Relevance of Purchasing Equipment of Overseas Direct Purchase in Korea*

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Abstract

Purpose – The goal of this study is to grasp the current status of the latest overseas direct purchase trends and diversified consumption tendencies, and it can be used as basic quantitative data for selecting the overseas direct purchase market and establishing policies in the e-commerce industry. This study examines the relevance between purchasing equipment and four demographics. Traits of the underlying purchasing equipment are cell phones, tablet PCs and PCs & notebooks.

Research design, data, and methodology –This survey was performed in 2021 on a total of 4,537 combined panel households covering 3,510 households and 191,027 additionally set in 2019 and approximately 10,800 household members. In particular, correspondence analysis is utilized to mine the relevance among the underlying variables.

Result – It is proved that the underlying demographics except age are relevant to the purchasing equipment of online overseas shopping. Especially, cell phones are closely relevant '2 million-3 million won', jointly relevant to 'service and office work' and marginally to all other academic levels except graduate school or higher.

Conclusion – Under intense competition, overseas direct purchase shopping malls should strive to provide not only price competitiveness but better service and customer value in order to continue to grow.

Keywords: Overseas Direct Purchase, Purchasing Equipment, Relevance, Correspondence Analysis

JEL Classification Code: C40, C81, M30.

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1. Introduction

According to 'Trend of Overseas Direct Purchase in 2022' provided by Korea Customs Service, in 2022, the scale of 'overseas direct purchase', a consumption activity of 'purchasing directly from abroad' through internet shopping malls, increased by 8.8% and 1.4% year-on-year to 96.12 million and $4,724.57 million (approximately 6.1 trillion won), respectively. Although the rate of increase has slowed somewhat due to the rise in exchange rate against the U.S dollar, the growth trend is steady, and this year, it is expected to exceed 100 million cases and 5 billion dollars for the first time in history. In 2022, the number of overseas direct purchase users was 15,573,000, a nearly threefold increase from five years ago in 2018 (5,193,000). The number of overseas direct purchases in 2021 (96.12 million) also tripled from 2018 (32.255 million), approaching 100 million.

It is analyzed that the background of the increase in the overseas direct purchase market is due to the advantage that the price is cheaper than that of the domestic market and the recent increase in demand for scarce products that are not sold in Korea, starting with the MZ generation. In addition, as more consumers want to save on shopping expenses due to high prices, the overseas direct purchase market is growing, and overseas e-commerce (e-commerce) companies are strengthening their Korean businesses one after another. Overseas e-commerce companies, such as Amazon, in the US, Alibaba in China, and Q10 in Singapore, which are the origins of online shopping, are concentrating their efforts on catching the increased demand for overseas direct purchase by expanding services not only for domestic consumers but also for domestic sellers.

Considering the share of overseas direct purchase by country in 2022, that is, the number of cases and the amount, China ranks first, followed by the United States, Europe, and Japan. The share of overseas direct purchases from China ranked first in terms of number of cases in 2020, followed by the first in terms of amount in 2022. More than 97% of overseas direct purchases are products shipped from China, the US, Europe, and Japan, and the unit price per item is highest in Europe ($129), followed by Japan ($58), the US ($51), and China ($29) is in order. In 2022 following 2021, health food was imported the most through overseas direct purchase (16.3%), followed by home appliances (13%), clothing (11.9%), and other foods (coffee, liquor, confectionery, etc., 10%), footwear (5.9%), cosmetics & perfume (4.9%), toys & dolls (4.4%), and handbags & bags (3.4%), with the top five items accounting for nearly 60% of the total. In 2022, home appliances and health foods were purchased the most in China and the United States, respectively, and other foods were purchased in Europe and Japan through overseas direct purchases. Among the major items, health food, other food, and cosmetics/perfume were purchased the most from the United States, and all other items were purchased the most from China.

The proportion of purchases was the highest in December (9.8%), and the lowest in February (7.0%). This is due to the increase in demand due to global large-scale discount events such as the year-end Singles Day in China and Black Friday in the United States starting in November. On the other hand, the reason why overseas direct purchase usage is the lowest in February is because the customs clearance volume of overseas direct purchases from China decreases due to delays in shipments in China during the Chinese New Year holiday.

Those in their 40s had the highest proportion of purchases (32%), followed by those in their 30s (29.6%), those in their 50s or older (22.6%), those in their 20s (14.6%), and those in their teens (1.2%). For reference, home appliances (15%) were the most purchased items by those in their 40s, followed by health food (14%), clothing (12%), and other foods (8%). In addition, the most purchased item among those in their 20s, 30s, and 50s and older was health food.

Male purchases (52.1%) were found to be higher than females (47.9%), and the main purchase items by gender are as follows: For men, the most purchased item was home appliances (21%), followed by health food (15%), clothing (10%), and other food (6%). On the other hand, in the case of women, health food (19%), clothing (14%), other food (12%), cosmetics and perfume (7%), in that order. Among the age and gender combinations, the group with the largest number of overseas direct purchases was male in their 40s, accounting for 17.4% of purchases, followed by females in their 30s with 15.4%. As the use of overseas direct purchase increased, the number of related consumer complaints over the past five years exceeded 100,000. From 2018 to November 2022, the number of consumer complaints related to overseas direct purchase received by the Korea Consumer Agency was 102,109. Examining the complaints received over the past five years by type, complaints related to delays and refusal of cancellation, refund, and exchange accounted for the highest number of 43,298, followed by unfair claims for penalties and fees and price (15,840), and delivery-related complaints (12,496 cases), etc.

The following three main characteristics can be found in overseas direct purchase in 2022 (Trend of Overseas Direct Purchase in 2022, Korea Customs Service). First, overseas direct purchase is sensitive to exchange rate changes. In other words, there is a clear tendency for purchase volume to decrease during periods of rising exchange rates against the U.S dollar and increase during periods of stabilization (large negative correlation). In the first half of 2022, when the exchange rate is relatively stable, the number of overseas direct purchases increased by about 13% compared to the same period last year, but in the second half when the exchange rate rises, it increases by only about 5%. In addition, as a result of analyzing changes in overseas direct purchases according to exchange rates from 2020 to 2022, when

exchange rate against the U.S dollar rises by 1%, the number of overseas direct purchases decreases by 0.79%. Second, target countries and items for overseas direct purchase have been diversified. In other words, over the past two years, the number of overseas direct purchases from Southeast Asian countries (Thailand, Singapore, Vietnam, Malaysia, etc.) increases by 118% and the amount by 148%. This is due to the fact that product information in various countries is easily shared through social networking services (SNS), which is a characteristic of online-based overseas direct purchase, and as the platform entry of e-commerce companies that purchase and deliver goods in the same region increases, ease of access to purchases by consumers has contributed to the growth. In addition, although health food in the first place, home appliances in the second place, and clothing in the third place are still major overseas direct purchase items, proportion of purchases of other items such as fashion items (clothing, shoes, handbags/bags), sporting goods, and household items is steadily increasing, and the concentration of purchase items is easing. Third, men's interest in fashion has increased, and the proportion of men's overseas direct purchases is increasing.

