



A Study on Association between Type of E-commerce and Demographic variables*

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Abstract

Purpose – The purpose of this study is to comprehensively understand the recent status of domestic e-commerce market and provide useful information for the revitalization of domestic on-line economy. This study looks over the association between type of e-commerce and demographic variables for each purchase ordering and sales order business. The demographics under consideration is administrative district, occupation and business organization type and type of e-commerce is B2B, B2C and B2G to deal with.

Research design, data, and methodology – From January 2017 to December 2017, about 14000 samples are extracted from all businesses with experience in purchasing or selling products or services through e-commerce. The association between the two categorical variables considered by using two major statistical techniques such as chi-square test and correspondence analysis can be quantitatively and visually detected.

Result – This study shows the association between the type of e-commerce with the administrative district and the occupation is completely different, but B2B and B2C are identical for organization type, with respect to both purchase and sales orders.

Conclusion – The association between the type of e-commerce with the administrative district and the occupation is completely different, but B2B and B2C are identical for organization type, with respect to both purchase and sales orders.

Keywords: Association, Demographics, Type of E-commerce

JEL Classification Code: C40, M12, M30, Y10.

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1. Introduction

According to the Korea Internet & Security Agency (KISA), the estimated size of the domestic online shopping market in 2019 is about 133 trillion won, which is about 20% higher than the 111 trillion won in 2018. In particular, the number of cross-border online shopping rose from 7.4% in 2016 to 18.0% in 2018, so that online shopping type increased the most.

With the development of information and communication technology and the explosive spread of global network infrastructure, e-commerce using the Internet is emerging as a new economic activity mode that overcomes time and space constraints. E-commerce is a key means of reconsidering the effectiveness and transparency of the economy as it reduces transaction costs by reducing distribution stages, and manages all transaction details on a computer. Accordingly, the Internet is becoming a business without borders, away from the concept of information sea. E-commerce is innovative in terms of changing transaction activities, which are the core mechanism of economic activities, and companies are presenting a new business model centered on e-commerce.

As a result of examining the e-commerce utilization rate by age, it can be found that the elderly people from 30s to 59s tend to increase significantly compared to the growth rate of 20s. Furthermore, the ratio of e-commerce users and domestic online shopping malls, overseas direct purchasing, and interpersonal transaction users are the highest among young people aged 25 to 34. Women used e-commerce more than men, but the percentage of experienced users was lower than that of men except TV home shopping.

In addition, major purchase media purchased from all e-commerce types are being converted from landline phones, pcs, or notebooks to smartphones, and this phenomenon is more prominent in TV home shopping and overseas fastballs.

As major purchasing media became smartphones, credit card payment of app card method increased to the main payment method, and mobile shopping increase also affected economic means.

The main goal of this work is to, by and large, figure out the recent status of domestic e-commerce market and obtain useful information for the revitalization of domestic on-line economy.

In this research, several associations between type of e-commerce and demographic variables for each purchase ordering business and sales order business are investigated by using some statistical analyses. In this case, the underlying demographic variables are administrative district, occupation and organization type, and the categories of type of e-commerce are B2B, B2C and B2G. In addition, five levels of organization type on both purchase ordering and sales order business above are as follows: private business, company corporation, corporation other than company, national & local government and unincorporated organization.

Literature review will be treated with in section 2, while data collection and statistical methods will be in brief stated in section 3. We describe and interpret each association mentioned above based on the statistical results in section 4. Finally, conclusion remarks and imitations of this research will be described in section 5.

2. Literature Review

Song (2019) examined the effect of B2C export companies' online export strategies on export performance and verified the difference in export types (direct export/substitution export) through empirical analysis. The results showed that B2C online exporters showed differences in export strategies and export performance by export type, and direct exporters recognized that they were more advanced than export strategies of agency exporters and recognized export performance more highly. As a result of verifying the effect of B2C export companies' online export strategy on export performance, price strategy, communication strategy, and resource strategy had a significant effect on export performance.

In order for online retailer to proceed as a partner in overseas expansion with domestic export manufacturing companies, it is necessary to manage the risk factors of profitability congestion first. The main reason for the profitability stagnation of online retailer was the increase in sales promotion costs in terms of cost expenditure. As a result, Ham and Kwak (2019) found that the cost risk management is theoretically applied to the continuance insurance for the risk of loss of sales promotion cost, but it was also found that various improvement conditions should be assumed.

Park and Han (2018) examined the relationship between supplier's brand value and transaction relationship in B2B transaction, the structural impact relationship between buyer's market orientation and long-term orientation of transaction relationship, and the impact relationship between buyer's market orientation and long-term orientation on the marketing performance of the buyer. The higher brand awareness or positive brand image, the more impact the

market orientation of the purchaser has on the long-term orientation, the impact the market orientation has on the long-term orientation and marketing performance, and the impact the long-term orientation in the transaction can be identified.

Lee and Nam (2016) looked at the status of domestic and overseas direct sales, which are the main interest of government and export related organizations including domestic companies, and draw up ways to promote domestic online direct sales. They analyzed the important sales operation processes such as finding promising products, opening of procurement-shopping malls, registration marketing payment, and settlement delivery customs clearance customer CS step by step. In particular, they have compiled practical related industry opinions such as surveys, meetings, and interviews on SMEs currently operating online direct sales shopping malls or operating in global direct sales open markets, and derived various difficulties raised by each operation stage and improvement plans for them. In order to activate direct overseas sales, it is necessary to provide customized information and consulting services for e-commerce markets in high demand countries and regions, and to create and spread new types of online export models for small and medium-sized enterprises such as content commerce and B2BC business models. In addition, the Korean government and related organizations should provide support measures to create an efficient B2C battery commerce environment such as reduction of logistics costs, rapid customs clearance procedures, related regulations and system maintenance.

Jeong and Park (2016) analyzed the correlation between B2C e-commerce promotion factors and online shopping market and overseas direct purchase in Korea and drew out factors for promoting B2C e-commerce through literature research and empirically analyzes causal relationship between promoting factors of e-commerce and domestic online shopping and overseas direct purchase, thereby suggesting tasks and successful logistics management strategies of Korean courier service companies in the era of B2C e-commerce. Their results show that variables such as the number of credit card usage, disposable income per household, exchange rate, real GDP, facility investment in information and communication sector, the number of high-speed Internet subscribers, IPV4 holdings in Internet protocols, and population over 15 years of age affected dependent variables by examining the two ARDL model.

Han et al. (2015) drew factors that affect the prolonged transaction between companies and verified the factors that affect B2B companies. As a result, in order to successfully prolong the trading relationship, it is necessary to strive to enhance imagery and performance without opportunistic behavior. Opportunistic behavior has a more negative impact on long-term transactions, so it is necessary to value the promises with the trading companies and to act static and reliable. In addition, it is necessary to emphasize shared value with trading partners, make efforts to build better transaction performance, build and maintain high corporate reputation, and make management efforts to increase immersion in transaction relations.

3. Data Collection and Statistical Techniques

The target sample was extracted from January to December 2017 from 14,000 businesses in 17 cities and provinces across the country, targeting all businesses with one or more employees nationwide under the supervision of the Ministry of Science and Technology Information and Communication. For the population of all businesses (about 3.9 million) with one or more employees across the country, the samples were extracted using multi-stage stratified system extraction. The interviewer visited the business subject to be surveyed and selected the eligible survey subjects and investigated the interview method of the interviewer who received the response to the survey contents in principle.

The purpose of this study is to investigate the current status of information of Korean businesses in five categories, including information infrastructure, information introduction environment, information operation environment, information investment and effect, and introduction of new technology, for all businesses nationwide.

