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The Effects of Elderly(Senior) Buying Factors and Satisfaction on Retailer's Online Shopping*

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Abstract

Purpose – This study investigates shopping behaviors and effects focusing on the seniors in 50s and 60s based on their buying satisfaction in online shopping. The study investigated causal relation between effects having influence upon online shopping behavior to give theoretical base on the use of online shopping. The study gave implications of consumption attitude of silver generation as well as senior consumers in aging society.
Research design, data, and methodology - The subject was senior consumers who have experienced online shopping to be sensitive to the fashion and to have active and reasonable consumption pattern and to be active and to have positive value.
Results - This study investigated the mediating effect on purchase satisfaction of the 50s and the 60s upon online shopping to examine online shopping use and effects. The subject was the ones in their 50s and 60s in Gyeonggi and Chungnam who had experienced online shopping. All of hypotheses of models at PLS analysis were supported.
Conclusions – Both information innovation and self-satisfaction showed positive influence upon the ease of and also access of the use. In addition, the access to the use had positive influence upon the purchase intention in retailers' online shopping.

Keywords: Retirement Style of the Elderly, Economic Activity of the Elderly, Purchase Satisfaction of the Elderly. Accessibility of the Elderly.

JEL Classifications: J14, H31, L81, P36.

1. Introduction

These days, online shopping has grown up rapidly with developed information technology. Inexpensive online shopping can be a reasonable consumption pattern in long period of stagnation and it has been a new power of distribution industry. In 2015, online shopping sales including Internet and mobile shopping reached 52 trillion KRW, and it showed larger than those of big mart and/or department stores. Thus, it is likely to be the largest distribution channel in the nation. Not only businesses but also academic circles have paid attention to the rapid growth of online shopping market to research actively and to research elderly consumers' online shopping rarely. Businesses and academic world think that young people in 20s and 30s make use of Internet, while the elderly do not make use of online shopping. While elderly generation in the past relied their lives upon their children, most elderly people, these days, are independent from their children and consume a lot. New elderly generation in their 50s and 60s consumes a lot to look for consuming life more than young consuming group and to be main consuming group(Kim, 2014). The ones in their 50s and 60s live consuming and leisure lives based on economic power after retirement to participate in social life actively and to differ from elderly generation having passive life styles. Currently, the ones in their 50s occupy 13.7% of total population, and in 2020, the elderly having economic power is likely to occupy more than half of total population of elderly. Market scale for the elderly is likely to increase 3 times from 44 trillion KRW in 2010 to 148 trillion KRW in

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2020 (Statistics Korea). More elderly have participated in economic activity at extension of life expectancy to let distribution business have more influence(Oh, Nam, & Yun, 2014).

Elderly consumers have more influence on online shopping market. 2012 Internet shopping sales material said that sales of the ones in their 20s to 30s occupied 47.2% to be 13.0% down than 5 years ago and that of new customers of the 40s to 50s did 49.2% to be 11.0% up. Remarkable distribution of smart phone has invited senior groups to Internet culture world naturally(Yoon, 2008). Such a fact evidenced that senior generation was quickly accustomed to online shopping and new buying channel. Senior consumers in their 50s or older have been potential segmentation market to lower entry barrier and to grow up online shopping and to develop special marketing strategy. Systematic research on senior consumers' online shopping is needed, and precedent studies were focused on young consumers in their 20s and 30s not to research senior consumers's online shopping(Eastman & Iyer, 2005).

The purpose of the study was to investigate the online shopping behavior and effects of the seniors in 50s and 60s based on the mediating effect of buying satisfaction with online shopping. The study investigated the relations between the effects upon online shopping behaviors to give the theoretical base on the use of online shopping. The study gave implications of the consumption attitude for silver generation as well as senior consumers in aging society.