In this work, the relevance between purchasing equipment and the underlying demographics investigates exploiting both chi-squared test and correspondence analysis. Four demographic variables under consideration are academic level, average monthly income, occupation and age, while three traits of purchasing equipment are cell phones, tablet PCs and PCs & notebooks. The distinctive feature of this study is that it analyzes the relevance between purchasing equipment and demographics with added academic level in overseas direct purchase, which is rapidly attracting attention from consumers in recent years, while Jeong (2023) examines the relevance between purchasing equipment and three demographics (average monthly income, age and occupation) in home shopping.

The main purpose of this study is to grasp the current status of the latest overseas direct purchase trends and diversified consumption tendencies, and it can be used as basic quantitative data for selecting the overseas direct purchase market and establishing policies in the e-commerce industry. Literature review will be presented in Section 2, and both data collection and statistical methods will be mentioned in Section 3. Interpretation of findings of several relevance on the statistical findings will be made in Section 4. Finally, conclusion remarks and imitations of this work will be stated in Section 5.

2. Literature Review

Overseas direct purchase refers to commercial transactions in which domestic consumers purchase online and offline products that are sold overseas and receive delivery. Overseas direct purchase is an abbreviation of 'direct purchase of overseas products' and is one of the consumption trends. Recent major studies on overseas direct purchase related to this study are as follows.

Lindh et al. (2020) suggests a model that accounts for factors which affect online consumer behavior by considering consumer behavior as a global phenomenon and detecting online consumers' intentions with data of international size. Especially, they concentrate on the consumers' internet skills, the perceived website usability and its trustworthiness and the technique suggested may be further developed since globalization and digitalization need new works that catch the internationalization ways of e-commerce.

Yoo and Jang (2021) examine the technology acceptance factors of overseas direct purchase using an integrated technology acceptance model targeting consumers who use overseas direct purchase when purchasing overseas goods, and proposes its limitations and supplementary measures. They intend to empirically analyze the significance of the expected performance, social impact, and price effectiveness that will be obtained by using overseas direct purchase on the future intention to use overseas direct purchase and the degree of perceived usefulness. Activation of e-commerce, including overseas direct purchase, not only facilitates market entry for companies, but provides opportunities to reduce production costs, expand sales, and respond quickly to various purchasing needs of consumers, and buyers have the advantage of reducing purchase costs and conveniently purchasing various products based on information on various products and services through the internet.

On the other hand, overseas direct purchase has inherent risk factors due to the characteristics of purchasing overseas products in addition to the risk factors of online shopping. Above all, in the case of overseas direct delivery and overseas delivery agency, since it is different from domestic online shopping in terms of information search, purchase procedure, payment method, etc., it can be predicted that the risk perception of on-line overseas shopping is more diverse and serious than the risk perception of online shopping. While the advantages and disadvantages of consumers' use of overseas direct purchase still exist, an empirical analysis is conducted on the effects of technology acceptance of overseas direct purchase on their intention to use and perceived usefulness for consumers who use overseas direct purchase when purchasing overseas goods. With regard to the intention to use overseas direct purchase, it is confirmed that performance expectation, effort expectation, social influence, and price utility had a positive significant influence

on the intention to use overseas direct purchase. In addition, in terms of perceived usefulness in using overseas direct purchase, effort expectation and price utility are found to have a positive significant influence on perceived usefulness, but performance expectation and social influence are found to have no significant influence on perceived usefulness.

Shi and Moon (2022) investigate the status of Chinese consumers' use of overseas direct purchase during the period of the COVID-19 pandemic by establishing hypotheses based on previous studies and to identify the determinants of customer satisfaction and repurchase intention for the site characteristics of overseas direct purchase and international logistics services. They present future strategies to shopping malls and logistics-related companies based on empirical analysis of overseas direct purchase satisfaction and repurchase intention before and after COVID-19 targeting Chinese consumers and suggested useful findings as follows. First, among the characteristics of overseas direct purchase sites, reliability has a positive effect on customer satisfaction. Second, among the variables related to the characteristics of international logistics services, customs risk, promptness, and accuracy all have significant effect on customer satisfaction. Third, customer satisfaction is found to have a mediating effect in increasing repurchase intention.

Using a structural equation model, Lee and Kim (2020) analyze the effects of product diversity, brand image, information validity, convenience, and simple payment on satisfaction and repurchase intention. They show that product diversity and brand image have a great influence on Chinese consumer satisfaction and repurchase intention, and that the brand image of Korean products has attractiveness and value that satisfy consumers. In addition, they derive that attractive brand image, information validity, convenience, and simple payment factors play an important role in satisfaction.

Shin and Kim (2022) design and analyze a monitoring system for the analysis of illegal transactions of foreign direct purchases, focusing on inter-individual transactions of online used sites. At this time, the system is structured after optimizing the nickname, cell phone number, product name (number, character, special character) according to the conversion format. Using the seller information and product name similarity, the registration of trading products or postings, their frequency, and trading areas can be analyzed, even when nicknames or phone numbers are periodically changed, identity can be determined and related patterns can be derived based on transaction methods that show similar forms. Therefore, the transaction method that shows a similar form to the seller can be analyzed by predicting the relevance with consistency such as identity determination, and it can be seen that the data can be visualized and used to crack down on illegal transactions of resellers of overseas direct purchase products.

