

Article

A Comparative Study of Green Purchase Intention between Korean and Chinese Consumers: The Moderating Role of Collectivism

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Abstract: This study aims to examine the impacts of the new ecological paradigm, environmental collective efficacy, environmental knowledge, and collectivism on the green purchase intention of Korean and Chinese consumers. Although some studies have researched the relationship between cultural influences and green purchase behaviour, a study on the moderating effect of collectivism on the formation of green purchase intention is rarely found. Therefore, based on 357 consumers in Korea and 398 consumers in China, this study proposes a new model of green purchase intention and empirically tests a model using moderated regression analysis (MRA). The results show that the new ecological paradigm, environmental collective efficacy, environmental knowledge, and collectivism are direct antecedents of green purchase intention in China. In particular, collectivism positively moderates the relationship between environmental collective efficacy and green purchase intention in China. However, the results from Korean consumers show that collectivism has neither a direct impact nor moderating impact on green purchase intention. However, it was found that environmental collective efficacy and environmental knowledge have direct impacts on green purchase intention in Korea. Finally, this study discusses the theoretical and managerial implications of these findings.

Keywords: green purchase intention; new ecological paradigm; environmental collective efficacy; environmental knowledge; collectivism; Korean and Chinese consumers

1. Introduction

Recently, people have become increasingly concerned about health problems caused by the environmental deterioration in Korea and China. The severe air pollution problems, such as high level of particulate matter and climate change caused by global warming, have become serious social problems in Korea and China as well. South Korea's new president signed an order to implement urgent measures to improve the country's severe air pollution problems just five days after taking office [1]. With a review of the drafted 13th Five-Year Plan [2], by the Chinese government, China is committed to sustainable development. In addition, not only has green marketing become an important issue due to the proactive movements of the Korean and Chinese governments towards greater policy implementation regarding environmental issues, but it has also become one of the most significant concerns for firms in Korea and China. As a large number of consumers recognize the dangers of environmental deterioration resulting from irresponsible consumption in Korea and China, firms need to have more knowledge of consumer values that impact green purchasing decision to increase the effectiveness of green marketing strategies.

Although there have been numerous studies verifying the antecedent variables of green purchase behaviour, there remains controversy regarding the impacts of antecedent variables on

green purchase behaviour [3,4]. Hines et al. found weak relationships between the New Ecological Paradigm (hereafter NEP) and green purchase behaviour [5], while Scott and Willits showed NEP and green purchase behaviour were unrelated [6]. In addition, environmental collective efficacy, environmental knowledge, and collectivism also have an uncertain relationship with green purchase intention in the previous studies [7,8].

Therefore, this study reviews the relationship between antecedent variables and green purchase intention in the existing literature. As a result, this study empirically compares the relationships among NEP, environmental collective efficacy, environmental knowledge, collectivism, and green purchase intention between Korean and Chinese consumers. In particular, this study empirically tests the moderating effects of collectivism on the relationships among NEP, environmental collective efficacy, and green purchase intention in Korea and China, because Hofstede classified Korea and China as countries characterized by high collectivist tendencies [9,10]. However, although both Korea and China have been classified as high collectivist countries in various studies, the characteristics of collectivism in Korea and China differ and their effects are expected to be diverge. Specifically, the moderating effect of collectivism on green purchase intention remains under-researched. Therefore, this study will compare whether collectivism positively moderates the effects of NEP, environmental collective efficacy and collectivism on consumer green purchase intention in both countries. Of value to international marketing, this study will be the first to analyse the moderating effects of collectivism on the formation of green purchase intention and to compare the impacts of collectivism on green purchase intention between Korean and Chinese consumers.

2. Literature Review and Hypotheses

2.1. New Ecological Paradigm (NEP)

Based on the review of studies concerning environmental attitude, two types of environmental attitude are used to predict ecological behaviour: attitudes toward ecological behaviour and attitudes toward the environment in general [5]. While the objects of attitudes toward the ecological behaviour are one's ecological actions such as recycling or participating in eco-friendly activities, the objects of attitudes toward the environment are the natural environment itself or some particular aspects of it such as air/water quality. Environmental attitude towards ecological behaviour refers to the Ajzen and Fishbein's theory of reasoned action model [11]. Based on the theory of the reasoned action model, researchers have found that environmental attitude is a multiple component construct composed of affect, knowledge, and intention, and the sub-dimensions have been used in parallel to predict ecological behaviour [12,13]. However, the study tradition, using the sub-dimensions in parallel to predict ecological behaviour, was altered by the following studies using the sub-dimensions of environmental attitude in a more sequential way to predict either environmental attitude or behaviour [14]. Consequently, environmental attitude was measured independently from its affective, cognitive and intentional components. Recent studies consider attitude toward the environment as a single component measure for predicting environmental behaviour [15,16].

The New Environmental Paradigm (NEP) is a representative single component measure of environmental attitude [7,17,18]. NEP is a common method of measuring attitudes towards the environment, first presented by Dunlap and Van Liere [17], and subsequently developed to the New Ecological Paradigm (NEP) [19]. The NEP scale has become one of the most widely used measures of environmental attitude globally and has been undertaken in numerous studies [20]. The New Ecological Paradigm (NEP) measures the overall relationship between humans and the environment using 15 measurement items. Dunlap et al. defined the NEP as a unidimensional construct with summing up these 15 revised NEP items [19]. The unidimensional NEP measurement is frequently used to predict environmental behaviour [20,21,22]. Similar to the NEP, Bohlen et al. also used the attitude toward the environment employing a unidimensional scale [23]. They perceived the attitude toward the environment is a consumer concern regarding the quality of the environment and key environmental issues. Above all, they thought that it was the best approach to recognize attitude as a conceptually meaningful single dimension in order to maintain internal consistency [23]. Ellen

(1994) also found that a general attitude toward the environment is a significant predictor of pro-environmental behaviours [24]. Therefore, the NEP scale was used to measure the cognitive and emotional attitude of consumers concerning environmental issues in this study.