2. Theoretical Background

2.1. Definition of senior and elderly

Terminologies of senior and elderly have been widely used to be difficult to define exactly. The elderly have been defined to be the one who makes change of psychology and physical body to decrease psychological function and to belong to social relation in the past. Time of the retirement is said to lose function of physical body from point of view of physiology and to decrease adaptation to environmental change as well as integration and to retire from first line life at retirement and/or transfer of rights of home affairs(Choo, 2015). People said the elderly change their behaviors by aging process. Aging speed may vary depending upon each individual, thus, it is difficult to decide a person by chronical age simply. so that reference age of the elderly has been on dispute(Federico, 2005). Recent studies said that reference age of elderly consumer groups varied from 45 years old to 65 years old. In Korea, the elderly are regarded as the Korean Senior Citizen Association at the age of more than 60 years old, and not only the Act on Life Protection but also the Act on Elderly Welfare said that 65-years old persons were the elderly. Marketing science says elderly consumer starts from about the age of fifties because their life styles change greatly owing to divorce, children's independence, and retirement and/or preparation for retirement. 50-years old or more person was said to be the elderly from point of view of user and/or consumer. These days, new types of the elderly have buying power and consumption ability, so that the terminology of senior instead of either older consumer and/or silver consumer has been used(Eastman & Iyer, 2005).

The terminology of senior was introduced by a professor Bernice Neugarten, department of psychology of Chicago University, USA. The professor said that today's elderly are different from yesterday's elderly. The senior want to overcome the elderly's life by leisure, beauty care, education, culture and other meaningful values based on their economic power from their age of 50 to 64 years old and to look for health, economic stability, social relations and interesting leisure. Such a thing distinguished from silver generation and/or senior giving impression of the social weak. The ones who consumed more than the 60s and 70s in the past were incorporated into senior group to be likely to make change not only consumer structure but also main market greatly(Ahn, 2011). The ones in their 50s are active to have features of the senior and to be likely to play an important role. Baby boomers in the 50s at early stage of the elderly time are likely to have great influence upon markets based on plenty of population and economic power and to represent senior group in the nation. In this study, retired elderly are said to be senior, and senior are said to be the ones in the 50s or older who are interested in fashion as well as consumption to be active(Auken, Barry, & Bagozzi, 2006).

2.2. Online shopping theory

Not only theory of reasoned action (TRA) but also technology acceptance model (TAM) explains use of online shopping. Theory of reasoned action (TRA) relies upon behavioral intention that is affected by attitude and subjective norm. The attitude is affected by belief and rating factor, and subjective norm is done by normative belief and motivation to comply. The technology acceptance model has expanded relation between attitude and behavioral intention of theory of reasoned action(Moon & Kim, 2001). The model relies upon information and technology acceptance based on relation between attitude and behavioral intention, and behavioral intention is done by attitude. The model had influence upon actual use behavior with two beliefs of convenience and access perceived. Usefulness is belief in the improvement of outcome by using online shopping, and access to the use is belief in less physical and mental effort by using online shopping(Chen, Gillenson, & Sherrell, 2002). Information technology is thought to be useful at more use, and information technology perceived may produce not only favorable attitude but also behavior of the use. The model

has explained acceptance and expansion of information technology to accept and make use of overall information technology(Dishaw & Strong, 1999). The model has disclosed effects having influence upon acceptance of organizational members of information technology for improvement of organizational performance to differ from online shopping factors that makes decision at the level of consumers. The model is said to be much simple and to put an emphasis upon individual's subjective judgment. Additional variables may introduce information technology system at the level of organization to explain consumer's selection of innovative product and/or service and to be widely used(Moon & Kim, 2001). Exogenous variables of user's characteristics were added to technology acceptance model to make correction of model and expand. Not only innovation but also self-satisfaction was used to inspect technology acceptance model and to have significant influence upon acceptance intention(Chen, Gillenson, & Sherrell, 2002).

Information innovation that is an individual's will to try new information technology describes individual's risk of acceptance of information technology. Consumers having information innovation were inclined to accept risk to take the lead in opinion and to get information not from word of mouth but from mass media and to open to inexperienced thing and to be young and well educated and to earn high income. The consumers showed that information innovation had influence upon Internet joint buying attitude and intention, and said that consumer innovation should be considered to develop Internet joint buying(Auken, Barry, & Bagozzi, 2006).

Self-satisfaction is said to be confidence and/or belief in specific behavior. Self-satisfaction is not use of computer but individual's perception in making use of Internet to attain a given task. Self-satisfaction of Internet shopping user had significant influence upon the convenience and access of the use. The one who had confidence of shopping by using online shopping thought for the ease of use and its usefulness for attaining for shopping outcome(Kim, Eom, Kim, & Youn, 2015).