Park and You (2021) empirically verify how the practical value of consumers using overseas direct purchase affects purchase intention according to the properties of the site and logistics. First, it is confirmed that practical value consumers affect both site properties and logistical properties, which shows that consumers who want to obtain economic benefits also value both the functional benefits of the site and the practical satisfaction of product delivery. Second, it is confirmed that only site convenience of site attribute and delivery accuracy of logistics attribute affect purchase intention, which indicates that what leads to actual purchase intention is accuracy rather than speed of delivery. Considering the practical implications through the above results, it is found that the structural parts of the site, such as the site convenience, as well as the economic benefit, affect the purchase intention for practical value consumers and that practical value consumers have high purchase intention when solving the reliability problem of whether the product purchased from overseas direct purchase is delivered well.

Park and Hyun (2022) identify the influence of the content attributes and logistics attributes of overseas direct purchase on consumers' perceived value, and the effect of perceived value factors on consumers' final purchase intention of overseas direct purchase products. First, as a result of examining the impact of the content properties and logistics properties inherent in the overseas direct purchase platform on consumers' perception of the value of overseas direct purchase, only attractiveness (degree of arousing consumers' desire to purchase, appropriateness of menu arrangement, and aesthetic appeal of design) is the only one that has an influence among the content properties inherent in the platform. Second, the perceived value of consumers for overseas direct purchase is a factor that is naturally connected to the purchase intention of both sensory value and economic value, and the influence of sensory value is analyzed to be greater.

Jung and Shin (2021) investigate the relationship between the quality factors of shopping malls for overseas direct purchase, perceived value, and purchase intention, and examine the moderating effect of price sensitivity of overseas direct purchase users. Based on the analysis results, the following implications are derived. First, it is found that all quality factors of overseas direct purchase shopping malls have a positive effect on the perceived value. In particular, information quality is found to have the most influence on perceived value. In the case of overseas direct purchase, the price of the product sold and the provision of accurate information have the greatest impact on the value perceived by users. Second, all quality factors of overseas direct purchase shopping malls are found to have a positive effect on purchase intention. In particular, it is confirmed that service quality has the most influence on purchase intention. In the case of overseas direct purchase, inconveniences such as long delivery period, delivery process, and after-sales

service are always raised as problems, therefore efforts should be made to improve service quality to lead to purchase. Third, the value perceived by overseas direct purchase users has a positive effect on purchase intention. Fourth, as a result of confirming the moderating effect of price sensitivity of overseas direct purchase users, all hypotheses regarding the moderating effect of price sensitivity are rejected. However, there is a difference in the path coefficient value for each group according to price sensitivity. In particular, the group with high price sensitivity shows a higher perceived value in system quality and service quality among overseas direct purchase quality factors than the group with low price sensitivity. In fact, while overseas direct purchase shopping malls are more competitive in price than domestic shopping malls, there are many disadvantages such as foreign language configuration (system quality aspect) and relatively less smooth service compared to domestic shopping malls (service quality aspect).

Kwak (2020) analyzes the system related to overseas direct purchase, which can be regarded as the customs clearance of express goods among the simplified customs clearance systems in Korea and compares overseas customs procedures by country, such as Indonesia, where overseas direct purchase is steadily increasing, as well as developed countries. Problems with Korea's simplified customs clearance process include a lack of manpower and infrastructure, illegal imports using inventory clearance, abuse of small tax exemption standards, and an increase in illegal users. Improvement plans for customs clearance process are recruitment of manpower, establishment of infrastructure, restructuring of organization to respond to the importation of illegal goods, recruitment of drug detection dogs, establishment of a department dedicated to responding to the abuse of the small tax exemption system, introduction of new technology and customs clearance system related to express goods and revision of customs law.

Jeong (2023) studies, in detail, the relevance between purchasing equipment and average monthly income, age, and occupation among demographics in the domestic home shopping market. At this time, the traits of purchasing media are cell phones, tablet PCs, PCs/notebooks, phone calls and TV directly. As a result, findings shows that theses all variables are relevant to the purchasing equipment. More specifically, phone calls are relevant to 'less than 500,000 won', 60s or older, and to agriculture, forestry & fishing, and other & unemployed, while cell phones are closely connected to '2 million-5 million won', 10s-20s, 40s, professionals, office workers, managers, and soldiers. On the other hand, TV directly' are mainly linked with low-income people, 50s, technical service, device & machine control assembly, full-time housewives, and simple labor jobs, while tablet PCs are with 40s. More specifically, cell phones are jointly relevant to professionals, office worker, administrators and solider, phone calls are marginally linked with both agriculture, forestry & fisheries and other & unemployed. On the other hand, students are marginally connected to both cell phones and PCs/notebooks, in terms of occupation. Additionally, phone calls are closely and marginally relevant to 60s and 70s, cell phones are jointly linked with 10s, 20s and 40s. In terms of age, 40s is marginally relevant to tablet PCs and cell phones, while 50s is marginally cell phones and TV directly in terms of age. Finally, 'less than half a million won and '2 million - 5 million' are closely relevant to 'phone calls' and 'cell phones', respectively, and 'half a million- one million', 'no income' and '1 million- 2 million' are marginally linked with 'TV directly', in terms of average monthly income (Jeong, 2023).

3. Data Collection and Statistical Techniques

The data considered for this study are extracted from the 'Korean Media Panel Survey in 2021' published in December 2021 by Korea Information Society Development Institute (KISDI), a global ICT policy institute driving industrial and economic innovation and digital inclusion. The survey is performed on a total of 4,537 integrated panel households including 3,510 households and 191,027 newly constructed in 2019 and about 10,800 household members aged 6 years or older in the household (Jeong, 2023).

Since one of the important goals of this survey is to identify media possession and usage behavior at the regional level, the distribution is adjusted so that a sample of a certain size or larger is distributed to each city/province unit for the total distribution of 500 survey districts. For sampling, a stratified two-stage sampling method is applied; the primary sampling unit is the survey group, and the secondary sampling units are households and individuals. In addition, as many as the number of sample survey districts assigned to each floor are extracted according to the stochastic proportional phylogenetic method that is proportional to the number of households in the survey district.

From 2019, the survey is conducted on 4,537 households of the integrated panel and household members aged 6 or older in the household. This survey is performed by enlarging panel households (or members) throughout the country in 2011, beginning with the panel setting in the metropolitan area and 5 cities in 2010, and the panel is supplemented in 2019. The 12th survey is enforced in 2021 on a total of 4,537 combined panel households covering 3,510 households and 191,027 additionally set in 2019 and approximately 10,800 household members.