Although numerous studies have been conducted to explain the relationship between the NEP and pro-environmental behaviours, no definitive explanation has yet been found. Dunlap and Van Liere found that NEP has no significant impacts on pro-environmental behaviour [17], while Hines et al. showed that a weak relationship exists between the NEP and green purchase behaviour [5]. However, there are a few studies that found participants who achieve a higher score on the NEP scale were more likely to support pro-ecological actions. For example, Cordano et al. evaluated the validity of the original and revised versions of the NEP scales on the intention to engage in pro-environmental behaviour [25]. These scales explained a significant amount of variance in the measure of intention to engage in pro-environmental behaviour. Lovelock found that a higher NEP Score was also associated with higher levels of environmentally friendly behaviour [26]. Hoàng and, Nguyễn found that consumers' NEP in Vietnam is related to green purchase intention [27]. Chen showed that in China and Taiwan, the NEP affected the willingness to stay in environmentally friendly and environmentally responsive hotels [28]. Stern et al. has also demonstrated the validity of the NEP scale in measuring environmental attitudes and predicting environmental behaviour. [29].

Purchase intention is generally defined as the antecedents that stimulate and drive consumers' actual purchase of products and services [30]. Numerous studies examined consumers' actual behaviour through studying their intentions [31]. Ajzen showed that intention is an influential predictor of purchase behaviour and strongly affects the likelihood of the decision to buy [32]. Kim and Pysarchik also demonstrated the existence of a strong correlation between purchase intention and actual purchase behaviour [33]. Chan found that Chinese consumer's intention to purchase green products can be a predictor of green purchasing behaviour [34]. Albakyrak et al. also demonstrated that green purchase intention is a significant factor in ascertaining the real or actual buying behaviour of an individual based on the theory of planned behaviour [35]. Therefore, this study will consider purchase intention towards green products (hereafter green purchase intention) as an alternative for measuring consumers' actual purchase behaviour. From the above discussion, Hypothesis 1 is developed:

Hypothesis 1 (H1): *NEP has a positive impact on green purchase intention.*

2.2. Environmental Collective Efficacy

Pro-environmental behaviour studies frequently apply the norm-activation model (NAM) [36], and the theory of planned behaviour (TPB) [11] for examining pro-environmental behaviour [3]. The NAM model views environmental behaviour primarily as prosocially motivated, whereas the TPB model views self-interest relying on rational choice models as the primary motivator. According to the TPB model, consumers' decision making is guided by the rational evaluation of behavioural consequences, the estimation of their ability to perform the behaviour (perceived behavioural control, PBC), and the perceived social pressure resulting from the expectations of significant reference persons (social norm). The TPB model assumes that consumers not only consider their environmental attitudes toward the green purchase behaviour but also take into account the effectiveness to perform the green purchase behaviour when forming pro-environmental purchase intention.

Kinnear et al. measured perceived consumer effectiveness (PCE) as a personal variable to predict environmental concern [37]. Ellen, Weiner, and Cobb-Walgren defined PCE as the extent to which individuals believe that their actions make a difference in solving a problem [38]. PCE was found to be a distinct predictor for an environmental concern or attitude for green purchase behaviours [38]. Berger and Corbin defined PCE as the evaluation of the "self" regarding specific issues [39]. Straughan and Roberts measured PCE as an attitudinal variable to predict environmental behaviour [40]. Kim and Choi also empirically found that PCE is positively related to

pro-environmental behaviour [22]. Similar to the concept of PCE, Kerr defined self-efficacy as a person's beliefs about how effective his or her behaviour is for achieving desired outcomes [41]. Fishbein and Cappella demonstrated that self-efficacy is an important determinant of behavioural intention [42]. Gupta and Ogden also empirically supported that self-efficacy is positively associated with behaviours fostering eco-friendly product consumption [43].

Furthermore, by considering that the ultimate outcome from environmental consumption is an improvement in social well-being on a large-scale, collective efficacy beliefs may have stronger impacts on green purchase intention than self-efficacy. In addition, if the study model were developed for Asian countries in which collectivism is dominant, environmental collective efficacy would be more significant.

Seijts and Latham found that strong collective efficacy which is the belief that the members within a group have the ability to achieve desired outcomes together might be more crucial for individual contributions regarding social problems [44]. Homburg and Stolberg found that people's engagement in pro-environmental activities cannot be predicted by self-efficacy but rather by collective efficacy [45]. Likewise, Bonniface and Henley found that people participating in a household waste management program are more likely to believe that the waste problem could be reduced by contribution from all members in a community than those who do not participate [46]. Bandura assessed collective efficacy beliefs by asking members of a group to judge the group's ability to jointly achieve desired outcomes [47]. This study thus defines environmental collective efficacy as one's belief about his/her group's ability to solve environmental problems effectively. From the above discussion, this study assumes that environmental collective efficacy is positively associated with people's willingness to purchase pro-environmental products. Thus, Hypothesis 2 is as follows:

Hypothesis 2 (H2): *Environmental collective efficacy has a positive impact on green purchase intention.*

2.3. Environmental Knowledge

Environmental knowledge is one of the important variables to predict pro-environmental behaviour. Fryxell and Lo defined environmental knowledge as the degree to which individuals know about environmental issues and the general knowledge of facts, concepts, and relationships about the ecosystems [48]. In the literature concerning environmental knowledge, researchers have generally used different concepts of environmental knowledge to predict an individual's green behaviour: general or specific environmental knowledge, and subjective or objective environmental knowledge.

