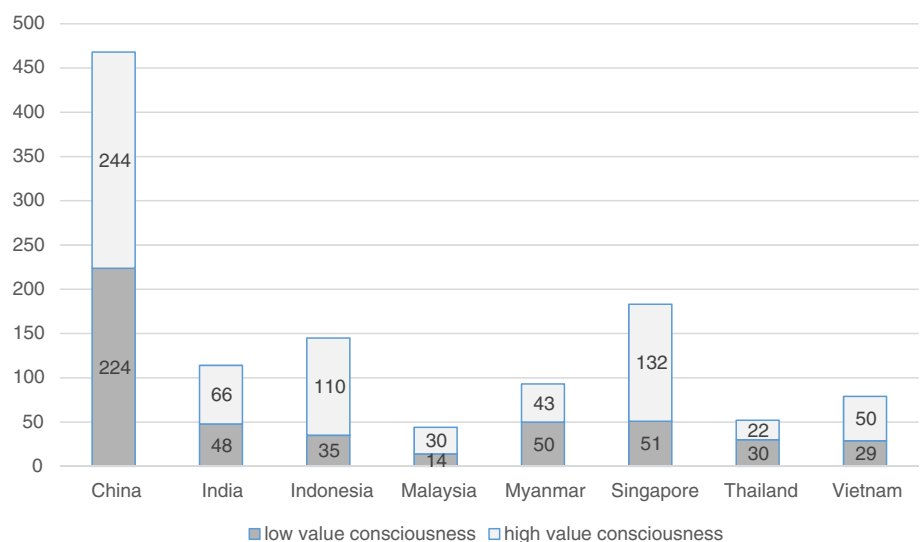

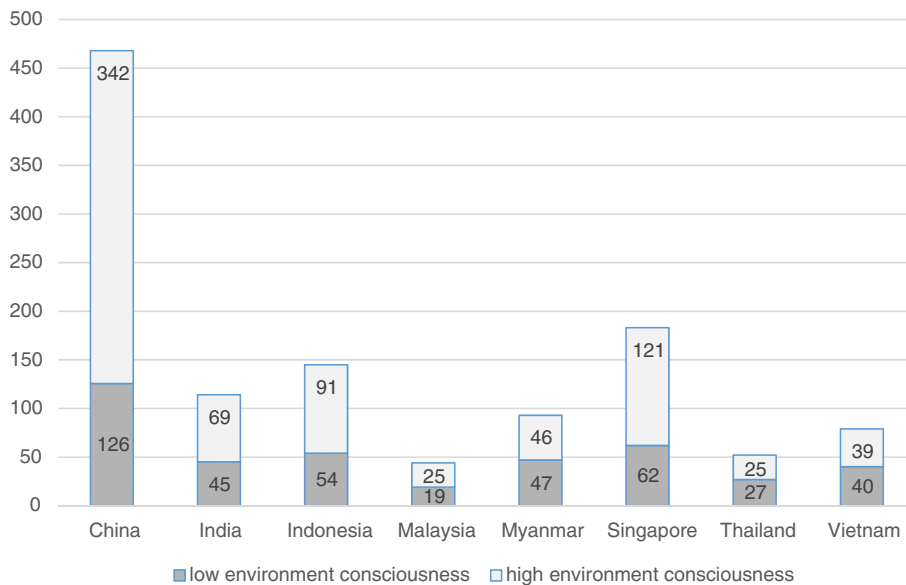**FIGURE 2** Asian consumers with high and low value consciousness.

Second, Asian consumers are mostly value conscious; that is, Asia has emerging economies whose consumers are less affluent. Our data in Figure 2 paint a similar picture. Of the surveyed consumers, 42.3% in Thailand and 75.9% in Indonesia rated themselves as highly value conscious (with ratings of at least 4 of 5). These dominant percentages reveal that companies could effectively position remanufactured products for these consumers. At the same time, they could position green marketing as "saving resources and saving money" to further alleviate value-conscious consumers' concerns about remanufactured products' quality and price. To market these products to value-conscious consumers, marketers could hold campaigns on the remanufacturing process of goods, place information into product packaging/instructions, or urge salespeople to educate consumers on how energy, resources, and costs are reduced in the process. They could further convey that though products are of lower price, they still have the same quality as new products.

Third, companies should be cautious in targeting the traditional green segment in Asia, that is, those claiming to care about environmental sustainability and to be willing to purchase green products. Our data show that though a large of number of Asian consumers claim to be highly environmentally conscious (48% to 73% of Asian consumers reported being highly environmentally conscious; see Figure 3), our empirical evidence suggests that these consumers do not actually convert their green beliefs into purchase intention for remanufactured products, even when they acknowledge the green attributes of such products, possibly due to their greater concern about health over environment. As such, we contend that the "real" green market for remanufactured products is not yet ready in Asia. Business practitioners may need to target broader segments to properly market these products, if this circular economy practice is to succeed.

NOTE

[1]Royne et al. (2016) gave the example that pandemic viruses can survive for 48 h on hard, nonporous surfaces and can last from 8 to 12 h on cloth, paper, and tissues. Unless viruses are destroyed by a bleach solution or an Environmental Protection Agency (EPA)-registered disinfectant, they are easily spread via recycled material.

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APPENDIX: CONSTRUCT MEASUREMENTS

A 5-point Likert scale was used.

Purchase intention

1. How interested would you be in buying remanufactured products this year?
2. How likely would you be to buy remanufactured products this year?

Green knowledge of remanufactured products

1. Remanufactured product is an environmentally friendly product.
2. Remanufactured product helps conserve resources.
3. Remanufactured product can reduce waste.
4. Remanufactured product can decrease pollution.

Social status consciousness (questions from Eastman et al., 1999**)**

1. I would buy a product just because it has status.
2. I would pay more for a product if it had status.
3. I am interested in new products with status.

Value consciousness (questions from Lichtenstein et al., 1990**)**

1. I am very concerned about low prices, but I am equally concerned about product quality.
2. When purchasing a product, I always try to maximize the quality I get for the money I spend.
3. I generally shop around for lower prices on products, but they still must meet certain quality requirements before I will buy them.

Environmental consciousness (questions adapted from Rashid, 2007**)**

1. The environment is one of the most important issues facing society today.
2. Strict global measures must be taken immediately to halt environmental decline.
3. A substantial amount of money should be devoted to environmental protection.
4. Unless each of us recognizes the need to protect the environment, future generations will suffer the consequences.
5. Whenever possible, I always buy products that are environmentally friendly.

Perceived quality (questions adapted from Hazen et al., 2012**)**

1. This item has an adequate life span.
2. An adequate number of features are available for this product.
3. Failure of this product does not occur often.
4. The appearance of the remanufactured product meets expectations.
5. A remanufactured product is of same quality as a new one if it is certified as so.

Perceived functional risk (questions from Hamzaoui-Essoussi & Linton, 2010**)**

1. Remanufactured products can lead to bad results.
2. Getting a remanufactured product would cause me to worry.
3. Remanufactured products have uncertain outcomes.

Awareness

1. I understand what a remanufactured product is very well.
2. I know well how a product is remanufactured.