The questions considered in the questionnaire utilized in this survey are the purchase area, major purchasing equipment, purchase method, major payment method, and total number of uses in the field of overseas direct purchase.

In particular, the item considered with focus is the main purchase medium, and the corresponding attributes are cell phones, tablet PCs, and PCs & notebooks. Assuming that the statistical significance of relevance among categorical variables reveals, the relevance can be mined visually exploiting correspondence analysis (Anderson, 2003; Benzercri, 1992; Bozdogan & Gupta, 1987; Brigitte, 2009; Clausen, 1988; Doey & Kurta, 2011; Greenacre, 2007; Hair et al., 2007; Hoffman & Franke, 1986; Johnson, 2015; Steven, 2009; Yang, 2013).

4. Research Results

According to 'Korea Media Panel Survey in 2021' on e-commerce and mail order usage, online shopping malls are the most used at 27.56 times a year, followed by TV home shopping (9.86 times a year), individual-to-person transactions (6.61 times a year), and overseas direct purchases (5.74 times a year) in terms of the number of uses by transaction type. In all transaction types, purchases made using cell phones are the most common among purchasing equipment, and purchases made through dedicated app purchases were relatively high in purchase methods. Considering the e-commerce usage experience rate by type, in addition, online shopping mall use is the highest at 86.1%, followed by TV home shopping (45.0%), person-to-person transaction (17.6%), and overseas direct purchase (15.5%) (Jeong, 2023).

4.1. Relevance between Average Monthly Income and Purchasing equipment

The order of purchasing equipment for direct overseas purchases is cell phones (86.5%), PCs & notebooks (11.3%), and tablet PCs (2.2%). This is the same as the order of purchasing equipment in home shopping in Jeong (2023), which reflects the same as the order of accessible and popularized media. First of all, among the demographic variables, cell phones purchases are the largest in all categories of monthly average income. In particular, when purchasing using cell phones, among categories of average monthly income, they purchase the most from both 1 million-2 million won and 3 million - 4 million won (92.8%), and the least from less than 500,000 won (43.1%).

When the average monthly income is more than 4 million won, the tendency to purchase by cell phones decreases somewhat (73.6% and 79.5%). Especially, those with no income have a higher percentage of purchases using cell phones than those with an average monthly income of less than 1 million won and those with more than 4 million won. It is speculated that this is due to the fact that the lower income class, compared to other income classes, does not own other purchasing equipment besides cell phones.
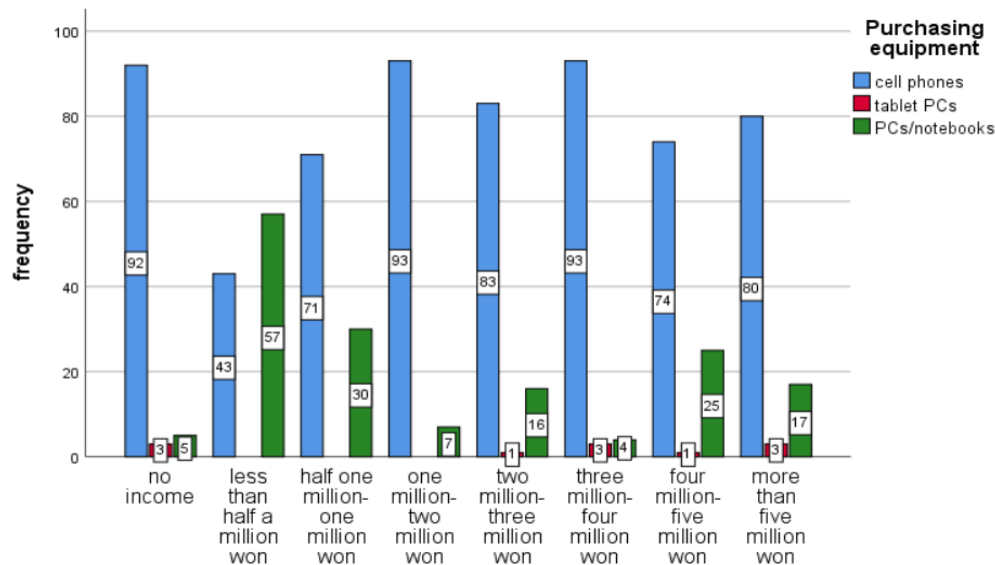

Figure 1: Average Monthly Income by Purchasing equipment

When purchasing overseas direct purchases with PCs & notebooks, the extremely low-income class (less than 500,000 won) accounts for the largest proportion (56.9%), followed by 500,000-1 million won (29.5), and 4 million- 5 million won (25.3%), 5 million won or more (17.4%), and 2 million to 3 million won (16.0%). In other words, it implies that the low-income and high-income groups generally have a greater tendency to purchase PCs & notebooks than the middle-income class.

It is very rare for all income groups to use tablet PCs to directly purchase overseas, and this phenomenon is especially noticeable in low-income groups. This is due to the reason that all classes, including the low-income class, own relatively few tablet PCs compared to other media. Among the 40 combinations of purchasing equipment and monthly average income, several combinations with higher frequency are as follows: (1 million - 2 million won, cell phones, 11.6%), (3 million - 4 million won, cell phones, 11.6%), (no income, cell phones, 11.5%), (2 million-3 million won, cell phones, 10.4%), (over 5 million won, cell phones, 10.0%), etc. It can be seen that the frequency of purchase using cell phones is far higher than that of other media in all average monthly income classes.
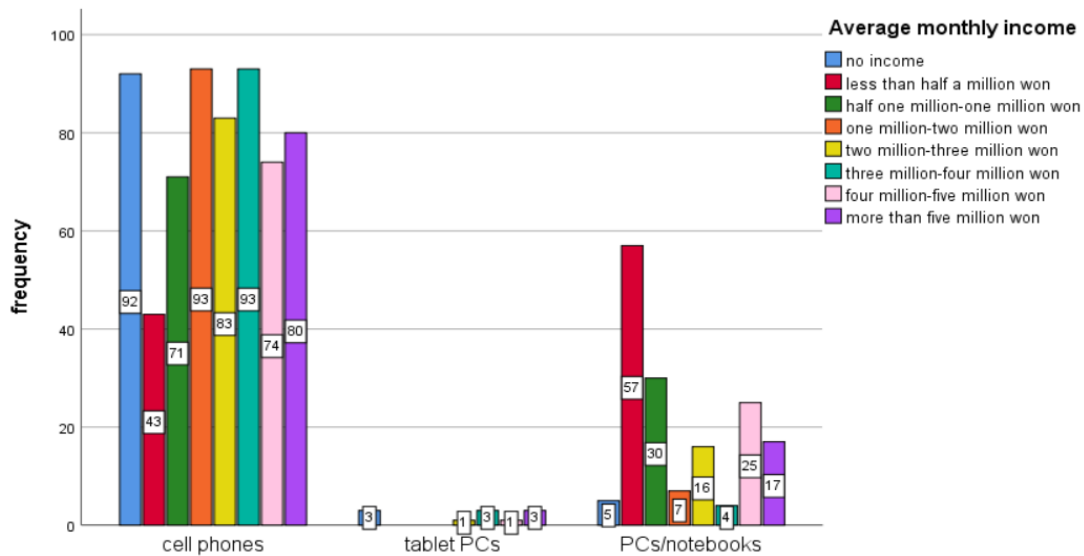