Polonsky et al. stated that environmental knowledge can be general or specific [49]. While a few studies have considered environmental specific knowledge [50], other studies have used general environmental knowledge [7,51], or both [48,52] to examine the relationship between environmental knowledge and pro-environmental behaviours. Previous studies regarding the impacts of specific environmental knowledge and general environmental knowledge on pro-environmental behaviours show mixed results. Barber et al. examined the relationship between general environmental knowledge and specific environmental knowledge, and found that product specific environmental knowledge had significant impacts on green purchase intention, whereas general environmental knowledge had little impact [52]. However, in contrast, Polonsky et al. found that both general and specific knowledge were positively related to environmental behaviours [49]. Barber et al. argued that environmental knowledge, general environmental knowledge and specific environmental knowledge might be related to different types of behaviour [52].

Meanwhile, Brucks described consumer product knowledge as subjective or objective knowledge. Subjective knowledge refers to the individual's perception of how much s/he knows and objective knowledge refers to a measure that an individual actually knows [53]. Ellen examined the impacts of objective and subjective knowledge on recycling and recycling-based purchase decisions [24]. He found that a significant relationship between subjective knowledge and three recycling behaviours of convenience recycling, committed recycling, and source reduction behaviours existed.

However, objective behaviour only significantly affected committed recycling. Through the above discussion, this study defines environmental knowledge as one's perception of how much s/he knows about general environmental issues and assumes that environmental knowledge is positively related to green purchase intention. Hypothesis 3 is presented as follows:

Hypothesis 3 (H3): *Environmental knowledge has a positive impact on green purchase intention.*

2.4. Collectivism

Hofstede modeled individualism and collectivism as opposite poles of a continuum to perform large-scale international comparisons [54,55]. Hofstede explained that people are likely to have a particularly strong desire for interaction and recognition in their group in countries with low individualism (collectivism), while people in the country with high individualism (individualistic) tend to feature the orientation toward oneself as an autonomous person [54]. Hofstede's model perceived individualism and collectivism as opposite poles of a continuum and compared the differences among the people from different countries. However, some researchers have recently treated individualism and collectivism as separate constructs and approached individualism and collectivism as personal values concurrently [55]. When measuring individualism and collectivism as a personal value dimension, they are often referred to as ideocentrism and allocentrism, respectively [56,57]. However, Soares et al. and Taras et al. simply called these dimensions as individualism and collectivism [55,58]. For consistency and simplicity, this study will adopt the definition of collectivism as the opposite of individualism and refer to the collectivistic personal value as collectivism based on the definition of Soares et al., and Taras et al. [55,58].

Collectivism has been found to affect many kinds of social behaviours. McCarty and Shrum found a positive relationship between collectivism and pro-environmental behaviour [59]. Specifically, collectivistic persons tend to be proactive in recycling because they are more likely to be more cooperative, caring for other people, and advocate group over personal values. Dunlap and Van Liere found that individualistic people tend to consider recycling less important [60]. Chan demonstrated that collectivism of Chinese consumers is positively related with environmental awareness [35]. Leung and Rice found that individualistic people are likely to do the more harmful behaviour on the environment for their own benefit than collectivistic people [61]. Kim and Choi also found that collectivist values are connected to pro-environment purchase behaviour [22]. They explained that collectivistic people are more likely to make pro-environmental decisions, because collectivistic people tend to perceive its importance regarding the prosperity of their group [22]. Arisal and Atalar also found that two different samples (in Turkey and abroad) that individual-collectivist values are positively linked with pro-environmental purchase behaviour [62]. Therefore, it can be concluded from the above literature that collectivistic people tend to show pro-environmental behaviour. From the above discussion, Hypothesis 4 was developed:

Hypothesis 4 (H4): *Collectivism has a positive impact on green purchase intention.*

This study hypothesized that collectivism positively moderates the relationships among NEP, environmental efficacy and green purchase intention. Most marketing theories approach the consumer's decision making process from the perspective that most individuals are independent, autonomous identities, free to make decisions purely based on personal desires and affiliations [63]. This approach is largely reflected by well-established Western theories related to marketing. From the perspectives of Western marketing theories, researchers should prioritize personal values and attitudes to predict consumer behaviour. However, consumption behaviours are definitely culturally bound. Schütte and Ciarlante present an Asian Hierarchy of Needs in contrast to Maslow's Hierarchy of Needs [64,65]. They explain that in the Asian Hierarchy of Needs, the needs on the top of the pyramid relate to social needs such as status and admiration rather than self esteem and self actualization. This theory indicates the greater importance of collectivism in Asian countries. In these circumstances, collectivism should be critically treated as a predictor of consumer

behaviour in Korea and China. In addition to the results of studies concerning the importance of collectivism as a significant variable in predicting consumer behaviour in Asian countries, numerous studies found that collectivism increases the psychological benefits derived from selecting products which meet social preferences [66]. As ecological attitude generally includes social preferences, this study assumes that collectivism will positively moderate the relationship between NEP and green purchase behaviour. In other words, the positive impact of NEP on green purchase intention is likely to be stronger for collectivistic consumers [67]. Numerous studies support the assumption that more collectivistic individuals tend to perceive the psychological benefits of products by selecting those products that meet their social preferences [68,69]. As pro-environmental attitude and behaviour reflects social preferences [68], this study predicts that the impact of NEP on green purchase intention is higher for collectivist than individualistic consumers. Therefore, collectivism may positively moderate the positive impact of NEP on green purchase intention due to its emphasis on the well-being of group members.