2.3. Influence upon consumers' buying decision

Consumers cognized by product price, assortment and expectation of quality of the product at Internet shopping mall. Attitude and buying behavior of Internet shopping varied depending upon difference of the reaction. At investigation into consumer's buying behavior on Internet, consumers thought much of price (29.1%) followed by quality (24.7%) and brand (21.4%). Consumers could not perceive quality by using sense and studies gave solution. Consumers buy by making use of various kinds of factors, for instance, trademark, packing, delivery and services of online, and smell, taste, texture and display of offline(Koufaris, 2002).

The Variables of reliability included e-commerce system characteristics, customer's psychology and reliability value, and mediating variables included customer's attitude and relation commitment after making reliability and customer's affection and others. By the effect upon buying intention and repurchase, reliability, relation commitment and customer's satisfaction had significant influence upon buying intention. Reliability had direct influence upon buying behavior, and connection of reliability, relation commitment, buying intention and reliability, and customer satisfaction and buying intention could produce strong buying intention. Reputation is consumer's rating by business activity, enterprise ethics and social contribution(Sung, Kim, & Youn, 2014). E-commerce's buying process is customer's shopping by web surfing at virtual place, and consumer's reliability upon shopping mall business may have influence upon buying decision. TMON, social commerce business, said that sales of the consumers in their 50s or older occupied 3.83%. Customer transaction of the 50s or older accounted for 127,432 KRW was the largest to be more than that of the 20s (83,193 KRW), the 30s (112,644 KRW) and the 40s (121,043 KRW). Customers in their 50s or older buying musical instrument from auction of 1st quarter of 2013 occupied 16% to be more than 50% up than 2 years ago. Hyundai Home Shopping allocated silver use commodity at golden hour such as Phonak and adult use diaper(Collier & Bienstock, 2006).

2.4. Buying decision of elderly Internet shopping

Consumers relying upon Internet and/or smart phone got information by Internet surfing (46.9%), Internet shopping mall (37.9%) and advertising (32.1%) before buying commodity and/or service. And, indexes of business website (3/2%), advertising e-mail (10.6%) and TM/letters (3.7%) were low. Digital media and IT equipment were supplied so that traditional channels had less influence than current online channels did. Online channels such as Internet surfing retrieval (48.7%), product price information of online shopping mall (42.5%) and review of blog and/or bulletin board had influence upon consumer's buying(Eastman & Iyer, 2005). Ratio of the customers relying upon advertising accounted for no more than 14.2%. Advertising can be effective to inform brands and/or cognition on the product at the stage of information retrieval and to play limited role when consumers compare product after selecting preferred product. Internet and media environment made change at time elapse to differ from environment of traditional media to expand effect of digital media rapidly: Consumers were asked to give information based on patterns and motives and to exercise power at decision-making. Consumers accept affirmative impression not from senses but from words and/or image. When consumers are given first impression of the product, they buy regardless of minor defect(Koufaris, 2002).

2.5. Customer satisfaction

Since the 1970s, scholars actively researched marketing area of customer satisfaction. Precedent studies defined concept of customer satisfaction in different way to vary depending upon focus on the result. Customer satisfaction comes from consumption experience from point of view of result to inspect cognition, rating and psychological process. Customer satisfaction can be made by the repurchase of commodity and/or reuse of service when customers are satisfied with desire and expectation(Choo, 2015). Customer satisfaction was considered as customer's sacrifice regarding product quality, performance, employee's service at a shop and after sales service or others, for instance, supply of commodity, customer's actual satisfaction comparing with expectation. Prices had influence upon customer satisfaction along with shopping convenience, commodity assortment, commodity information and seller's characteristics. Customer satisfaction includes overall rating based on buying and consumption of commodity and services at time elapse. Customer satisfaction is said to be customer's favor at consumer's buying, comparison and evaluation(Federico, 2005).

3. Survey of the Material and Analysis

3.1. Information innovation and characteristics perceived

Information innovation is said to select innovation quickly than remaining members of his social system do. Consumers' information innovation is defined as the way of accepting a new system quickly than remaining members do and to do shopping of information innovation quickly on online and to pursue new thing. Individual's attempt to get new information technology is said to be individual's will, and to describe risks of acceptance of information technology. Information innovation had influence upon joint buying attitude and intention on Internet and to consider consumer's information innovation to promote joint buying on Internet(Kim, 2015).