The 'e-commerce business' defined in this study means the business that has purchased (ordered) or sold (ordered) products or services through e-commerce among all businesses from January 2017 to December 2017. In this study, e-commerce means the way in which product or service purchase (order) or sale (order) is made online via computer and network (including mobile commerce). Internet-based mobile phones, such as mobile commerce, are included, but do not include ordering or receiving products or services using telephones, faxes, or conventional emails. In the case of financial insurance business, it refers to 'the way in which goods or services are purchased through the network through the internet, or products, information, and services are sold through the internet marketplace (the website capable of internet banking service)'. The electronic commerce object comprises the service like the information service, the online finance, lodging, the transportation and air travel including the raw material, the food, part, office supplies, instrument, maintenance and repair goods, report, software etc. (KOSIS, 2020)

The ‘business’ referred to in this study is cited in the National Business Survey of Statistics Korea, and refers to individual management units that perform industrial activities such as production, sales, or service provision under a single ownership or control in a certain physical place, regardless of profit or non-profit.

‘Private business’ is one owned and managed by individuals, and include businesses that are jointly operated by two or more people without having a corporate status. ‘Company corporation’ refers to a corporation, a limited company, a joint venture company, and a joint venture company under the Commercial Code, while ‘corporation other than company’ means a corporation that is not a corporation established under the Civil Act or the Special Act. ‘National and local government’ refers to the institution whose status as members of the organization is public officials, including central government agencies, local governments, schools, police stations, fire stations, and post offices. ‘Unincorporated organization’ is organizations that are not corporations, and there are alumni associations, supporters’ associations, cultural organizations, labor organizations, associations, churches and hermits, not corporations.

Assuming that the significance of association between variables is found using chi-square test, this relationship can be expressed as visual representation, in which every row and column is dotted as a point using correspondence analysis (Agresti, 2002). Both degree and strength of association can be visually detected by measuring the distance with this analysis between variables under consideration (Greenacre, 1984; Hoffman & Franke, 1986; Clausen, 1988; Benzercri, 1992; Greenacre, 2007; Hair et al., 2007; Brigitte, 2009; Steven, 2009; Doey & Kurta, 2011; Yang, 2013).

4. Research Results

4.1. Type of E-commerce on Purchase Ordering Business by Demographic Variables

4.1.1. Association between Administrative District and Type of E-commerce

The domestic purchase ordering business of domestic e-commerce is in the order of B2B (59.8%), B2C (36.8%), B2G (3.4%). In addition, the number of e-commerce purchase ordering company among administrative districts is high in the order of Seoul (27.6%), Gyeonggi (21.1%), Gyeongnam (16.1%), Busan (6.2%), Daegu (5.2%), Gyeongbuk (4.2%), Ulsan and Gangwon (3.7%), Chungnam (3.0%), Incheon (2.2%), Chungbuk (2.0%), Daejeon (1.6%), Gwangju (1.3%) etc. It can be seen that Seoul and Gyeonggi account for nearly half of the total, and e-commerce purchase ordering is high in administrative districts with large populations (see <Figure 1>).

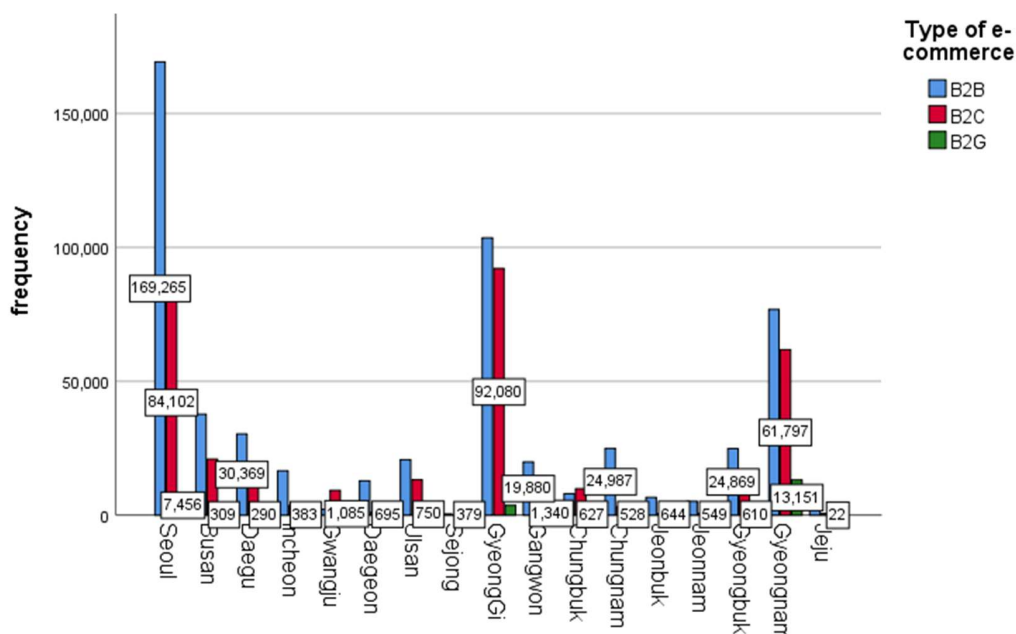


Figure 1: Administrative district by type of e-commerce

Among the types of e-commerce, Seoul, Gyeonggi, and Gyeongnam are the order of B2B (64.9%, 51.9%, 50.6%, respectively), B2C (32.2%, 46.2%, 40.7%, respectively), and B2G (2.9%, 1.8%, 8.7%, respectively), and this pattern occurs in most areas except for a few areas. On the other hand, Gwangju and Chungbuk were followed by B2C (73.5%, 53.2%, respectively), B2B (18.0%, 43.4%, respectively), B2G (8.6%, 3.4%, respectively), and Sejong is followed by B2B (55.2%), B2G (41.9%), and B2C (2.9%).

The proportion of B2G is very small for all administrative districts, while B2B accounts for more than half of all areas. In particular, in the case of B2B, the order of the purchase order business is Seoul (30%), Gyeonggi (18.3%), Gyeongnam (13.6%), Busan (6.7%), Daegu (5.4%), Chungnam and Gyeongbuk (4.4%). On the other hand, B2C had a lot of purchase orders in the order of Gyeonggi (26.5%), Seoul (24.2%), Gyeongnam (17.8%), Busan (6.0%), Daegu (5.4%), Gyeongbuk (4.1%), Gangwon (3.9%), and Ulsan (3.8%). In the case of B2G, Gyeongnam (40.5%), Seoul (22.9%), Gyeonggi (11.3%), Gangwon (4.1%) and Gwangju (3.3%) are in order (see <Figure 2>).

In particular, Gyeongnam has a large portion of B2G compared to other administrative districts. For all three types of e-commerce, Seoul and Gyeonggi Province account for almost 50% or more.

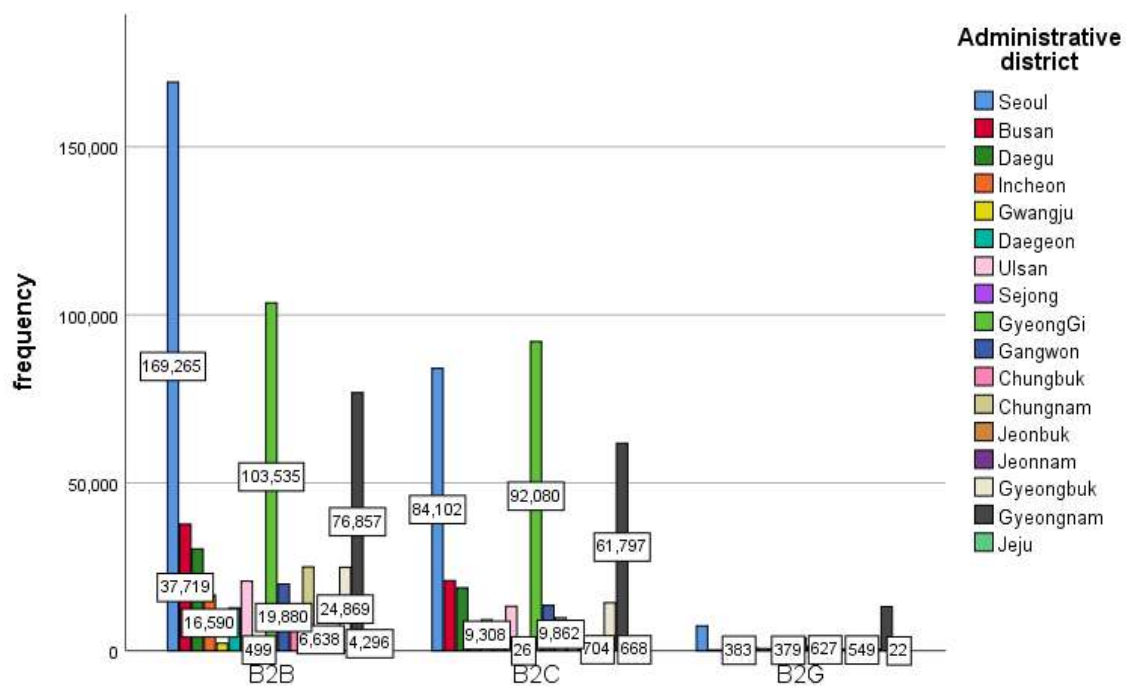


Figure 2: Type of e-commerce by administrative district

We can find out a significant association between administrative district and type of e-commerce on purchase ordering business (p-value < .001).