Hypothesis 5 (H5): *Collectivism positively moderates the positive effect of NEP on green purchase intention.*

Collectivism may also have a positive moderating impact on the relationship between environmental collective efficacy and green purchase intention. When people decide whether they should pursue collective interests in large-scale social dilemmas, collective efficacy would be a very important consideration [46]. Considering the results of pro-environmental behaviour is a happy and healthy life under a collective perspective, each consumer derive efficacy from judgments of how much his/her group members together can positively affect the environment [47]. Therefore, this study assumes there are positive interaction effects between environmental collective efficacy and collectivism on green purchase intention. In other words, when individuals tend to be more collectivistic, the individuals are likely to have stronger purchase intention towards green products resulting from environmental collective efficacy. Based on the above discussion, Hypothesis 6 is presented as follows:

Hypothesis 6 (H6): *Collectivism positively moderates the positive effect of environmental collective efficacy on green purchase intention.*

Figure 1 presents the conceptual framework and hypotheses of this study. This study examines extant theories regarding the main effects of NEP, environmental collective efficacy, environmental knowledge and collectivism on green purchase intention. The hypotheses of this study assume that higher NEP, environmental collective efficacy, environmental knowledge and collectivism increases consumers' green purchase intention in Korea and China (**H1**, **H2**, **H3**, and **H4**). Hereafter, this study posits that collectivism tends to exhibit positive moderating effect as a personal culture dimension on the positive impacts of NEP and environmental collective efficacy on green purchase intention (**H5/H6**). In other words, this study assumes that collectivism increases the effects of NEP (**H5**) and environmental collective efficacy (**H6**) on green purchase intention. These hypotheses are developed to draw out cultural marketing implications. Moreover, of significant practical important, these hypotheses imply that firms should invest more in increasing the level of NEP and environmental collective efficacy of consumers when dealing with collectivistic consumers. This study will test these hypotheses using consumer data from Korea and China.

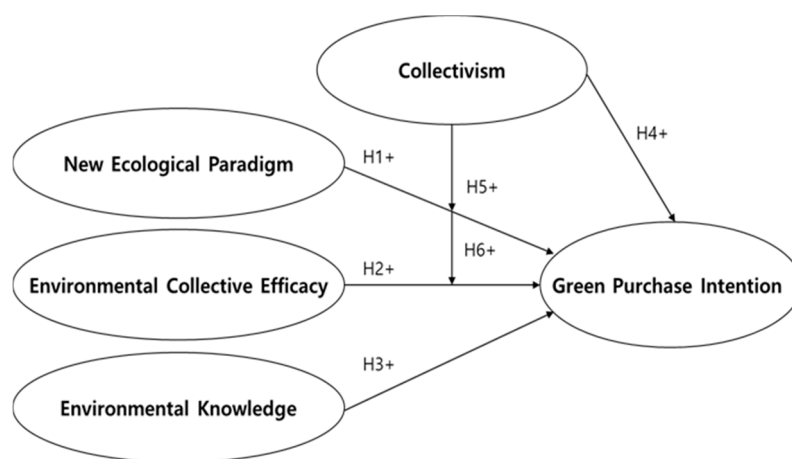


Figure 1. Conceptual framework and hypotheses.

3. Methodology

3.1. Questionnaire Design

A self-administered questionnaire survey was designed to collect empirical data in Korea and China (see Table 1). To ensure equivalence in the conceptual model, this study considers measure equivalence and construct equivalence. First, to establish translation equivalence, this study had the original English instrument translated to the Korean by a bilingual professional and Korean instrument translated to Chinese by another bilingual professional. Subsequently, the Chinese instrument was back-translated to Korean by another bilingual professional [70]. The questionnaire was pre-tested by 98 and 87 respondents from Korea and China, respectively, and revised to ensure content validity. In addition, several irrelevant or ambiguous items were removed for clarity and to ensure construct equivalence.

The questionnaire consists of six parts. Part 1 measures the green purchase intention (four items). To measure the green purchase intention precisely, this study presented the definition of “green products” in a box on the top of the green purchase intention measurement items. This study defined “green product” as a product not only fulfilling the same functions as the equivalent conventional product but also causing less damage to the environment throughout the product life cycle from production to disposal [71]. Part 2 measures the NEP (seven items). NEP originally consisted of 15 items; however, this study revised and eliminated items due to problems of items equivalence and ambiguity [19]. Part 3 measures the environmental collective efficacy (five items). Part 4 assesses the environmental knowledge (four items). Part 5 measures the collectivism (four items). The first five parts are measured using a seven-point Likert scale: 1 (strongly disagree) to 7 (strongly agree). Finally, Part 6 includes the respondents’ socio-demographic information using the five items of gender, age, education level, marital status, and occupation. More detailed measurement items of the constructs in this study are presented in Table 1.

Table 1. Constructs, items, and sources.