Individual's information innovation was thought to be voluntary motive looking for new thing, and to try new information technology. Consumers having high information innovation cognized convenience in the use and easy access of new information system. The study inspected acceptance of social commerce that considered quality and individual's characteristics by using expanded technology acceptance model. Information innovation had significant influence upon access to the use. Information innovation was found to have affirmative influence upon convenience of the use as well as access to the use of online shopping (Kim & Youn, 2015).

<H1> Senior's information innovation has affirmative influence upon convenience of the use.

<H2> Senior's information innovation has affirmative influence upon access to the use.

3.2. Purchase satisfaction and perceived characteristics

Purchase satisfaction is said to be the confidence and/or belief on specific behavior. Purchase satisfaction in the use of information system is defined to be individual's subjective cognition on the use of system. Purchase satisfaction of the computer had influence upon computer buying intention by users' emotional state, in other words, influence upon the attitude(Kim, 2016). Studies on Internet acceptance added computer Purchase satisfaction to technology acceptance model to increase model's appropriateness. In Finland, the study on effect of Purchase satisfaction upon use of the computer was made: Purchase satisfaction had direct influence upon the intention to the use as well as access to the use, and had indirect influence upon convenience of the use. Purchase satisfaction had significant influence upon the perceived use convenience as well as the access to the use(Venkatesh & Bala, 2008).

A study on buying intention of knowledge management system suggested not only Purchase satisfaction but also preference emotion that had influence upon user's access to the use. Users having high Purchase satisfaction thought of no difficulty of system to have high intention of the use of knowledge management system. Interest and Purchase satisfaction had significant influence upon not only convenience of the use but also access to the use of online shopping.

Customers having high satisfaction for online shopping thought of easy use of the online shopping to cognize easy use of the shopping and to perceive accomplishment of shopping outcome by using online shopping(Fornell & Larcker, 1981). Internet shopping mall user's Purchase satisfaction had significant influence upon convenience of the use as well as access to the use(Dishaw & Strong, 1999).

<H3> Senior's self-satisfaction has affirmative influence upon convenience of the use.

<H4> Senior's self-satisfaction has affirmative influence upon access to the use.

3.3. Convenience of the use and access to the use

Access to the use of online shopping made users think of the ease use in online shopping, and convenience of the use perceived produced high value in the use of online shopping. Ease use of information technology accounts for perception of usefulness. Technology acceptance model with belief variable of pleasure had significant influence upon convenience of the use. In the study on smart phone user's technology acceptance, access to the use was found to

have influence upon convenience of the use. Access to the use was found to have affirmative influence upon convenience of the use. Senior group who cognized the ease of the use in online shopping thought much of convenience of the use to be likely to increase consumption online(Venkatesh & Davis, 2000).

<H5> Senior's access to the use has affirmative influence upon convenience of the use.

3.4. Perceived characteristics and buying intention

Consumer's convenience in the use and access to the use had influence upon information system user's information technology acceptance and buying intention. Consumers who thought of the ease use of information technology had favorable attitude and use. In the study on expanded technology acceptance model, convenience of the use and access to the use had influence upon acceptance intention. Not only the convenience of the use but also the access to the use had an important influence upon online shopping acceptance. And, the convenient use and access to the use of technology acceptance model had a significant influence upon the acceptance of web service. Many studies said that not only convenience of the use but also access to the use had affirmative influence upon buying intention(Seo, Yang, & Lee, 2014).

<H6> Senior's convenience of the use has affirmative influence upon purchase intention.

<H7> Senior's access to the use has affirmative influence upon purchase intention.

3.5. Mediating effect of purchase satisfaction

Before defining purchase satisfaction, consumer satisfaction needs to examine. Consumer satisfaction comes from difference between expectation and rating: High rating is said to be satisfaction, while low rating is done to be dissatisfaction. Consumer's affirmative emotion at consumption is called satisfaction, and his negative emotion is done dissatisfaction: Consumers generally have expectation before buying, and satisfaction is made when the performance is larger than expectation and dissatisfaction is done when the performance is smaller. Affirmative difference between prior expectation and emotion after use is said to be purchase satisfaction, while negative difference is done to be dissatisfaction(Sung, Kim, & Youn, 2014).