We can find that both 'B2B', 'B2C', and 'B2G' are closely related to 'Seoul', 'Chungbuk' and 'Gyeongnam', respectively, as shown in <Figure 3>. Note that a bi-plot on <Figure 3> shows visual associations of every category between administrative district and type of e-commerce on purchase ordering business by gauging the distance among categories.

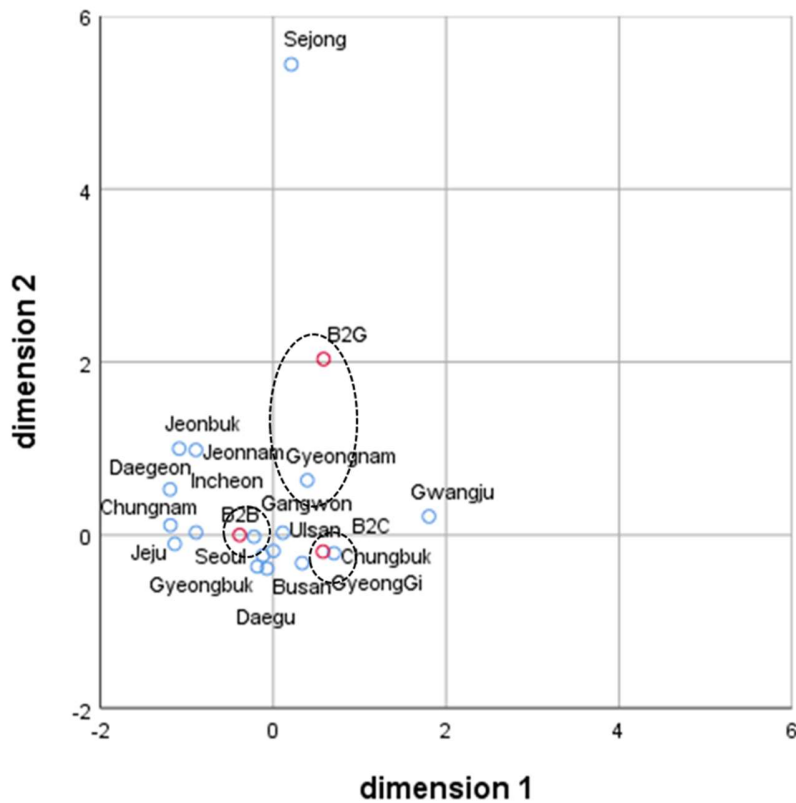


Figure 3: Row and column points with symmetric normalization

4.1.2. Association between Occupation and Type of E-commerce

The most common types of e-commerce purchase ordering business are wholesale & retail (23.9%), others (21.1%), association & organization, repair & other personal service (11.0%), accommodation & restaurant service (10.9%), manufacturing industry (10.2%), transport service (6.1%), real estate & rental business (4.4%), professional, scientific & technical service (4.0%), and construction industry (3.3%) (see <Figure 4>).

The order of the share of wholesale and retail, others, accommodation & restaurant service, association & organization, repairs & other personal service, and manufacturing industry, which account for a large portion of e-commerce purchase ordering business, is B2B (58.5%, 53.8%, 70.2%, 65.4%, 65.9%, respectively), B2C(65.9%, 39.2%, 40.8%, 27.4%, 32.6%, 29.9%, respectively), and B2G (2.3%, 5.4%, 2.4%, 2.0%, 4.2% respectively), and this pattern occurs except for transport service, real estate & rental service among 13 industries.

On the other hand, transport service and real estate & rental service are B2C (53.4%, 55.2%, respectively), B2B (46.3%, 40.4%, respectively), and B2G (0.3%, 4.4% respectively). B2G accounts for very small portions of all industries, and B2B accounts for more than half of all industries.

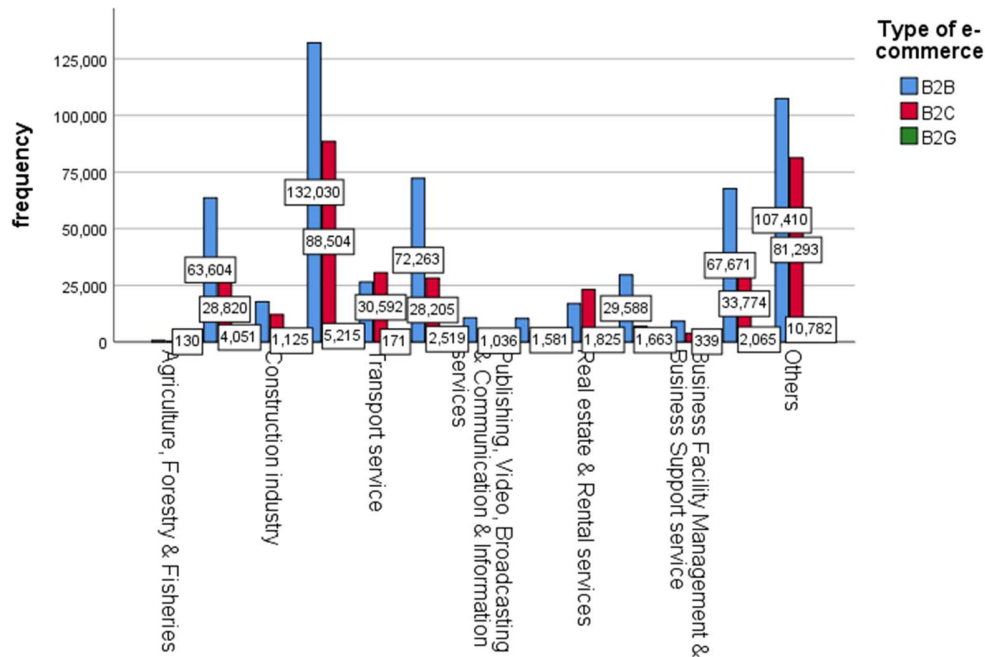


Figure 4: Occupation by type of e-commerce

In the case of B2B, the order of the purchase order business is wholesale & retail (23.4%), others (19.0%), accommodation & restaurant service (12.8%), association & organization, repairs & other personal service (12.0%), manufacturing industry (11.3%), professional, scientific & technical service (5.2%), transport service (4.7%), construction industry (3.1%) etc., as seen in <Figure 5>.

In the case of B2C, the order is wholesale & retail (25.4%), others (23.4%), association & organization, repair & other personal service (9.7%), transport service (8.8%), manufacturing industry (8.3%), accommodation & restaurant service (8.1%), real estate & rental business (6.7%), and construction industry (3.5%).

For B2G, the order is others (33.2%), wholesale & retail (16.0%), manufacturing industry (12.5%), accommodation & restaurant service (7.8%), association & organization, repair & other personal service (6.4%), real estate & rental service (5.6%), professional, scientific & technical service (5.1%), finance & insurance (4.9%). For all three types of e-commerce, wholesale & retail, and others account for more than 40% (see <Figure 5>).