Constructs	Measurement Items	Sources
New Ecological Paradigm (NEP)	Humans are seriously abusing the environment.	[19,72]
	Despite our special abilities, humans are still subject to the laws of nature.	
	When humans interfere with nature it often produces disastrous consequences.	
	The balance of nature is very delicate and easily upset.	
	The Earth is like a spaceship with very limited room and resources.	
	Humans were meant to rule over the rest of nature.	
	If things continue on their present course, we will soon experience a major ecological catastrophe.	
Environmental	I believe that we as members of one community can together reduce environmental degradation around us.	[46]

Collective Efficacy (ECE)	I believe that we as members of one community can together help mitigate global climate change.	[73]
	I believe that we as members of one community can make our environment cleaner through pro-environmental behaviour.	
	I believe that we as members of one community can together encourage more and more people to behave in an eco-friendly way.	
	I believe that we as members of one community can come up with creative ideas to help solve environmental problems effectively.	
Environmental Knowledge (EKN)	I know how to preserve and not cause damage to the environment.	[33,34]
	I know that plastic bags take many years to decompose and cause pollution.	
	I know the causes and effects of “global warming.”	
Collectivism (COL)	I know the causes and effects of “particulate matter.”	[9]
	Groups make better decisions than individuals.	
	It is better to work in a group than alone.	
Green Purchase Intention (GPI)	Decisions made by individuals are usually of higher quality than decisions made by groups.	[33,34]
	I would not support my work group if I felt they were wrong(R).	
	I will definitely consider buying a pro-environmental product.	
	I will prioritize a pro-environmental product when shopping.	
	I feel like buying a pro-environmental product.	
	I will recommend a pro-environmental product to people around me.	

3.2. Data Collection

To test study hypotheses, data were collected in Busan, Ulsan and Changwon in Korea and Beijing, Shanghai and Qingdao in China during July–August 2016. Survey data were collected from different shopping malls located in various cities in Korea and China to allow for consumer heterogeneity and ensure sample randomness. A team of trained business school graduate students were recruited to survey consumers at each shopping mall. Surveyors screened consumers passing through the entrance at shopping malls and chose every fifth consumer as a targeted respondent. Respondents received \$1.50 worth of products as an incentive to participate in this study. A self-completion questionnaire was utilized to collect data. Of the 363 questionnaires administered in Korea, and 402 in China, four and six were excluded, respectively, because of inconsistent responses and missing values. A final samples of 357 and 398 completed questionnaires of Korean and Chinese consumers were obtained, respectively, and analysed to test the hypotheses.

3.3. Data Analysis

This study utilized moderated regression analysis (MRA) to test the study hypotheses and SPSS 20.0 version was employed. MRA is a specific application of multiple linear regression analysis, in which the regression equation contains an “interaction term” [76,77]. A single regression equation forms the basic moderation model:

$$Y = i_5 + \beta_1 X + \beta_2 Z + \beta_3 XZ + e_5 \quad (1)$$

where β_1 is the coefficient relating to the independent variable, X , to the outcome, Y , when $Z = 0$; β_2 is the coefficient relating to the moderator variable, Z , to the outcome when $X = 0$; i_5 is the intercept in the equation; and e_5 is the residual in the equation.

The regression coefficient for the interaction term, β_3 , provides an estimate of the moderation effect. If β_3 is statistically different from zero, there is a significant moderation of the X – Y relation in the data. Plotting the interaction effects aids in the interpretation of moderation to show how the slope of Y on X is dependent on the value of the moderator variable. Regression slopes that correspond to the prediction of Y from X at a single value of Z are termed simple slopes.

4. Results

4.1. Descriptive Analysis Results

Table 2 presents the demographic characteristics of respondents. Descriptive results show that approximately 60% of respondents had undergraduate or graduate degrees in both countries. More

than 80% of the respondents were between 20 and 49 years old, and about 40% of respondents were male. While more than half of respondents were married (67.5%) in Korea, approximately 60% of respondents in China were single. Regarding occupation, the most common occupation was student (43.0%) in China, and office manager (24.6%) and technician (24.4%) were the most common occupations in Korea.

The descriptive results of NEP, environmental collective efficacy, environmental knowledge, collectivism and green purchase intention show that Korean consumers' NEP, environmental knowledge, environmental collective efficacy, collectivism and green purchase intention were significantly higher than Chinese consumers for all variables. Detailed descriptive analysis results are shown in Table 3.

Table 2. Sample characteristic.

Items	Korea (n = 357)		China (n = 398)	
		Frequency (%)		Frequency (%)
Gender	Male	152 (42.6%)	159 (39.9%)	
	Female	203 (56.9%)	239 (60.1%)	
	Missing data	2 (0.5%)	0 (0.0%)	
Age	Under 20	1 (0.3%)	9 (2.3%)	
	20–29	105 (29.4%)	178 (44.7%)	
	30–39	92 (25.8%)	96 (24.1%)	
	40–49	97 (27.2%)	65 (16.3%)	
	50–59	52 (14.6%)	37 (9.3%)	
	Over 60	10 (2.8%)	13 (3.3%)	
Education	Middle school or below	62 (17.4%)	5 (1.3%)	
	High school	83 (23.2%)	139 (34.9%)	
	Undergraduate	185 (51.8%)	212 (53.3%)	
	Postgraduate	27 (7.6%)	41 (10.3%)	
	Missing data	0 (0%)	1 (0.3%)	
Marital Status	Single	116 (32.5%)	236 (59.3%)	
	Married	241 (67.5%)	161 (40.5%)	
	Missing data	0 (0%)	1 (0.3%)	
Occupation	Student	11 (3.1%)	171 (43.0%)	
	Office manager	88 (24.6%)	55 (13.8%)	
	Professionals	48 (13.4%)	58 (14.6%)	
	Sales personnel	53 (14.8%)	18 (4.5%)	
	Technician	87 (24.4%)	8 (2.0%)	
	Housewife	16 (4.5%)	49 (12.3%)	
	Other	54 (15.1%)	39 (9.8%)	

Table 3. Descriptive analysis results of variables ¹.

