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A Study of Perceived Simplicity in Product Quality Information Visualization Styles in Online Markets and Its Relation to Product Quality Trust - focused on older adult consumers for rice products sold in domestic markets

온라인 매장의 제품 품질 시각정보 유형에서 지각된 단순성과 이에 따른 제품 품질 신뢰도에 관한 연구 - 국내에서 판매되는 쌀 제품 및 고령층 소비자 중심으로

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차례

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ABSTRACT

In recent years, rice products have received the highest number of quality complaints among the food and beverage categories sold in online stores, and there is a need for research on efficient visualization of the quality of rice products sold in online stores. Especially for older adults with reduced cognitive abilities and lack of product quality trust, visualized product information should be presented considering the characteristics of older adult consumers. This study aims to present types of efficient product quality visual information for rice products in online stores, focusing on elderly consumers. The research methods and contents include a literature study on the characteristics of elderly consumers and perceived simplicity, followed by case studies and analysis, the production of experimental items for surveys, online surveys, and empirical analysis based on these. According to a literature study, older adults can understand information morequickly if product information is briefly organized or grouped. In addition, it is suggested that providing various types of visualization methods will be effective in improving the reliability of elderly consumers. According to the case study and analysis results, a Likert scale online survey was conducted, and the mediating factors were perceived simplicity, perceived product information, visual information style of product information, and reliability. The sample style types presented are simple shapes, mixed banners, package only, and white backgrounds and graphic backgrounds of those types. The study model and hypothesis were set, data were processed through empirical analysis, and the result of ANOVA verified the causal relationship. As a result, all hypotheses have been accepted, with mixed banners with a graphic background as the most effective style of product information description in terms of comprehension of product information, leading to product quality trust. The result of the study can be beneficial for planning and designing online product display images to improve the product quality trust of older adult consumers.

Keywords
online shopping environment
product quality visual information
perceived simplicity
product quality trust
older adult consumers

요약

최근 몇 년간 온라인매장에서 판매되는 식음료 카테고리 중 쌀 제품군에서 가장 많은 품질 관련 불만이 접수 되었으며, 온라인매장에서 판매되는 쌀 제품의 품질에 대한 효율적인 시각정보에 대한 연구가 필요하다. 이는 특히 인지 능력의 저하와 제품 품질 신뢰에 어려움이 있는 고령층에 더욱 필수적이며, 따라서 품질에 대한 시각정보는 고령층의 특성을 감안하여 제공되어야 한다. 본 연구는 고령층 소비자들을 중심으로, 온라인 매장에서의 쌀 제품의 효율적인 제품 품질 시각정보 유형의 제시를 목적으로 한다. 연구 방법 및 내용은 고령층 소비자의 특징과 지각된 단순성에 대한 문헌연구를 시작으로 사례연구 및 분석, 설문을 위한 실험물 제작, 온라인 설문과 이를 바탕으로 한 실증분석이다. 문헌연구에 따르면 고령층은 상품정보가 간략하게 정리되거나 그룹화 하여 제공하면 정보를 보다 쉽게 이해할 수 있으며. 또한 다양한 형태의 시각화 방법의 제공이 고령층 소비자의 신뢰도 향상에 효과적일 것이라 제시한다. 사례연구 및 분석결과에 따라 제작된 리커트 척도 온라인 설문이 진행되었으며, 매개요소는 지각된 단순성, 지각된 상품정보, 상품정보의 시각적 정보 스타일, 신뢰도이다. 제시된 샘플 스타일 유형은 단순 도형, 혼합 배너, 패키지 단독, 그리고 해당 유형들의 흰 배경과 그래픽 배경이다. 연구 모델과 가설이 설정되었으며, 실증분석을 통해 데이터를 가공하였고, ANOVA를 통한 결과 인과관계를 검증하였다. 결과, 모든 가설이 채택 되었으며, 특히 그래픽 배경에 놓인 혼합 배너 스타일이 제품 품질 신뢰로 이어지는 제품 정보의 이해 측면에서 가장 효과적인 것으로 나타났다. 해당 연구의 결과는 고령층을 대상으로한 쌀 제품의 온라인 디스플레이 이미지 기획 및 구성에 제품 품질 신뢰도 향상 측면에서 도움이 되는 자료가 될 수 있다.