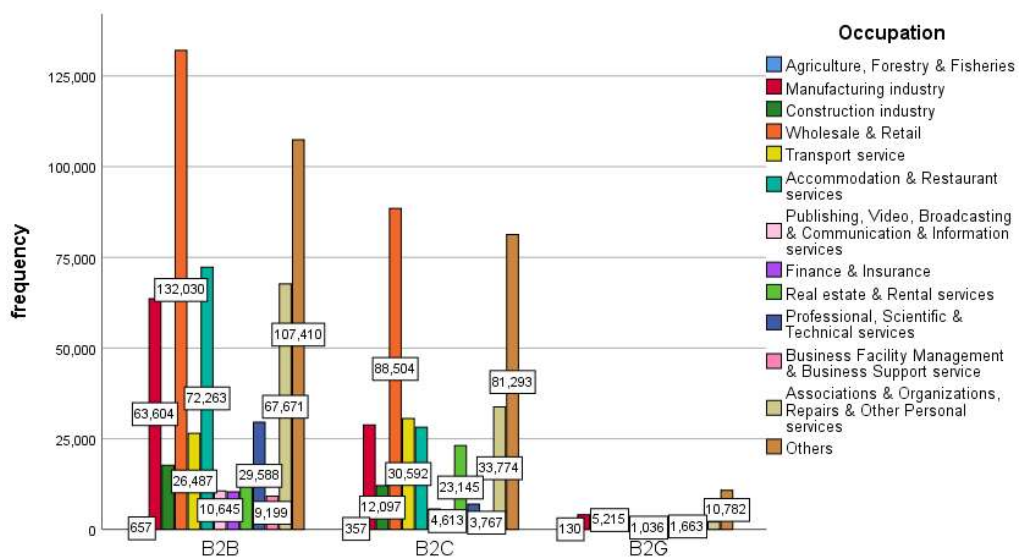


Figure 5: Type of e-commerce by occupation

The result of chi-squared test denotes the close association between occupation and type of e-commerce on purchase ordering business (p-value <.001). In addition, <Figure 6> shows that B2B, B2C and B2G seem to be in connection with ‘construction industry’, ‘business facility management & business support service’, and ‘agriculture, forestry & fishery’, respectively.

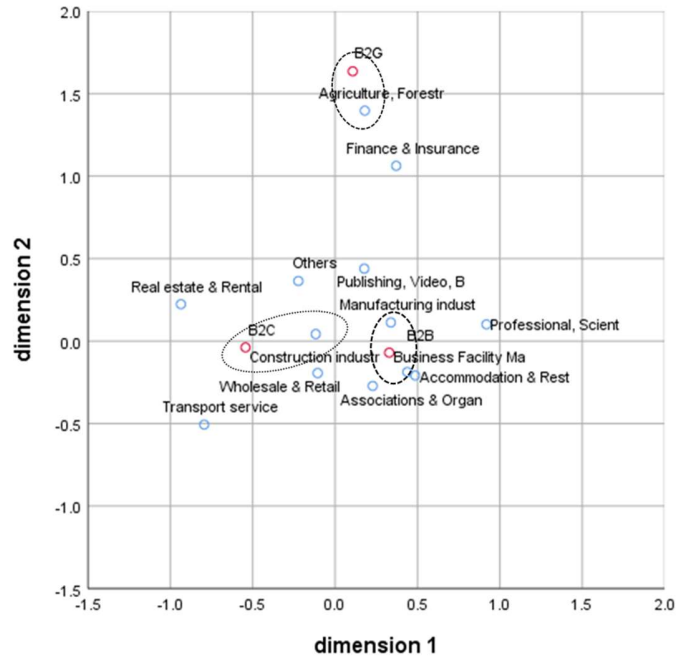


Figure 6: Row and column points with symmetric normalization

4.1.3. Association between Business Organization Type and Type of E-commerce

Among the organization types, the most common share of e-commerce purchase ordering projects is private business (70.3%), company corporation (20.2%), corporation other than company (4.1%), un-incorporate organization (3.6%), and national & local government (1.8%) (see <Figure 7>).

Private business, company corporation, and corporation other than company, among the organization types, account for the following order: B2B (58.5%, 66.2%, 64.4%, respectively), B2C (39.3%, 29.8%, 26.2%, respectively), and B2G (2.2%, 4.0%, 9.3%, respectively). In addition, unincorporated organization is B2C (47.9%), B2B (45.8%), B2G (6.3%), while national & local government is B2B (52.6%), B2G (26.9%), and B2C (20.5%) in order. For all organization types, the proportion of B2G is relatively small, and B2B accounts for almost half of the total as seen in <Figure 7>.

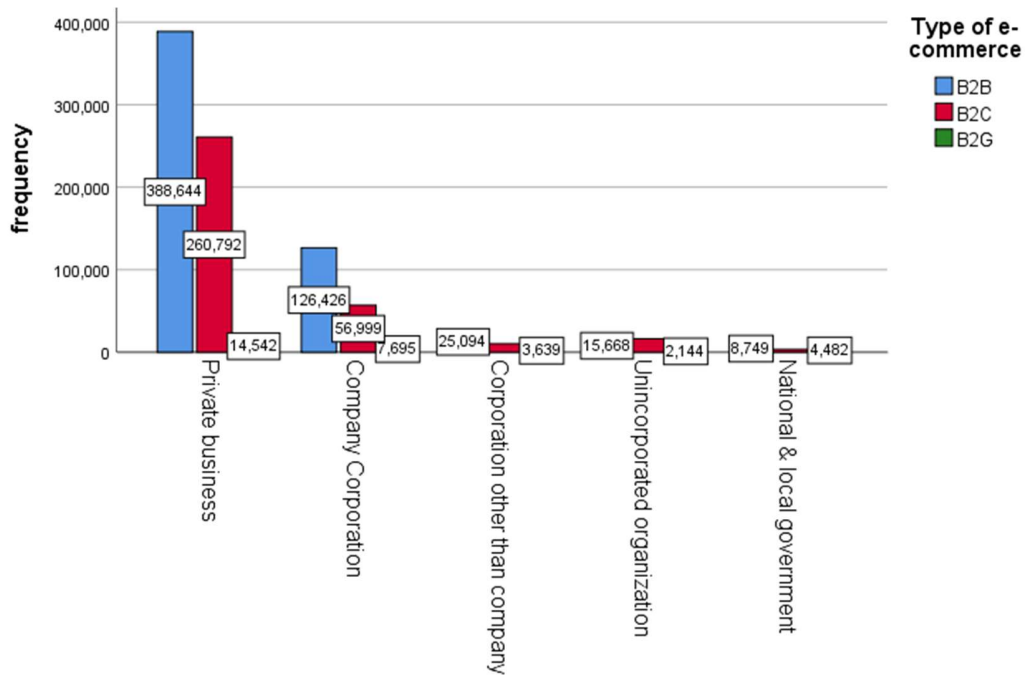


Figure 7: Business organization type by type of e-commerce

In case of B2B, the order of the most common purchase order business is private business (68.8%), company corporation (22.4%), corporation other than company (4.4%), unincorporated organization (2.8%), national & local government (1.5%)