Variables	Country	N	M (SD)	t
New Ecological Paradigm (NEP)	Korea	357	5.77 (0.89)	6.75 ***
	China	398	5.34 (0.85)	
Environmental Collective Efficacy (ECE)	Korea	357	5.43 (1.03)	7.31 ***
	China	398	4.91 (0.91)	
Environmental Knowledge (EKN)	Korea	357	4.84 (1.15)	7.91 ***
	China	398	4.25 (0.91)	
Collectivism (COL)	Korea	357	5.40 (1.04)	8.45 ***
	China	398	4.95 (0.93)	
Green Purchase Intention (GPI)	Korea	357	5.30 (1.21)	6.31 ***
	China	398	4.57 (1.13)	

¹ Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

4.2. Exploratory Factor Analysis and Discriminant Validity of Variables

To explore the measured variables of the study model, exploratory factor analysis (EFA) was conducted using SPSS 20.0 for Microsoft Windows. Table 4 presents the results of exploratory factor analysis (EFA) for all variables. Five factors, with a cut-off factor loading of 0.5 and an eigenvalue greater than one, explaining 61.97% and 70.26% of the variance of the constructs scale in Korea and China, respectively, using a principal components factor analysis with a varimax rotation. The Cronbach's alpha exceeded the threshold value of 0.7, confirming the high reliability of results. Table 4 presents the five factors, i.e. the new ecological paradigm (NEP), environmental knowledge (EKN), environmental collective efficacy (ECE), collectivism (COL) and green purchase intention (GPI).

Table 4. Exploratory factor analysis (EFA) results on variables.

Factor/Item	Korea (n = 357)					China (n = 398)				
	NEP	EKN	ECE	COL	GPI	NEP	EKN	ECE	COL	GPI
Cronbach's Alpha	0.757	0.884	0.911	0.906	0.898	0.708	0.835	0.843	0.845	0.874
New Ecological Paradigm (NEP)	0.731	−0.015	0.298	0.015	−0.066	0.796	−0.015	0.298	0.015	−0.066
	0.783	0.075	0.249	0.005	0.057	0.786	0.075	0.249	0.005	0.057
	0.761	0.033	0.222	0.125	0.148	0.744	0.033	0.222	0.125	0.148
	0.623	0.324	0.064	0.226	0.129	0.630	0.324	0.064	0.226	0.129
	0.803	−0.068	0.156	0.075	0.135	0.611	−0.068	0.156	0.075	0.135
	0.709	0.011	0.107	0.130	0.124	0.608	0.011	0.107	0.130	0.124
	0.712	0.306	0.113	0.105	0.108	0.544	0.306	0.113	0.105	0.108
Environmental Knowledge (EKN)	0.085	0.824	0.207	0.028	0.113	0.198	0.824	0.207	0.028	0.113
	0.092	0.874	0.216	0.147	0.175	0.055	0.874	0.216	0.147	0.175
	0.048	0.781	0.121	0.226	0.210	0.040	0.781	0.121	0.226	0.210
	0.070	0.818	0.230	0.181	0.262	−0.052	0.818	0.230	0.181	0.262
Environmental Collective Efficacy (ECE)	0.242	0.185	0.773	0.078	0.019	0.132	0.185	0.773	0.078	0.019
	0.205	0.166	0.857	0.080	0.129	0.262	0.166	0.857	0.080	0.129
	0.211	0.237	0.744	0.072	0.254	0.177	0.237	0.744	0.072	0.254
	0.305	0.094	0.776	0.079	0.198	0.204	0.094	0.776	0.079	0.198
	0.250	0.366	0.613	0.032	0.274	0.187	0.366	0.613	0.032	0.274
Collectivism (COL)	0.171	0.318	0.124	0.500	0.225	0.058	0.318	0.124	0.500	0.225
	−0.026	0.046	0.025	0.850	0.004	0.133	0.046	0.025	0.850	0.004
	0.161	0.189	0.160	0.722	0.197	0.022	0.189	0.160	0.722	0.197
	0.225	0.105	0.006	0.787	−0.053	0.209	0.105	0.006	0.787	−0.053
Green Purchase Intention (GPI)	0.199	0.156	0.170	0.013	0.815	0.114	0.156	0.170	0.013	0.815
	0.134	0.204	0.106	0.039	0.835	0.122	0.204	0.106	0.039	0.835
	0.075	0.260	0.116	0.090	0.859	0.153	0.260	0.116	0.090	0.859
	0.064	0.106	0.212	0.129	0.832	0.146	0.106	0.212	0.129	0.832
Eigenvalue	4.26	3.49	3.41	2.37	3.33	3.63	3.49	3.41	2.37	3.33
Variance Explained (%)	17.77	14.53	14.22	9.87	13.87	15.13	14.53	14.22	9.87	13.87

Discriminant validity was estimated by testing the correlations among the measures of potentially overlapping constructs. The square root of the AVE of a construct needs to be higher than the variance shared between the construct and other constructs. Although there is no standard value for discriminant validity, a result of less than 0.85 infers that discriminant validity likely exists between the constructs. Since the results are less than 0.85, this study concludes that discriminant validity exists among the scales measuring the constructs. Table 5 shows that the results indicate adequate discriminant validity.

Table 5. Discriminant validity

Variables	Korea (n = 357)					China (n = 398)				
	1	2	3	4	5	1	2	3	4	5
NEP	1					1				
EKN	0.291	1				0.189	1			
ECE	0.539	0.502	1			0.480	0.301	1		
COL	0.332	0.390	0.269	1		0.283	0.211	0.244	1	
GPI	0.311	0.456	0.440	0.246	1	0.351	0.287	0.538	0.161	1

4.3. Empirical Analysis

Based on the studies of Baron and Kenny as well as Cohen and Cohen, hierarchical regression analysis was used to test **H1**, **H2**, **H3**, **H4**, **H5**, and **H6** [74,75]. Results are presented in Table 6. Multiple regression analysis was performed for the independent variables of NEP, ECE, and EKN for the green purchase intention of Korean and Chinese consumers in Model 1. Subsequently, multiple regression analysis was conducted for the independent variables of NEP, ECE, EKN, and COL for purchase intention of green products of Korean and Chinese consumers in Model 2. Finally, multiple regression analysis was performed for the independent variables of NEP, ECE, EKN, COL and the interaction variables (NEP×COL, ECE×COL) for green purchase intention of Korean and Chinese consumers in Model 3.