Figure 2: Purchasing equipment by Average Monthly Income

There is an indication that the significant relevance between average monthly income and purchasing equipment (p-value < .001) exists utilizing Pearson's chi-squared test statistic (142.914). This finding suggests that the null hypothesis that 'there is no relevance between purchasing equipment and monthly average income' cannot be accepted at the level of 5%. This suggests that the relevance between the two variables can be specifically mined by expressing the distance between the eight attributes of average monthly income and the three attributes of purchasing equipment on a two-dimensional plane.
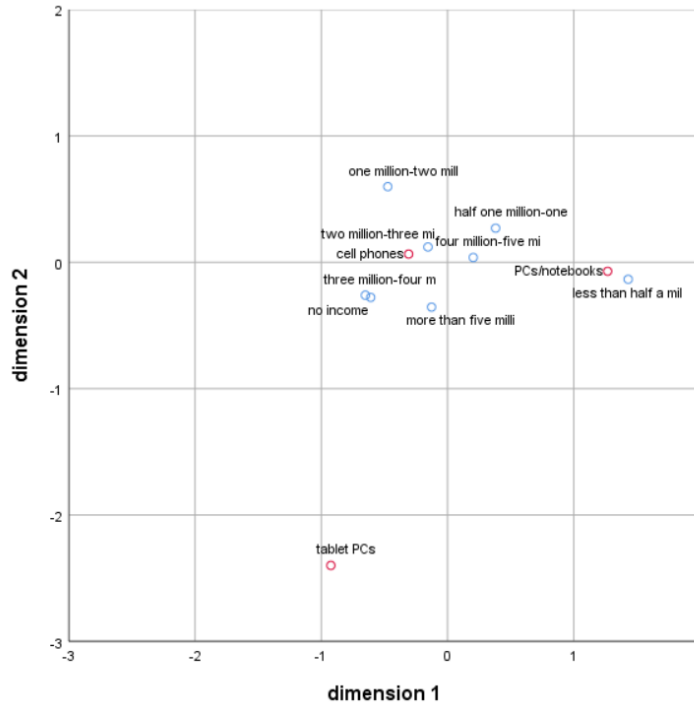
Figure 3: Row and Column Points with Symmetric Normalization

It is demonstrated that 'less than half a million won' and '2 million - 3 million' are closely connected to 'PCs/notebooks' and 'cell phones', respectively, as shown in Figure 3. A bi-plot on Figure 3 depicts visual relevance of each category between purchasing equipment and average monthly income by gauging the distance among categories.

4.2. Relevance between Occupation and Purchasing equipment

In almost all occupations, the order of frequency of media purchased through overseas direct purchase is cell phones, PCs & notebooks, and tablet PCs. Instead, technicians and related skilled workers, simple labor workers, and other & unemployed purchase overseas direct purchases in the order of cell phones, tablet PCs, and PCs & notebooks.
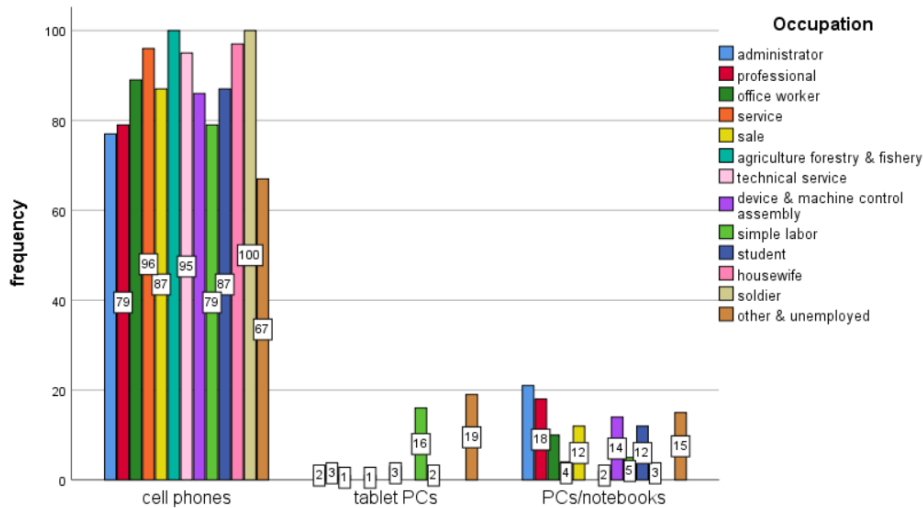

Figure 4: Purchasing equipment by Occupation

In all occupations, the frequency of overseas direct purchase using cell phones is the highest, and this tendency is conspicuous in agriculture, forestry and fishery workers (100.0%), soldiers (excluding professional soldiers, 100.0%), housewives (96.9%), service workers (95.6%), and technicians and related workers (94.7%).

On the other hand, other & unemployed (66.8%), managers (76.7%), and simple labor workers (78.7%) are relatively less likely to purchase using cell phones when making overseas direct purchases compared to other occupations. Among the combinations of purchasing equipment and occupation, agricultural, forestry & fishery (7.7%) and soldiers (excluding professional soldiers, 7.7%) using cell phones accounted for the highest frequency (6.1%, 6.1%), and followed by housewife (7.5%), service (7.4%), and technical service and related workers (7.3%) in order.