중심어
온라인구매환경
제품품질시각정보
지각된단순성
제품품질신뢰도
고령층소비자

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1. Introduction

1.1. Background

Past studies suggest shoppers prefer to shop online to save time and increase convenience. Online shopping avoids traveling and parking, physical store navigation, and contending with other shoppers (Statista, 2021). Finding a way to reduce shopping time can benefit all ages of shoppers, especially older adults, as studies have shown that their cognitive abilities are much weaker than young adults, and it can be stressful for older adults to be navigating around online shops analyzing and making decisions between products (John & Cole, 1986). Research shows that the main reasons for online shopping are the merit in prices and deals and for having heavy items delivered to the door. Grocery products with long expiration dates, such as rice products, are mostly purchased online for convenience in delivery (Economy Seoul, 2019). according to recent reports, there has been an increase in product quality complaints about online purchased rice products. Most complaints were on how the rice products needed to describe its information effectively on online markets and that the delivered product needed to be in the expected and explained quality. Rice product information such as the packaged date and year, the grade of the rice, and the place of origin needed to be presented more clearly, or such information was difficult to find. Korea analyzed 674 consumer complaints related to rice products from 2016 and 2019, and 53.7% of complaints about the quality of the rice. 45.8% of consumers mentioned that 'provided information on the product is not reliable,' and other complaints such as 'difficulty in finding the packaged date and freshness of the product' and 'difficulty in finding product related information at once' followed. Consumer Korea conducted a survey to respond to the information consumers would like to know when purchasing rice products online, and consumers were allowed to select multiple elements. 82.6% answered 'the information on the milling date of the rice(dojungilja),' 72.1% answered 'the grade of rice,' 66.4% answered 'the location of where the rice was grown and manufactured,' and 59.5% answered 'the kind of rice.' Although it is regulated that the grain manufacturers and grain sales dealers must include 'manufactured date,' 'milling date,' 'kind of rice,' and 'grade of rice' on the packages of rice, online markets do not need to provide such information, due to the 'Act on the Notice on Provision on Information on Products in Electronic Commerce.'

1.2. Purpose and Aim of Study

This study investigates how the level of perceived clarity in product quality information of product display images on online display pages can influence improvement in product quality trust, focusing on older adult shoppers. The purpose of the study is due to the growing complaints about rice products purchased online and their quality. Older adults tend to have difficulty in quality trust in products purchased online, that improvement in product quality trust can provide a better online shopping experience for older shoppers (Cheng et al. et al., 2023).

This study focuses on the rice product category, as the category has shown a dramatic increase in the rate of complaints and unsatisfactory rates in recent years in the online markets, that according to Consumer Korea (Consumerskorea.org), consumer complaints were risen to 46% in 2019, in the past three-year report comparison. Also, the brands and the kinds of rice vary; detailed information such as the milling date, the region it was grown, the treatment type, and more information are essential elements consumers check

when they purchase rice products. It is the kind of product category which requires more consideration for shoppers, as rice is Korea's leading daily food ingredient, and it is purchased by all families regardless of the size or form of the family.

1.3. Method of Study

This study established effective visualization methods in product information delivery in visual images through literature research and case study analysis. The rice product display images with product information visuals were gathered. An analysis of display image cases of domestic online food shopping malls was performed, and based on the case analysis, experimental stimuli for rice product display image types were produced. A survey containing six experimental stimuli was conducted with consumers in their late 40s to 70s who had experience purchasing rice products online. Data were processed through empirical analysis, and the result of ANOVA verified the causal relationship.