Regarding the results of Korean consumers, β of NEP on green purchase intention was 0.095 ($p > 0.05$), β of ECE on green purchase intention was 0.232 ($p < 0.001$) and β of EKN on green purchase intention was 0.311 ($p < 0.001$) in Model 1. In Model 2, β of NEP on green purchase intention was 0.085 ($p > 0.05$), β of ECE on green purchase intention was 0.234 ($p < 0.001$), β of EKN on green purchase intention was 0.299 ($p < 0.001$) and β of COL on green purchase intention was 0.038 ($p > 0.05$). A change of R^2 (ΔR^2) was not significantly increased, from 0.274 (Model 1) to 0.275 (Model 2) at the model of significance. In Model 3, β of NEP on green purchase intention was -0.123 ($p > 0.05$), β of ECE on green purchase intention was 0.032 ($p > 0.05$), β of EKN on green purchase intention was 0.304 ($p < 0.001$), β of COL on green purchase intention was -0.442 ($p > 0.05$), and β of interaction variables (NEP×COL and ECE×COL) on green purchase intention were 0.410 ($p > 0.05$) and 0.313 ($p > 0.05$) respectively. A change of R^2 (ΔR^2) was not significantly increased, from 0.275 (Model 2) to 0.281 (Model 3) at the model of significance. Therefore, according to the results of Model 1, there were only significant main effects of EKN and ESE on the green purchase intention of Korean consumer, as shown in Table 6. H2 and H3 are supported in Korea.

Result concerning Chinese consumers found that β of NEP on green purchase intention was 0.112 ($p < 0.05$), β of ECE on green purchase intention was 0.444 ($p < 0.001$), and β of EKN on green purchase intention was 0.132 ($p < 0.01$), in Model 1. β of NEP on green purchase intention was 0.114 ($p < 0.05$), β of ECE on green purchase intention was 0.445 ($p < 0.001$), β of EKN on green purchase intention was 0.133 ($p < 0.05$) and β of COL on green purchase intention was -0.007 ($p > 0.05$) in Model 2. A change of R^2 (ΔR^2) was not significantly increased, from 0.316 (Model 1) to 0.316 (Model 2) at the model of significance [43]. In the Model 3, β of NEP on green purchase intention to green product was 0.527 ($p < 0.05$), β of ESE on green purchase intention was 0.535 ($p < 0.01$), β of EKN on green purchase intention was 0.137 ($p < 0.01$), β of COL on green purchase intention was 0.625 ($p < 0.05$), and β of interaction variables (NEP×COL and ECE×COL) on green purchase intention were 0.166 ($p < 0.05$) and 0.758 ($p < 0.05$) respectively. A change of R^2 (ΔR^2) was significantly increased, from 0.316 (Model 2) to 0.327 (Model 3) at the model of significance. Therefore, according to the results of Model 3, there was a significant interaction effect of NEP×COL on the green purchase intention in China as shown in Table 6. H1, H2, H3, H4, and H6 are supported for China.

Table 6. Multiple regression analysis (MRA).

Variables		(Dependent Variable) Purchase Intention for Green Product					
		Korea (n = 357)			China (n = 398)		
		Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Independent Variables	NEP (A)	0.095	0.085	-0.123	0.112 *	0.114 *	0.527 *
	ECE (B)	0.232 ***	0.234 ***	0.032	0.444 ***	0.445 ***	0.535 **
	EKN (C)	0.311 ***	0.299 ***	0.304 ***	0.132 **	0.133 **	0.137 **
	COL (D)		0.038	-0.442		-0.007	0.625 *
Interactions	A × D			0.410			0.166
	B × D			0.313			0.758 *
R ²		0.274	0.275	0.281	0.316	0.316	0.327
F		44.345 ***	33.359 ***	22.756 ***	60.550 ***	45.305 ***	31.534 ***
ΔR ²			0.001	0.006		.000	.011

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

5. Discussion and Implications

5.1. Theoretical Implications

This study focuses on a new perspective of green purchase intention. Both Korea and China have recently declared a national emergency due to serious environmental pollution problems such as respiratory problems caused by fine dust (or particulate matter). In addition, as problems caused by environmental pollution adversely affect individual health and hygiene, Korean and Chinese consumers are increasingly concerned with the environment and pro-environmental consumption. Although Korean and Chinese consumers are increasingly concerned about the environment and the resulting outcomes of their consumption, academia has not been able to provide consensus regarding green purchase intention [3,4], and has tended to adopt theoretical models mainly developed in Western countries [11,36]. Previous studies concerning green purchase behaviour have developed theoretical frameworks reflected by well-established Western theories and have not tested the constructs of higher levels of collectivism in Asian countries [64,65]. In particular, the moderating roles of collectivism on the relationship between environmental attitudes and green purchase intention have received little attention.