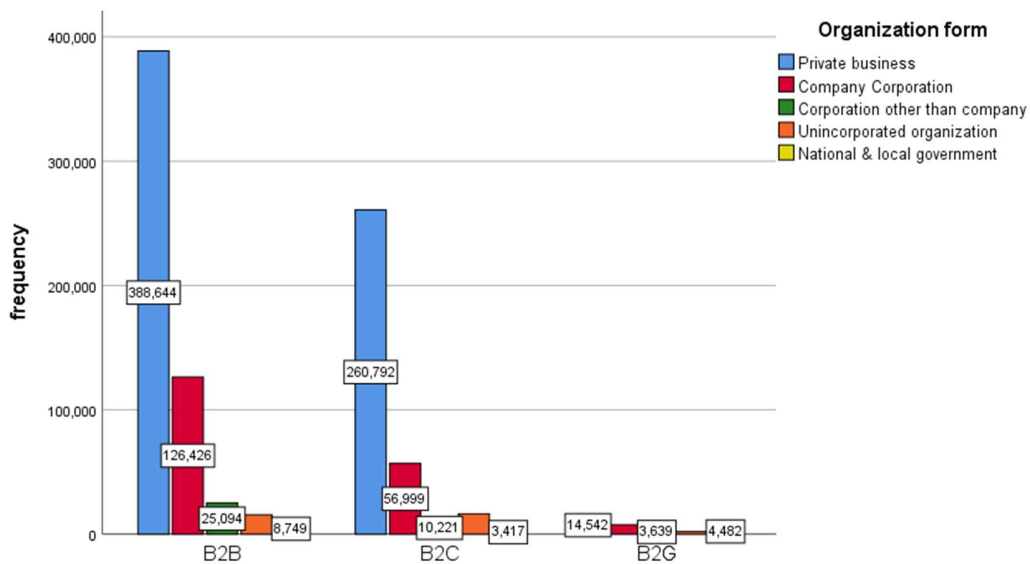


Figure 8: Type of e-commerce by business organization type

In the case of B2C, the order is private business (75.0%), company corporation (16.4%), unincorporated organization (4.7%), corporation other than company (2.9%), and national & local government (1.0%), while in the case of B2G, private business (44.7%), company corporation (23.7%), national & local government (13.8%), corporation other than the company (11.2%), and unincorporated organization (6.6%). Therefore, it can be seen that private business and company corporation account for more than 90% of all three types of e-commerce (see in <Figure 8>).

The result of chi-squared test indicates that there exists a significant association between business organization type and type of e-commerce on purchase ordering business (p-value < .001). From <Figure 9>, we may find out the clue that B2B, B2C, and B2G have to do with much ‘company corporation’, ‘private business’, and ‘national & local government’, respectively.

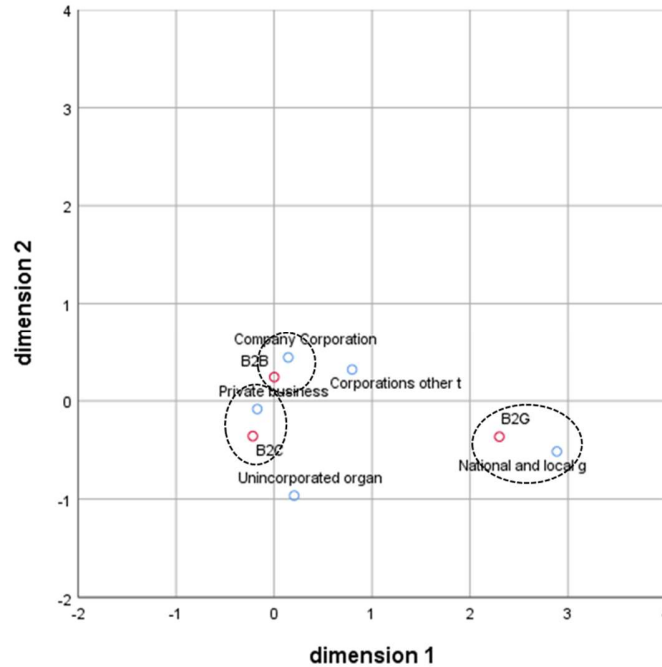


Figure 9: Row and column points with symmetric normalization

4.2. Type of E-commerce on Sales Order Business by Demographic Variables

4.2.1. Association between Administrative District and Type of E-commerce

The domestic e-commerce sales order business is in the order of B2C (74.5%), B2B (20.3%), and B2G (5.2%). In addition, the most common order for e-commerce sales orders in administrative districts is Seoul (29.3%), Gyeonggi (18.0%), Gyeongnam (8.6%), Incheon (5.7%), Busan (4.9%), Chungnam (4.0%), Daejeon (3.9%), Ulsan (3.8%), Gangwon (3.5%), Gyeongbuk (3.3%), Daegu and Jeonbuk (2.9%), Jeonnam (2.7%), Chungbuk and Jeju (2.3%), Gwangju (1.9%) etc. It can be seen that Seoul and Gyeonggi occupy nearly half of the total (see <Figure 10>).

Among the types of e-commerce, Seoul, Gyeonggi, Gyeongnam and Incheon are the order of B2C (75.3%, 62.5%, 79.6%, 81.2%, respectively), B2B (18.4%, 29.2%, 14.2%, 16.2%, respectively), and B2G (6.3%, 8.3%, 6.2%, 2.6%, respectively), and this pattern happens in all administrative districts. It can be confirmed that the B2G portion is very small for all administrative districts, and B2C accounts for more than 70% in almost all regions.

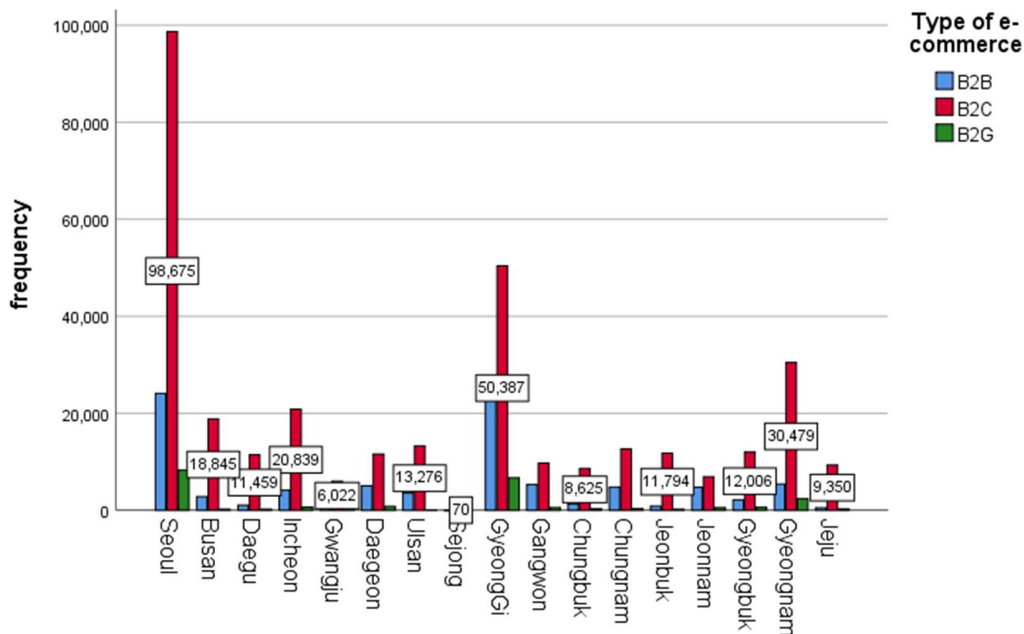


Figure 10: Administrative district by type of e-commerce

In particular, in the case of B2C, the order of sales order business is Seoul (29.7%), Gyeonggi (15.1%), Gyeongnam (9.2%), Incheon (6.3%), Busan (5.7%), Ulsan (4.0%), Chungnam (3.8%), Gyeongbuk (3.6%), Jeonbuk and Daejeon (3.5%), Daegu (3.4%) etc.

In the case of B2B, Seoul (26.5%), Gyeonggi (25.8%), Gyeongnam (6.0%), Gangwon (5.8%), Daejeon (5.6%), Chungnam (5.3%), Jeonnam (5.2%), Incheon (4.6%) are in the order, while in the case of B2G, Seoul (35.7%), Gyeonggi (28.8%), Gyeongnam (10.3%), Gwangju (4.4%), and Daejeon (3.5%). In particular, it can be seen that Seoul and Gyeonggi occupy almost 50% or more of e-commerce types (see <Figure 11>).