2. Literature Review

2.1. Simplicity in Visual Information

'Simplicity Theory' explains that humans are susceptible to any discrepancy in complexity, and interest is aroused in what appears to be "too simple"(Chater. N., 1999). One of the reasons older adults have difficulty in online shopping is known to be caused by their decline in cognitive abilities. Older adults need help locating relevant information in complex contexts (Yoon & Cole, 2009) and are easily side-tracked, and have difficulty sticking to facts when going through product information (Petty & Cacioppo, 1986). Such characteristics make it difficult for older consumers to gather and understand product information in online sold products, and it can be even more challenging for them when the product information they want is presented in complex forms. Therefore, for older adults to gather product information, simplicity in product visual description is necessary.

2.2. Comprehensibility of Visual Information

For older adults to make product decisions in online shopping, they must comprehend the information and its meaning, determine meaningful differences between options, and measure facts to match whether it meets their value (Peters et al., 2007). studies suggest that simple-to-understand product information in online shopping environments will be more accessible to older consumers. Consumers must gather a certain level of product information and comprehend the information to make a purchase decision, and older adults tend to have reduced cognitive abilities and efforts; how simple the information is provided is influential in older consumers' online shopping (Abaluck & Gruber, 2009).

2.3. Product Quality Visualization Effect

Abaluck and Gruber (2009) suggest that information should be organized in a formatted template with limited information to help older shoppers, as older adults make better decisions when provided information is limited. Furthermore, when comparing complex options, older adults are more feature-oriented due to their tendency to reduce options, and the cognitive effort involved in a decision is greater than the experiential benefits offered by the features (Carpenter & Yoon, 2011). A study by Dilshodjon et al., 2013 states that various rich media representations, such as high-quality pictures, flash media, 3D rendering, and product videos, should be provided to increase product transparency, and this suggests that visual descriptions must be in multiple and diverse forms.

3. Case Study

3.1. Analysis Method and Selection Standards of Examples

Rice product display images from domestic online food and grocery shopping malls were gathered from March 8, 2023, to March 13, 2023, and a total of ten online malls were selected according to the rankings from the Open Survey of 2023 on online food and grocery purchase tend reports (Opensurvey, 2023). Online store display pages were analyzed, including Coupang, Naver Shopping, Market Kurly, Emart Mall, G-Market, Homeplus Mall, 11st, SSG.com, Auction, We Make Price, and TMon. The analysis focused on collecting all of the product information visualization styles in display image boxes, explicitly focusing on the visualization styles of how detailed product information requested by the consumers, such as 'milling date,' 'the grade of rice,' 'where it was grown,' 'category of rice,' and 'protein percentage' were portrayed. According to the analysis of the collection, the categories of product quality information visualization styles can be categorized into three kinds, a) Simple shapes, b) Mixed banners, c) On packages, and the backgrounds can be categorized into two kinds, a) Blank background and b) Graphic Background.

3.2. Result of the Case Study

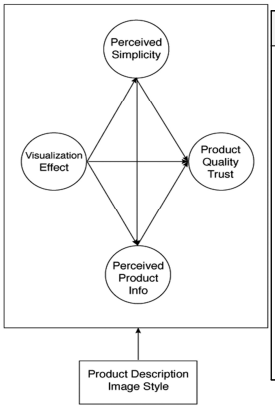
The case study resulted in the below styles of product information visualization styles: Simple Shapes: The product quality information is in simple shapes aligned to one side. This style most matches what the literature study suggested: having limited product information in shapes and having them organized linearly.

Mixed Banners: The necessary product quality information is in assorted shapes and distributed around the overall image. This style matches the literature review on placing necessary information in shapes but is not aligned or organized to a particular shape.

On Packages: The product quality information is in the product packages themselves; no other shapes or banners are added to the product image for the product information description. above-categorized styles of product-quality information images are placed against blank or graphic backgrounds. Below <Table 1> is the display image kinds in providing information according to the result of the case study.