A study on consumer's satisfaction with product says that consumers' knowledge and experience for product and prices affect on the decision in different ways. Consumers' information and knowledge for product affect to be low price when product quality are not reflected the price properly. Product price may have great influence upon consumers' a lot of information on the product, and the mediating effect is made between consumer's perceived quality and price (Agarwal & Prasad, 1998). Consumer's knowledge on the product medicated relation between reference price, product rating, price concerning purchase intention, brand name, shop name and others. Satisfaction variable was variable having influence upon development of attitude on the object. Distributor's friendly brand could lessen difference between risk and quality to increase distributor's brand purchase. Distributor's friendly brand could elevate consumers' purchase intention. Purchase satisfaction was mediated between convenience of the use and access to the use (Federico, 2005).

<H8> Senior's purchase satisfaction has mediating effect upon convenience of the use.

<H9> Senior's purchase satisfaction has mediating effect upon access to the use.

4. Methodologies and Empirical Analysis

4.1. Material collection and sampling

The subject was senior consumers who experienced online shopping to be sensitive to the fashion. They are active and reasonable consumption pattern and have positive value. The survey was performed from February 1, 2017 to April 30, 2017, for 13 weeks after adjusting questionnaires at preliminary investigation. The author gave interviewees in Gyeonggi and Chungnam questionnaire and let them fill out by themselves. The author excluded 100 copies of the ones who were not interested in fashion and consumption to be inactive (Senior was said to be the one who is sensitive to the fashion to be 50 to 69 years old and to have active and reasonable consumption pattern according to survey of first half of 2013 of Korea Research). 310 copies of the questionnaire were used after excluding 40 copies having poor reply.

Demographic characteristics were: Ratio of women (210 persons, 67,8%) was much larger than that of men. The ones who were 50 to 55 years old were 165 persons (53.2%), followed by 98 persons (31.6%) from 56 years old to 55 years old to be the largest, and 37 persons (11.9%) of more than 60 years old. 4 years college students and/or graduate were 119 persons (38.4%) to be the largest, followed by 88 persons (28.4%) of high school graduate, 4-years college students and/or graduates were 119 persons (38.4%) to be the largest, followed by 55 persons (17.7%) of 2-3 years college students and/or graduate, 24 persons (7.7%) of graduate school students and graduate, and 14 persons (4.5%) of middle school graduate or below. 99 persons (31.9%) of housewives were the largest, followed by self-employed and private business (78 persons, 25.2%),

administration and office worker (71 persons, 22.9%), miscellaneous job of 36 persons (11.6%) and specialists (16 persons, 5.2%).

4.2. Operational definition and measuring of the variables

Likert 5-point scale was used. The study adjusted and made correction of variables to keep reliability and reality according to measurement having reliability and validity of precedent studies. The innovation was defined to be individual's effort to do online shopping firstly in favorable way. The study measured information innovation by four questions of 'try new technology firstly', 'do not hesitate to introduce new technology', 'like to experience new technology' and 'find out how to experience new technology'. Self-satisfaction was defined to be confidence and/or belief in effective buying activity of online shopping(Koufaris, 2002).

Self-satisfaction was tested by four questions, for instance, 'have confidence in the use of online shopping', 'no difficulty in the use of online shopping, 'make use of online shopping very well, and 'understand how to make use of online shopping'. Convenience of the use perceived is defined to be subjective belief in effective improvement of life by using online shopping. Four questions were used to conduct test: "Online shopping can improve quality of my life.", "Online shopping can improve consumption life.", "Online shopping saves time and expense.", "Online shopping lessens shopping time.".

Access to the use perceived is said to be subjective belief that customers make use of online shopping easily or without efforts. Four questions were used: "Find out things easily on online shopping.", "How to use online shopping site is simple.", "Use of online shopping is define and easy to understand.", "Easy to remember use of online shopping."

Purchase intention is defined to be will making use of online shopping continuously. Three questions were used: "Make use of online shopping continuously.", "Make use of online shopping from time to time." "Recommend online shopping to neighboring persons actively." The study investigated purchase satisfaction by using difference between satisfaction before buying and satisfaction after buying. And, single question was used.

4.3. Measuring scale

The study investigated measuring models to evaluate reliability and validity and investigated structure model by path between suitability and construct. PLS(Partial Least Square) was used to investigate convergent validity, internal consistency, AVE and appropriateness.