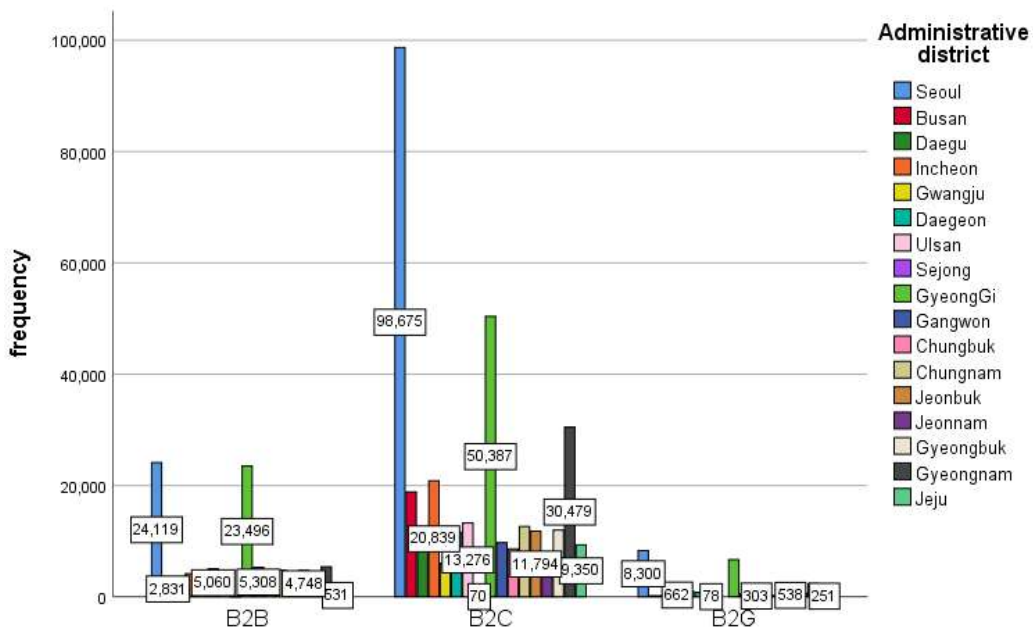


Figure 11: Type of e-commerce by administrative district

The finding of chi-squared test shows that there exists a significant association between administrative district and type of e-commerce on sales order business (p -value < .001). From <Figure 12>, B2B among administrative districts is marginally connected with both ‘Gangwon’ and ‘Jeonnam’. In addition, B2C and B2G are closely related to ‘Gyeongbuk’ and ‘Gwangju’, respectively.

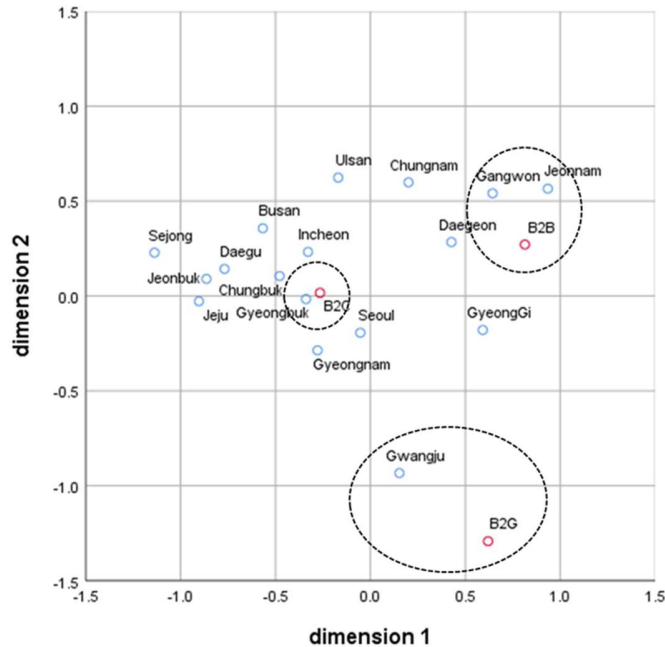


Figure 12: Row and column points with symmetric normalization

4.2.2. Association between Occupation and Type of E-commerce

The most common types of e-commerce on sales order business are transport service (46.9%), wholesale & retail (24.3%), manufacturing industry (10.2%), accommodation & restaurant service (5.9%), finance & insurance (3.7%), publishing, video, broadcasting & communication & information service (2.7%), professional, scientific & technical service (1.9%), construction industry (1.3%) etc. (see <Figure 13>).

The order of the share of transport service, wholesale & retail, accommodation & restaurant service and finance & insurance, which account for a large portion of e-commerce on sales order business, is B2C (96.9%, 54.6%, 85.5%, 55.0%, respectively), B2B (2.2%, 35.3%, 14.1%, 34.5%, respectively), and B2G (1.0%, 10.1%, 0.4%, 10.5%, respectively). On the other hand, manufacturing industry, construction industry, and professional, scientific & technical service are B2B (48.6%, 44.4%, 58.1%, respectively), B2C (43.1%, 28.3%, 32.5%, respectively), and B2G (8.2%, 27.3%, 9.4%, respectively). While B2G accounts for very small portion of all industries, B2C accounts for more than half of the industries with the largest portion of type of e-commerce as seen in <Figure 13>.

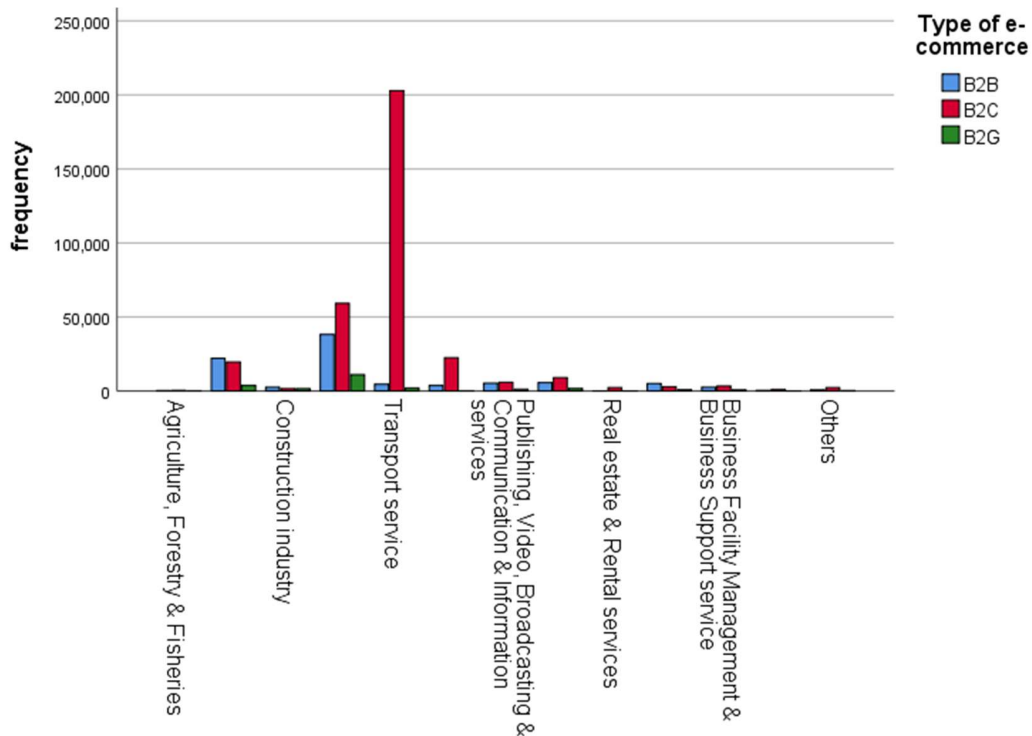


Figure 13: Occupation by type of e-commerce

In the case of B2C, the order of the purchase order business is transport service (61.0%), wholesale & retail (17.8%), accommodation & restaurant service (6.7%), manufacturing industry (5.9%), finance & insurance (2.7%) etc., while in the case of B2C, the order is wholesale and retail (42.0%), manufacturing industry (24.3%), finance & insurance (6.2%), publishing, video, broadcasting & communication & information service (5.7%), professional, scientific & technical service (5.5%), transport service (5.0%), accommodation & restaurant service (4.1%) etc. (see <Figure 14>).