In the case of purchase using PCs & notebooks, the manager accounted for the largest share (21.0%), followed by experts and related workers (17.6%), other & unemployed (14.7%), device machine operators and assembly workers (14.0%) in order. The frequency of purchasing tablet PCs is very low for all occupations except other & unemployed (18.5%) and simple labor workers (15.9%).
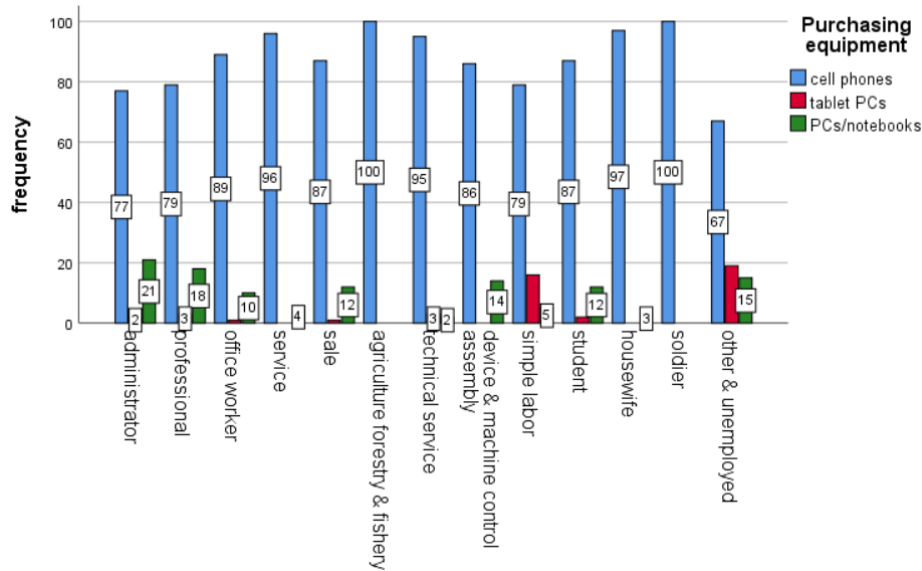

Figure 5: Occupation by Purchasing equipment

The corresponding small p value (>. 001) of Pearson's computed test statistic (211.228) implies that the null hypothesis of 'no relevance between purchasing equipment and occupation' is rejected at level 5%. This demonstrates that the relevance between the two variables can be specifically investigated by depicting the distance between the thirteen attributes of occupation and the three attributes of purchasing equipment on a two-dimensional plane.

As shown in Figure 6, the specific relevance between purchasing equipment and occupation can be derived as follows. Cell phones are, in particular, jointly relevant to 'service' and 'office work', while PCs & notebooks are closely linked to 'administrators'.
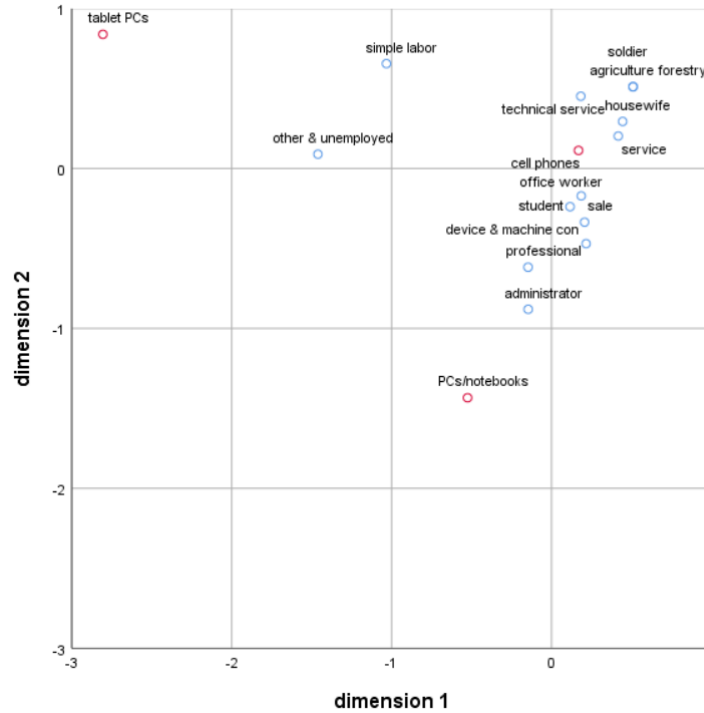
Figure 6: Row and Column Points with Symmetric Normalization

4.3. Relevance between Academic Level and Purchasing Equipment

It can be seen the order of frequency of media purchased through overseas direct purchase at all academic levels is cell phones (82%), PCs & notebooks (16.5%), and tablet PCs (1.5%). In particular, high school graduates tend to purchase with cell phones (97%), and graduate school students and above have a relatively small proportion of purchases with cell phones (60%) compared to other academic levels, and among other media, purchases with PCs & notebooks are much higher (37%) than other academic levels.
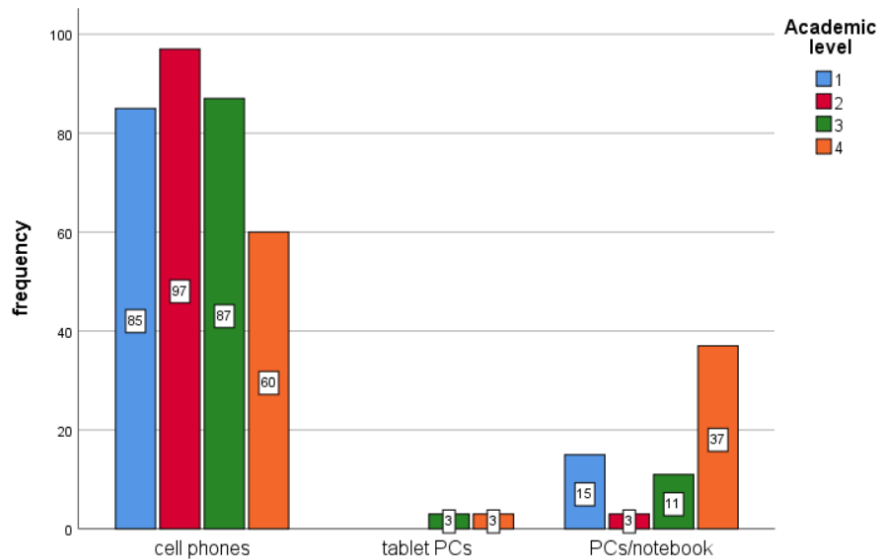