Therefore, this study developed a new model to reflect the cultural features of Korean and Chinese consumers' pro-environmental purchase intention. In addition, this study considers NEP, environment collective efficacy, environmental knowledge and collectivism as predictors of green purchase intention. Collectivism was considered a direct antecedent and a moderating variable. This study contributes to the literature by investigating those factors likely to influence consumers' green purchase intention in the context of green marketing. Results showed that NEP, environmental collective efficacy, environmental knowledge, and collectivism are all antecedents of green purchase intention in China. Most importantly, the moderating role of collectivism can not be ignored on the relationship between environmental collective efficacy and green purchase intention in China. However, in Korea, the results showed that only environmental collective efficacy and environmental knowledge are significant antecedents of green purchase intention. The moderating effect of collectivism was not presented for Korea.

Results found significant impacts of environmental collective efficacy and environmental knowledge on green purchase intention in both countries, which is consistent with previous findings [46,47,48,49]. However, no statistically significant relationship between NEP and green purchase intention was identified in Korea [5,17], whereas a significant main impact of NEP on green purchase intention was found in China [25,26,27,28,29]. Likewise, collectivism was found not to be a significant antecedent of green purchase intention in Korea, whereas a significant main impact of collectivism on green purchase intention was found in China [22,34,59,62]. Moreover, the

moderating impact of collectivism was found on the relationships between environmental collective efficacy and green purchase intention in China [46,47], but was not found in Korea.

In summary, findings of this study confirm that environmental collective efficacy and environmental knowledge are important predictors of green purchase intention in both countries. However, NEP and collectivism featured different impacts on green purchase intention in Korea and China. According to the descriptive analysis results of the variables, Korea seems to have higher pro-environmental attitudes, collectivism and pro-environmental purchase intention than China, but the effectiveness of pro-environmental attitude variables was lower than expected in Korea. Finally, it was particularly surprising to find the direct effect and moderating effect of collectivism are not evident for Korea, unlike previous studies. The results of this study are contradictory to those of previous studies [46,47]. MRA results from Korean consumers show although Korean consumers exhibit stronger collectivism than Chinese consumers on the surface, collectivism in Korea does not have a positive direct and moderating impact on the green purchase intention. This seems because Korean consumers are more influenced by the anticipated results from pro-environmental behaviours such as the values and outcomes of pro-environmental behaviours rather than being influenced by individual-level cultural disposition such as collectivism in forming green purchase intention. On the other hand, this study found that Chinese consumers have weaker collectivism than Korean consumers, but Chinese consumers' collectivism positively affects green purchase intention. It means, in China, if consumers have stronger cultural disposition to advocate collective values, is likely to have higher green purchase intention. Particularly, this study found that collectivism has a positive moderating effect on the relationship between environmental collective efficacy and green purchase intention in China. In other words, in China, if consumers tend to recognize higher efficacy of one's pro-environmental behaviour and to have stronger cultural disposition to advocate collective value concurrently, consumers tend to exhibit higher green purchase intention.

5.2. Managerial Implications

International green marketers claim that the lack of foreign market information is always a major obstacle to the successful international expansion of green products [76]. Lim et al. also insist that it is time to improve green marketing strategies since it is crucial for promoting green products. Understanding the uniqueness of each market will help to market products in a more effective way and can influence the target market consumers [77].

The results show that green marketing practitioners can increase the size of the green market in China by focusing on increasing the NEP, environmental collective efficacy, environmental knowledge and collectivism of consumers. For example, green marketing practitioners will be able to utilize content marketing strategies to enhance the new ecological paradigm and environmental knowledge of Chinese consumers. Through content marketing, green marketing practitioners can stimulate consumers' ecological awareness and strengthen consumers' environmental knowledge related to their eco-friendly products and services. In addition, delivering a message that individual consumers' green purchases will contribute to protecting the environment of their community, country, and globally may also be a successful marketing strategy. That is, emphasizing environmental collective efficacy can be a successful marketing strategy for Chinese consumers. In particular, for consumers with a high tendency of collectivism in China, it is an effective way to promote green products through emphasizing the fact that one's pro-environmental purchase is very beneficial and effective for preserving the environment from a collective perspective.

However, green marketing practitioners in Korea require different green marketing approaches to that of China. Empirical analysis results in this study, unlike the results of previous studies, show that China has weaker collectivist tendency than Korea. However, the effect of collectivism of Chinese consumers on green purchase intention was more significant. Furthermore, the moderating effect of collectivism in Korea was not found. Therefore, according to the results of this study, green marketing for Korean consumers requires more individual (personal) approaches. For example, as Korean consumers exhibit higher green purchase intention when environmental knowledge level is

high, a marketing strategy that can raise the level of environmental knowledge will be effective. Therefore, content marketing in Korea is also expected to achieve higher marketing performance. Environmental collective efficacy had a significant effect on the green purchase intention for Korean consumers. Therefore, it may be a very useful marketing approach to highlight that consumers' efforts, such as green purchase dealing with their group members will be very effective.

5.3. Limitations and Suggestions

This study has several limitations. Firstly, the sample size in this study is relatively small. Thus, future studies should increase the sample size and collect data from different cities in Korea and China so that results can be more generalizable. Secondly, this study examined the green purchase intention in general and did not consider specific kinds of products or behaviours. Further study is required in order to examine more specific green purchase behaviours considering various kinds of products. Thirdly, there may exist other factors that affect green purchase intention, beyond "NEP", "environmental collective efficacy", "environmental knowledge" and "collectivism". Other potential antecedents should be explored in future studies. Lastly, this study only focused on cognitive and intention variables, and did not consider demographic variables. Several demographic variables can be interrelated with green purchase intention. Thus, future studies should include demographic variables such as gender, education, income and marital status as antecedents of green purchase intention. In addition, findings of other cultural dimensions used as moderating variables will also be valuable and should be considered in future study.

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