For B2G, the order is wholesale & retail (47.3%), manufacturing industry (16.1%), transport service (8.6%), finance & insurance (7.4%), construction industry (6.7%), publishing, video, broadcasting & communication & information service (5.0%) etc. (see <Figure 14>).

For B2C, transport service and wholesale & retail account for nearly 80%, and wholesale & retail and manufacturing industry account for more than 60% of B2B and B2G (see <Figure 14>).

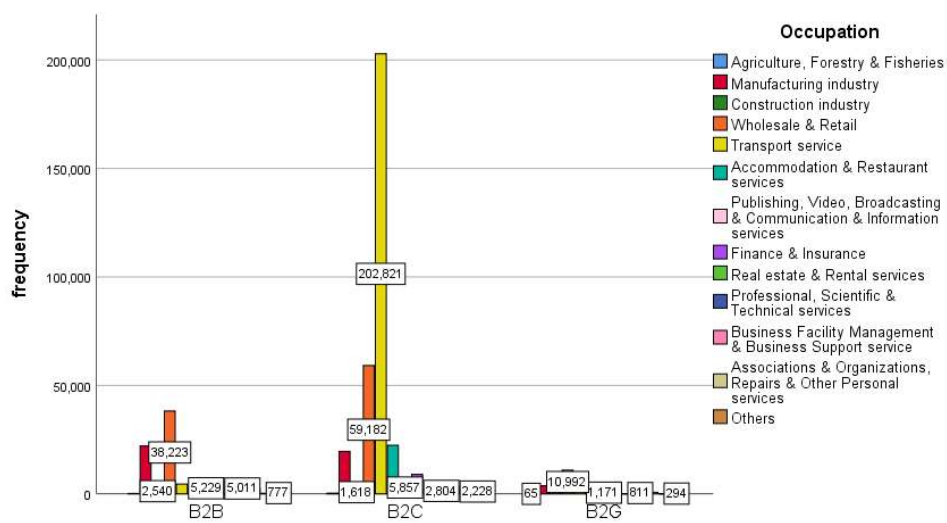


Figure 14: Type of e-commerce by occupation

Chi-squared test reveals the significant association between occupation and type of e-commerce on sales order business (p-value <.001). As seen in <Figure 15>, B2B among occupations is marginally linked with both 'professional, scientific & technical service' and 'manufacturing industries'. Additionally, B2C and B2G are largely concerned with 'wholesale & retail' and 'construction industry', respectively.

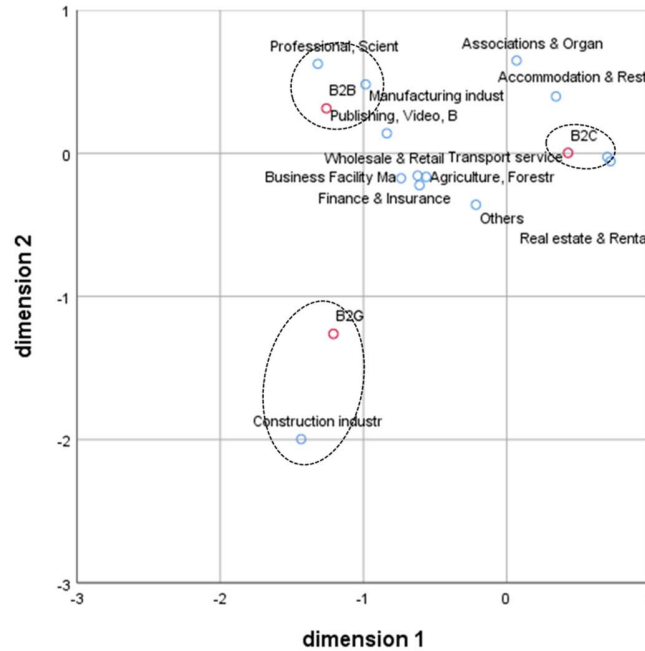


Figure 15: Row and column points with symmetric normalization

4.2.3. Association between Business Organization Type and Type of E-commerce

Among the organization types, the most common share of e-commerce sales orders is private business (78.5%), company corporation (18.6%), corporation other than company (2.4%), national & local government (0.3%) and unincorporated organization (0.1%).

Private business and company corporation, among the organization types, accounts for the following order: B2C (81.6%, 48.2%, respectively), B2B (14.8%, 41.4%, respectively), B2G (3.6%, 10.4%, respectively), and B2G (29.8%, respectively), and this pattern occurs for the rest of organization types (see <Figure 16>).

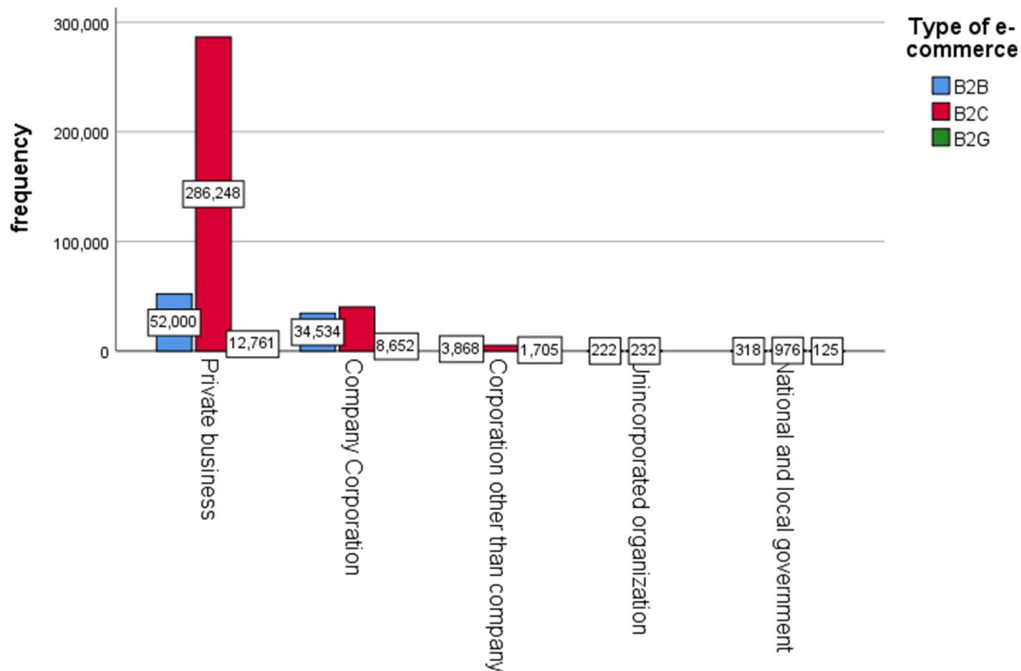


Figure 16: Business organization type by type of e-commerce

In particular, B2G accounts for a relatively large portion of a company corporation and corporation other than company compared to other types of organization (10.4% and 15.9%, respectively), and B2C can be seen to account for almost half or more of all organization types.

As seen in <Figure 17>, in case of B2C and B2B, the order of the most common sales orders business is private business (86.0%, 52.2%, respectively), company corporation (12.1%, 38.0%, respectively), corporation other than company (1.5%, 7.3%, respectively). In addition, the order is private business (54.9%), company corporation (37.2%), corporation other than the company (7.3%) etc. for B2G.

Therefore, it can be seen that private business and company corporation account for more than 90% of all three types of e-commerce (see <Figure 17>).