Figure 7: Purchasing equipment by Academic level

Note that the numerical values above in Figure 7 show the following:

1: middle school graduates or less 2: high school graduates 3: college graduates   4: graduate school or higher

At all academic levels, the most frequent overseas direct purchases are made using cell phones, while the frequency of purchases with tablet PCs is very rare. Among the 12 combinations of purchasing equipment and academic level, high school graduates (24.2%) accounted for the highest frequency, followed by college graduates (21.7%), middle school graduates or less (21.2%), graduate school or higher (15.0%) who purchased using cell phones, and more than graduate school or higher (9.2%) purchased with PCs & notebooks.
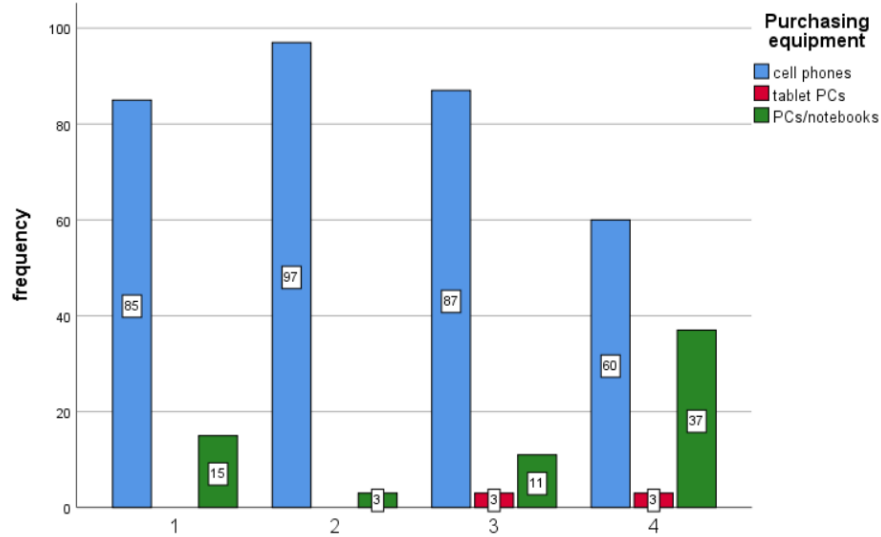

Figure 8: Academic level by Purchasing equipment

For purchases made using cell phones, high school graduates (29.5%) account for the largest portion (21.0%), followed by college graduates (26.4%), middle school graduates or higher (25.8%), and graduate students or higher (18.2%). In the case of purchase using PCs & notebooks, graduate school or higher (9.2%) accounted for the largest share (21.0%), followed by middle school graduates or higher (17.6%), college graduates (14.7%), and high school graduates (14.0%). At all academic levels, the frequency of purchases with tablet PCs is very low, especially those with high school graduates or lower.

Pearson's calculated test statistics (53.571), and since the corresponding p-value is less than .001, the null hypothesis that there is no relevance between purchasing equipment and academic level is rejected at level 5%. This shows that the relevance between the two variables can be specifically examined by depicting the distance between the four attributes of academic level and the three attributes of purchasing equipment on a two-dimensional plane. The bi-plot in Figure 9 suggests that cell phones are marginally connected to 'all other academic levels except graduate school or higher', while PCs & notebooks are closely relevant to 'graduate school or higher'.
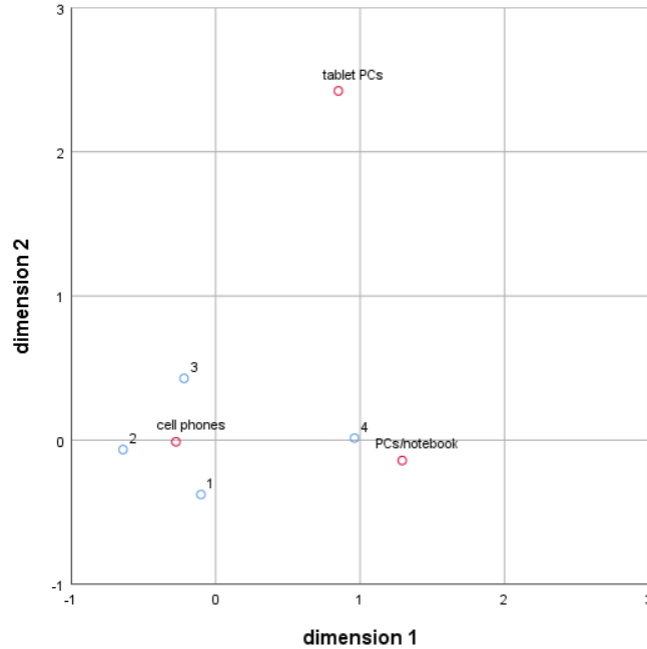
Figure 9: Row and Column Points with Symmetric Normalization

4.4. Relevance between Age and Purchasing Equipment

In all age groups, the trend of overseas direct purchase with cell phones is dominant, and it can be seen that this tendency is particularly strong among people in their 40s compared to other age groups (92.0%). Compared to other age groups, those in their 40s who made overseas direct purchases using PCs & notebooks have the smallest percentage (7.0%), and the rest of the age group accounts for a similar percentage of nearly 10%. On the other hand, purchases with tablet PCs are very rare, especially among those in their 10s and 60s and older.
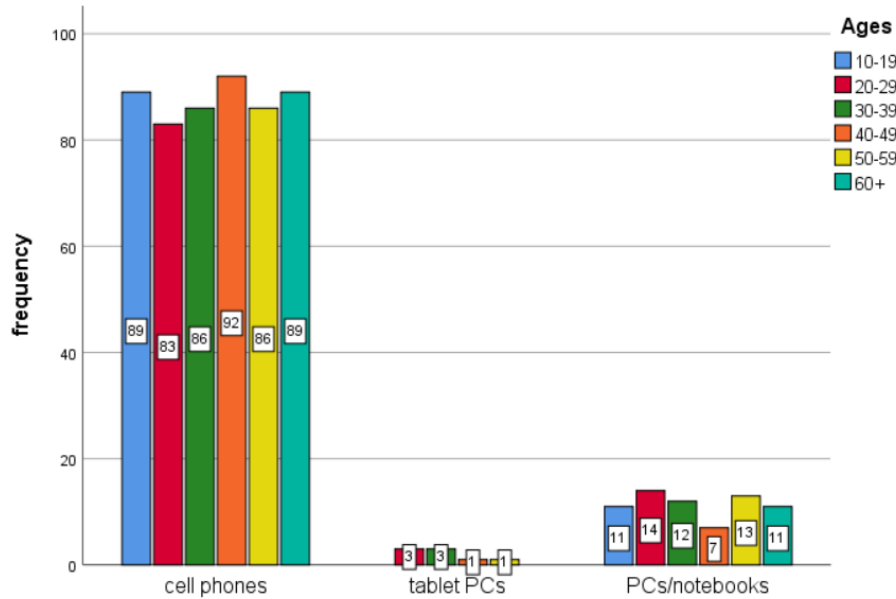