<Table 1> Reliability

Configuration concept	Number of metrics	Cronbach's α	Communality	Composite Reliability	AVE
Information innovation	3	.901	.842	.944	.802
Purchase satisfaction	3	.838	.834	.917	.794
Convenience of the use perceived	4	.812	.822	.856	.683
Access to the use perceived	4	.781	.801	.881	.681
Purchase intention	3	.823	.815	.908	.775

Bootstrap of PLS was used to investigate convergent validity by factor loading of construct. Factor loading shall exceed 0.7: No.3 question of convenience of the use was removed because of low loading, and remaining questions had convergent validity at more than 0.7 of factor loading. The construct had reliability (<Table 1>). The variables had more than 0.6 of reliability and Cronbach's α coefficient to have internal consistency. The findings were: Cronbach's α coefficient of information innovation, self-satisfaction, convenience of the use, access to the use and purchase intention was more than 0.7 to satisfy reliability condition of more than 0.6. All of the constructs had good internal consistency.

<Table 2> Validity analysis

Variable	Measuring variable	Factor loading	t Value	P
Information innovation	Information innovation 2	0.890	19.325	.000
	Information innovation 3	0.877	19.534	.000
	Information innovation 1	0.873	17.132	.000
Purchase satisfaction	Purchase satisfaction 2	0.915	24.188	.000
	Purchase satisfaction 3	0.823	19.961	.000
	Purchase satisfaction 1	0.745	20.54	.000
Convenience of the use perceived	Convenience of the use perceived 2	0.862	17.547	.000
	Convenience of the use perceived 4	0.854	15.981	.000
	Convenience of the use perceived 1	0.652	9.551	.000
Access to the use perceived	Access to the use perceived 2	0.877	23.207	.000
	Access to the use perceived 1	0.863	20.853	.000
	Access to the use perceived 4	0.757	16.219	.000
	Access to the use perceived 3	0.652	9.739	.000
Purchase intention	Purchase intention 1	0.882	14.65	.000
	Purchase intention 3	0.846	11.64	.000
	Purchase intention 2	0.824	9.722	.000

Each construct has factor loading <Table 2>. More than 0.5 of factor loading is thought to have convergent validity, and measuring variables satisfying reference value have convergent validity. AVE has relation with construct <Table 3>. To verify AVE, the study inspected that square root of AVE exceed correlation, and latent variables satisfying reference value were thought to have AVE.

<Table 3> AVE analysis

Measuring items	Information innovation	Purchase satisfaction	Convenience of the use perceived	Access to the use perceived	Purchase intention
Information innovation	.866				
Purchase satisfaction	.407	.861			
Convenience of the use perceived	.388	.389	.794		
Access to the use perceived	.471	.311	.472	.793	
Purchase intention	.423	.476	.403	.454	.850
AVE	.751	.743	.632	.630	.724

4.4. Hypothesis test

PLS was used to verify model and to evaluate appropriateness and significance of path coefficient. Suitability of path models was <Table 4>. The study inspected three conditions to verify suitability of path model: First, redundancy had positive value to satisfy conditions. Second, goodness-of-fit of path models accounted for 0.51 to be higher than 0.1. R^2 of internal variable was high; 0.473, 0.597 and 0.354, and construct had goodness-of-fit. The study verified hypotheses by PLS path analysis.

<Table 4> Goodness-of-fit of path models

Measuring items	Information innovation	Purchase satisfaction	Convenience of the use perceived	Access to the use perceived	Purchase intention
R^2			.473	.597	.354
Communality	.852	.844	.733	.731	.825
Redundancy			.149	.285	.237
Goodness -of-fit	.510				

<Hypothesis 1> had path coefficient of 0.169(t=2.139), and <Hypothesis 2> had 0.438(t= 7.727), and <Hypothesis 3> had 0.466(t=5.985), and <Hypothesis 4> had 0.505 (t=8.911), and <Hypothesis 5> had 0.230 (t=2.481), and <Hypothesis 6> had 0.318 (t=5.100), and <Hypothesis 7> had 0.371 (t=5.730): All of <Hypotheses> were adopted (<Table 5>).