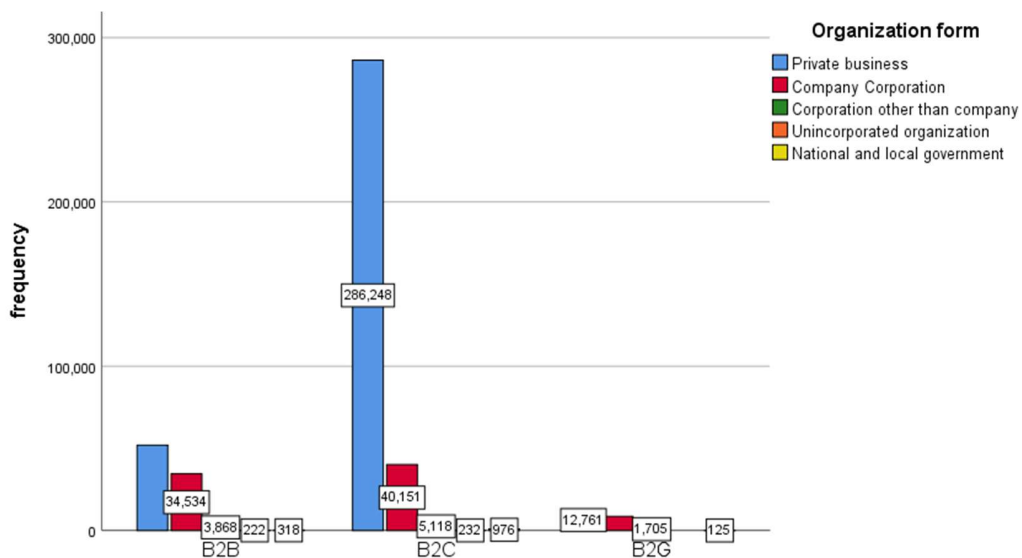


Figure 17: Type of e-commerce by business organization type

The p-value of chi-squared test shows that there exists a significant association between organization type and type of e-commerce on sales order business (p-value < .001).

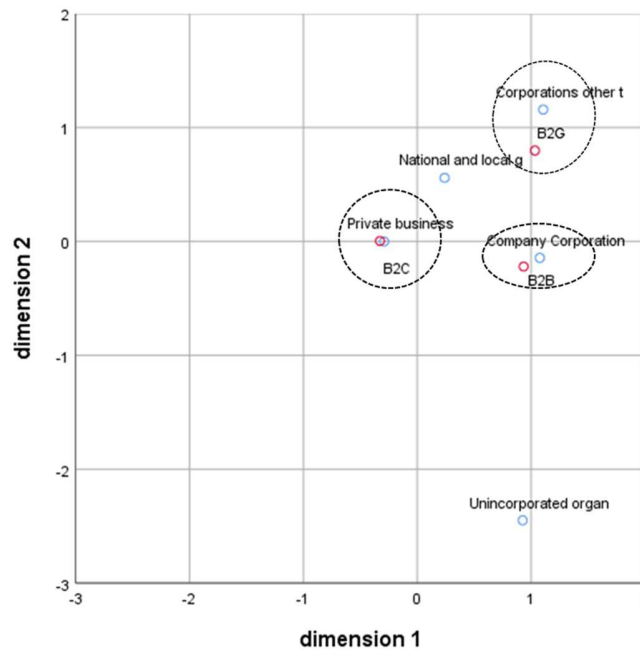


Figure 18: Row and column points with symmetric normalization

From <Figure 18>, we may draw conclusion that B2B, B2C, and B2G have a strong association with ‘company corporation’, ‘private business’ and ‘corporation other than company’, respectively.

5. Concluding Remarks and Limitations

In this study, we test existence of several associations between type of e-commerce and demographic variables in terms of both purchase ordering business and sales order business by taking advantage of bar chart and chi-squared test. Additionally, the visual relationships between two categorical variables can be easily checked by correspondence analysis.

The largest proportion of domestic electronic commerce purchase orders and sales orders is B2B (59.8%) and B2C (74.5%), respectively, and there is a difference with each other.

Regardless of e-commerce purchase orders and sales orders, Seoul, Gyeonggi and Gyeongnam are the major businesses in the administrative districts, and these three administrative districts account for more than half of the total.

Among occupations, the businesses that make up the main portion of the order for purchase of e-commerce are wholesale & retail (23.9%), others (21.1%), associations & organizations, repairs & other personal service (11.0%), while the order of the most common sales orders is transport service (46.9%), wholesale & retail (24.3%), and manufacturing industry (10.2%) in order.

Regardless of the order of purchase and sales of e-commerce, businesses that account for a major portion of the organization type are private company and corporate corporation, and these two businesses account for more than 90%.

The characteristics of three types of e-commerce can be summarized as follows for e-commerce purchase order:

In the case of B2B, the following account for a large portion for three demographic variables: Seoul (26.5%) and Gyeonggi (25.8%) for administrative district, wholesale & retail (42.0%) and manufacturing industry (24.3%) for occupation, and private business (57.2%) and company corporation (38.0%) for organization type. In addition, B2B is associated with Seoul, construction industry, and company corporation for demographic variables, respectively.

In the case of B2C, Gyeonggi (26.5%) and Seoul (24.2%), Gyeongnam (17.8%) for administrative district, wholesale & retail (25.4%), others (23.4%) for occupation, private company (75.0%), and company corporation (16.4%) for organization type do. B2C is also related closely to Chungbuk, and private business, respectively.

In the case of B2G, Gyeongnam (40.5%), Seoul (22.9%) and Gyeonggi (11.3%) for administrative district, others (33.2%) and wholesale & retail (16.0%) for occupation, private business (44.7%) and company corporation (23.7%) for organization type do. B2G is closely linked with Gyeongnam, agriculture, forestry & fishery, business facility management & business support service and national & local government, respectively.

Similarly, the feature of three types of e-commerce can be summarized as follows for e-commerce sales orders.

In the case of B2B, the following have high percentage for three demographic variables: Seoul (26.5%), Gyeonggi (25.8%) for administrative district, wholesale & retail business (42.0%), manufacturing industry (24.3%) for occupation, private business (57.2%) and company corporation (38.0%) for organization type. For three demographic variables, B2B is closely connected with Gangwon, Jeonnam, professional, scientific & technical service' and 'manufacturing industries, and company corporation, respectively.

In the case of B2C, Seoul (29.7%), Gyeonggi (15.1%) and Gyeongnam (9.2%) for administrative district, transport service (61.0%), wholesale & retail (17.8%) for occupation, private businesses (86.0%), and company corporation (12.1%) for organization type do. Additionally, B2C is intimately related to Gyeongbuk, wholesale & retail, and private business for three demographic variables, respectively.

In the case of B2G, Seoul (35.7%) and Gyeonggi (28.8%) for administrative district, others (33.2%) and wholesale & retail (16.0%) for occupation, private business (54.9%), and company corporation (37.2%) for organization type do. B2G has direct connection to Gwangju, construction industry and corporation other than company, respectively.

In summary, the association between the type of e-commerce with the administrative district and the occupation is completely different, but B2B and B2C are identical for organization type, with respect to both purchase and sales orders.

This study examined the relationship between the three major e-commerce types, B2B, B2C, and B2G, considering only three demographic variables. We can consider the association of various trading targets by expanding to C2C, C2B, C2G, G2B, G2C, and P2P in order to obtain more segmented and specific information. Furthermore, it would be meaningful to consider transaction types such as internet portal service, internet contents service, internet e-commerce, and internet brokerage.

The demographic characteristics of this study are administrative district, occupation, industry, and e-commerce types, B2B, B2C, and B2G. By considering the relationship between them, companies can create effective profits by grasping the needs of customers through subdivision and specialization in performing marketing strategies.

In the meantime, since e-commerce support projects have been distributed to the Ministry of Trade, Industry and Energy, the Ministry of Science and ICT, the Ministry of SMEs and Startups, Korea SMEs and Startups Agency, and KOTRA, it was difficult to create a synergistic effect in policy, and it was impossible to avoid duplication of work. In order to streamline this, it is urgent to select a competent ministry to oversee e-commerce support projects.

In order to resolve unfair competition between domestic online distributors and overseas online distributors, taxation standards should be strictly imposed on domestic online companies. In addition, when the supply of goods is made at the open market on the Internet in the VAT Act, the consumer bureau should make a plan to exercise the right to tax VAT generated in the transaction continuously and try to prevent tax evasion and tax avoidance on the new international transaction type through online such as cross-border online shopping (Jhun, 2018).

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