Figure 10: Purchasing equipment by Age

Of the 18 combinations of purchasing equipment and age, (40s, cell phones, 15.3%) and (10s, cell phones, 14.8%) and (60s or older, cell phones, 14.8%) account for a large proportion compared to other combinations. As with other

demographic variables, it can be seen that purchases made using cell phones dominate among other purchasing equipment in terms of age.
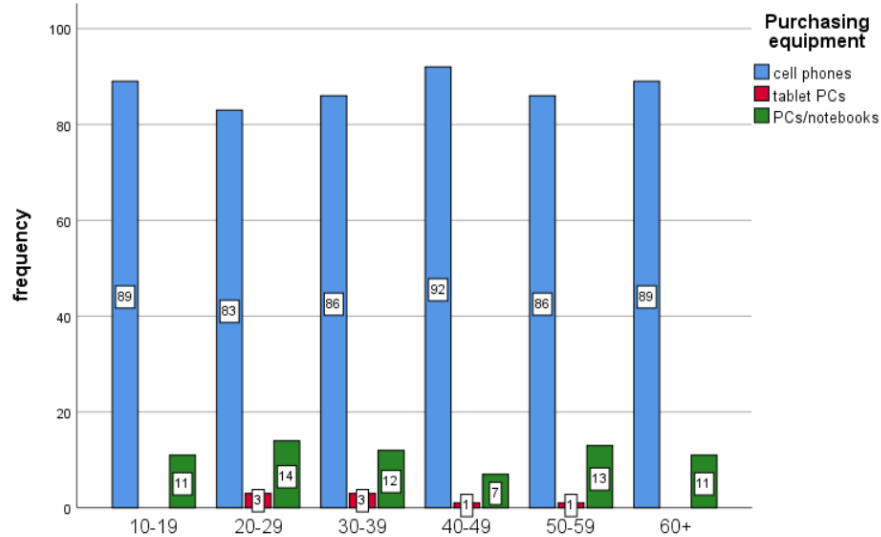

Figure 11: Age by Purchasing equipment

Since it is Pearson's test statistic (10.141) and the corresponding p=.428, the null hypothesis of 'there is no relevance between purchasing equipment and age' is accepted at the 5% level. For this reason, additional correspondence analysis is unnecessary to investigating the relevance between age and purchasing equipment.

5. Concluding Remarks and Limitations

In this work, the relevance between purchasing equipment and the underlying demographics is investigated by exploiting chi-squared test and correspondence analysis. The variables under consideration are average monthly income, academic level, occupation and age, while the attributes of purchasing equipment are cell phones, tablet PCs and PCs & notebooks.

Most of the previous studies on overseas direct purchase are analyzed based on the structural equation model to analyze the effect relationship between latent variables that are difficult to measure directly along with basic statistical analysis of the current status and data. Compared to other existing studies, the academic contribution and differentiation of this study are as follows. This study empirically analyzes the relevance between the underlying categorical variables of importance in overseas direct purchase for the first time, and the distinctive distinction of this study provides a foundation for expanding to a more reliable causal model and distinguishes the segmentation of overseas direct purchases unlike previous works. As a result, it can be proved that the underlying demographics except age are relevant to the purchasing equipment of online overseas shopping. Summing up the main findings, cell phones among purchasing equipment are closely relevant to the average monthly income of '2 million-3 million won', jointly relevant to 'service and office work' and marginally linked with 'all other academic levels except graduate school or higher'. On the other hand, PCs & notebooks are closely connected to the average monthly income of 'less than half a million won', to 'administrators' and to 'graduate school or higher', respectively, while tablet PCs could not find any noticeable relevance to the attributes of the considered demographic variables.

The management and practical contribution of this study is that, first, by investigating the relevance between demographic variation and purchasing equipment in overseas direct purchase, it is possible to identify the segmentation standard variable for market segmentation and to develop a profile of the segmented market. Second, by evaluating the attractiveness of each market segment, it plays an important role in selecting a target market, and furthermore, you can identify competitive product positions for positioning in each target market and obtain basic information to develop a marketing mix. Third, the characteristics of purchased equipment can be identified with respect to demographic variables, and it would be desirable to focus on developing and upgrading customized software

tailored to the attributes of each demographic variable so that the advantages of each purchased equipment can be maximized through this statistical analysis.

While price competitiveness, represented by cost-effectiveness and cost-effectiveness, has emerged as a key factor in online shopping and e-commerce in the past, now is the age of value consumption. It should be considered that consumers are more sensitive to the sensory value of product purchases. First, when designing the platform, more diverse and unique information related to overseas direct purchases is exposed to consumers, content composition that can provide various consumption experiences should be prepared from a policy perspective. In addition, recently, domestic shopping malls have opened overseas direct purchase categories and provided purchasing agency services, etc. Second, overseas direct purchase shopping malls should strive to provide price competitiveness, better service and customer value in order to continue to grow under intense competition. Third, it is important to carefully consider the key details before making a purchase since overseas direct purchase has characteristics that exchange, refund, and after-sales service (A/S) are difficult. The authorities should also come up with measures to prevent consumer damage and take active measures.

This paper considered the four demographic variables considered in overseas direct purchase, but by expanding the following two aspects, it is possible to study in depth the relevance with purchasing equipment from more diverse aspects. First, it would be very interesting to analyze the relevance by expanding the type of market to customer to customer (C2C) or consumer to business to consumer(C2B2C) such as Daangn market, Danawa market, and lightning market, together with domestic online shopping mall. Second, by adding administrative district, gender, type of residence, religion, life cycle, and family size to the four demographic variations considered in this paper, it will be possible to conduct a more extensive study in the future.

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