Not only <Hypothesis 8> but also <Hypothesis 9> described mediating effect of purchase satisfaction. Multi-group analysis was done to inspect effect of mutual reaction at construct equation model. This study inspected satisfaction by continuous variable. Mean-centering option of original material of PLS was used to inspect and to inspect moderation effect by effect value of F2. Test result of hypothesis was <Table 6>

<Table 5> Hypotheses test result

Measuring items	Information innovation ▶ Convenience of the use perceived	Information innovation ▶ Access to the use perceived	Purchase satisfaction ▶ Convenience of the use perceived	Purchase satisfaction ▶ Access to the use perceived	Access to the use perceived ▶ Convenience of the use perceived	Convenience of the use perceived ▶ Purchase intention	Access to the use perceived ▶ Purchase intention
path coefficient	.169	.438	.466	.505	.230	.318	.371
T-value	2.139	7.727	5.985	8.911	2.481	5.100	5.730
P	.000	.000	.000	.000	.000	.000	.000

<Table 6> Convenience of the use perceived * purchase satisfaction ▶ test result of purchase intention

Measuring items		Convenience of the use perceived ▶ Purchase intention	Purchase satisfaction ▶ Purchase intention	Convenience of the use perceived * Purchase satisfaction ▶ Purchase intention	R2
Main effect	path coefficient	.318	.393	-	.542
	T-value	5.100	6.227	-	
	P	.000	.000	-	
Mutual reaction effect	path coefficient	.580	.761	.571	.565
	T-value	4.495	5.760	2.846	
	P	.000	.000	.000	

Effect Size(F2): .03

Path coefficient of effect of not only convenience of the use but also purchase satisfaction was 0.318(t=5.100) and 0.393(t= 6.227) respectively to be significant, and R2 was 0.542. R2 of mutual reaction model with convenience of the use and purchase satisfaction was 0.565 to be higher than that of main effect model by 0.014. Mutual reaction between convenience of the use and purchase intention was 0.580(t=4.495) to be significant, and that between purchase satisfaction and purchase intention was 0.761(t=5.760) to be significant. Convenience of the use * purchase satisfaction mutual reaction and purchase intention was 0.572 (t=2.846) to be significant and to have positive mediating effect. The ones who had high purchase satisfaction had higher purchase intention than the ones who had low purchase intention had. <Hypothesis 8> of "Convenience of the use perceived has mediating effect upon purchase intention." was adopted.

<Table 7> shows the result of <hypothesis 9>. Path coefficients of effect of access of the use as well as purchase satisfaction were 0.371(t=5.730) and 0.393(t=6.227), and R2 of main effect model was 0.542 to have significant path.

<Table 7> Access of the use perceived * purchase satisfaction ▶ purchase intention test result

Measuring items		Access to the use perceived ▶ Purchase intention	Purchase satisfaction ▶ Purchase intention	Access to the use perceived * purchase satisfaction ▶ Purchase intention	R^2
Main effect	path coefficient	.371	.393	-	.542
	T-value	5.730	6.227	-	
	P	.000	.000	-	
Mutual reaction effect	path coefficient	.617	.645	.583	.542
	T-value	3.568	3.249	2.092	
	P	.000	.000	.000	

Effect Size(F2): .06

R^2 of mutual reaction model with access of the use and purchase satisfaction was R2 to have same value as that of main effect model. Path coefficient between access of the use and purchase satisfaction was 0.617(t=3.568) to be significant, and that between purchase satisfaction and purchase intention was 0.645(t=3.249) to be significant. Path coefficient between access to the use, purchase satisfaction and purchase intention was 0.583(t=2.092) to be significantly positive. The one who cognized purchase satisfaction highly had high purchase intention. <Hypothesis 9> was adopted.

Test of all of hypotheses was <Table 8>.

<Table 8> Hypotheses test of path analysis

Hypotheses	Channel	Accept
H1: Senior's information innovation has affirmative influence upon convenience of the use.	Information innovation ▶ Convenience of the use perceived	Accept
H2: Senior's information innovation has affirmative influence upon access to the use.	Information innovation ▶ Access to the use perceived	Accept
H3: Senior's self-satisfaction has affirmative influence upon convenience of the use.	Purchase satisfaction ▶ Convenience of the use perceived	Accept
H4: Senior's self-satisfaction has affirmative influence upon access to the use.	Purchase satisfaction ▶ Access to the use perceived	Accept
H5: Senior's access to the use has affirmative influence upon convenience of the use.	Access to the use perceived ▶ Convenience of the use perceived	Accept
H6: Senior's convenience of the use has affirmative influence upon purchase intention.	Convenience of the use perceived ▶ Purchase intention	Accept
H7: Senior's access to the use has affirmative influence upon purchase intention.	Access to the use perceived ▶ Purchase intention	Accept
H8: Senior's purchase satisfaction has mediating effect upon convenience of the use.	Convenience of the use perceived * purchase satisfaction ▶ Purchase intention	Accept
H9: Senior's purchase satisfaction has mediating effect upon access to the use.	Access to the use perceived * purchase satisfaction ▶ Purchase intention	Accept

5. Conclusions and Limitations

5.1. Conclusions

This study investigated mediating effect of purchase satisfaction of the 50s and the 60s upon online shopping to examine online shopping use and effects. The subject was the ones in their 50s and 60s in Gyeonggi and Chungnam who had experienced online shopping. All of hypotheses of models at PLS analysis were supported. Not only information innovation but also self-satisfaction had positive influence upon not only convenience of the use but also access to the use, and access to the use had positive influence upon purchase intention. Access to the use had affirmative influence upon convenience of the use. Purchase satisfaction had mediating effect upon relation between convenience of the use and purchase intention, and purchase satisfaction had mediating effect upon relation between access to the use and purchase intention.

The implications were as follows. First, the subject in precedent studies was the ones in the age of 20s and 30s,

while this study focuses on the seniors in the age of 50s and 60s. The study had scientific and practical value. A new type of the elderly had different buying power. This study shows an implication on online shopping behavior with practical value.

Second, convenience of the use had positive influence upon purchase intention. The elderly was not reluctant to accept new technology and to have an idea of the use when he or she thought of usefulness of online shopping. But, working group thought of low online use not to invite elderly consumers to online shopping market. Online shopping mall for consumers in their 20s to 30s was expanded continuously, and no online shopping mall was for the elderly. Online shopping mall for the elderly should be opened.

Third, access to the use had affirmative influence upon purchase intention to let the elderly get easy access and to visit shopping mall often. Currently, the elderly who had experienced IT development did not reject online to be likely to reject. Simple online shopping mall could elevate access to make design of shopping mall for the elderly and to let the elderly not to be isolated from society and economy.

Fourth, the study introduced not only innovation but also Purchase satisfaction by elderly consumer's variables to inspect effects of the variables upon online shopping behavior. Not only innovation but also Purchase satisfaction had influence upon the elderly's use of online shopping. Innovation is an individual's inherent characteristics to be difficult to make change by making effort, and Purchase satisfaction can increase by making effort. Elderly consumers can be satisfied based on the area that user group thought much of, and can expand elderly market to promote domestic market.

Fifth, purchase satisfaction had mediating effect between convenience of the use and purchase intention, and between access to the use and purchase intention. The one who was satisfied with purchase after buying had high purchase intention on online shopping. Consumers who cognized low purchase satisfaction thought of ease of the use in online shopping to make useful life. The population in their 50s recently increased to let the ones being accustomed to Internet and/or mobile system and to join elderly group. The one who is satisfied with online shopping makes use of the shopping by himself or herself to expand the elderly expand online shopping market. Such a phenomenon evidenced more consumption of the ones in 50s or higher. The government shall develop various kinds of contents for the elderly having economic power to give community and to produce stable consumption market in the aging society.

5.2. Limitations

The study had limitations: First, much high ratio of women could not generalize the findings. Elderly women's opinions were more reflected. Elderly women did not join in the society actively to experience computer and/or online shopping less and to be likely to have fear. Further studies shall collect data after considering ratio of gender. Second, factors having influence upon technology acceptance included innovation and Purchase satisfaction only. In addition to individual's characteristics, other factors such as system characteristics, social influence, and promotion conditions could have influence upon technology acceptance. Further studies shall consider those factors. Third, the interviewees were the elderly in their 50s or older in Gyeonggi and Chungnam not to generalize the findings(Kim, 2014).

This study investigated purchase satisfaction only considering the elderly's age. Further studies shall inspect purchase satisfaction by using multiple questions. Precedent studies inspected consumers' buying behavior, and materials of precedent studies were not enough because consumers in their 50s or older could not participate in the related surveys. Shortage of materials prevented comparing with existing studies as well as model setting((Kim, 2014). In aging society with high population of aging generation, the elderly is likely to play important role in the economy and society: So, multiple investigation into the elderly is needed(Kim, 2016). The study was made in Metropolitan area. Sampling shall be made nationwide to interpret the findings from point of view of the nation. Investigation shall consider fact that the elderly is not familiar to structured questionnaire.

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