〈Table 1〉 *Display Image Kinds in Providing Information (Homeplus.com,*

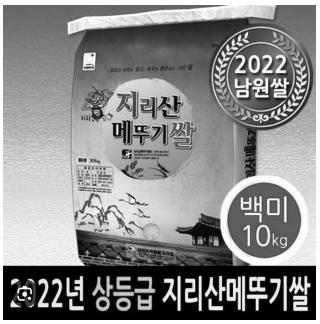
Blank Background		
〈Figure 2〉 *Simple Shapes*	〈Figure 3〉 *Mixed Banners*	〈Figure 4〉 *On Packages*
		
Stylized Background		



〈Figure 1〉 *Study Model*

〈Figure 5〉 *Simple Shapes*

〈Figure 6〉 *Mixed Banners*



〈Figure 7〉 *On Packages*

4. Study Method

4.1. Study Model and Hypothesis

This study was designed as an investigation to verify the effect of visual product information styles on rice products sold in online markets and its product description visualization effect, perceived simplicity, and perceived product information as mediating elements that lead to trust in products focused on older adults.

The literature study explained that older adult consumers have weak cognition ability and that product information must be put in a simple and organized format in online markets. Furthermore, the previous studies suggest that the level of product information recognition of older adults influences trust in online sold products, as the ambiguity of product information leads to the suggestion of discrepancy of product quality, that unmentioned product information or hard-to-find information is likely to suggest older consumers of 'not being transparent.'

By this, it can be predicted that when required product information is in the simpler format on display pages of the online market, and when the display image of information is easily recognized, it is likely to deliver to older consumers the message that the product is not hiding product quality information and that the image is therefore reliable. Furthermore, the studies have mentioned that multiple forms and types of visual descriptions must be presented to promote product quality trust. The study model and hypothesis below were established in <Figure 7> and <Table 2>.

〈Table 2〉 *Hypothesis*

Hypothesis	
H1.	Depending on the design type, there are differences in quality visualization effect, perceived product clarity, perceived product awareness, and product trust.
H2.	The quality visualization effect has a positive (+) influence on perceived product clarity.
H3.	The visualization effect of quality and perceived product clarity have a positive (+) influence on perceived product awareness.
H4.	The visualization effect of quality, perceived product clarity, and perceived product awareness have a positive (+) influence on product trust.
H5.	There is a mediating effect of perceived product clarity and perceived product awareness between the visualization effect of quality and product trust.

4.2. Sample Design

An online survey was conducted from April 5th, 2023, to April 25th, 2023, via Google Forms, by 297 participants residing in the Seoul and Gyeonggi region of Korea. Participants have been provided a link to the survey with a survey procedure description note through the participants' email addresses. All Participants had experience in online food and grocery shopping with relatively high digital literacy, and the survey was requested to be completed only through desktop computers. Participants were requested to complete the survey as if they were in an online shopping environment, without time restrictions.

According to the result of the case study, 6 sample stimulants for the test were created, a) Simple shapes, b) Mixed banners, c) On Package with a) Blank background, and b) Graphic background as shown in <Table 3> below. The stimulants were generated using Adobe Illustrator and Adobe Photoshop, the style of the display boxes and general page layout followed the style of Coupang, the ranked one online market domestic consumers use the most in South Korea. The survey has six images of the product quality description visualization styles, and one of the six images has been randomly selected for each

participant in the age range of the late 40s~ 70s. In addition, the survey was conducted by referring to previous studies to measure each variable.

5 point Likert chart has been used to measure the level of product description visualization effect, perceived simplicity, level of product information recognition, and trust in online vendors, as Likert-type scales help measure latent constructs that are generally thought of as unobservable individual characteristics, without concrete, objective measurement, that are believed to exist and cause variations in behavior (Converse 1986). The response scales used in the survey are 1 being strongly disagree, 2 disagree, 3 neutral, 4 agree and 5 strongly agree.

The questionaries for measurements of mediating elements were set according to the previous studies mentioned in the literature review. The measured qualities for perceived simplicity were, 'The product information in the image is simple,' 'The composition of the product information in the image is simple,' and 'The description of the product information in the image is simple.' The measured qualities for the level of product information recognition were, 'The product information in the image is easily recognizable,' 'The composition of the product information in the image is easily recognizable,' and 'The description of the product information in the image is easily recognizable.' The measured qualities for the product description visualization effect were, 'The product description visualization effect in the image is satisfactory,' 'The composition of the product description visualization effect in the image is satisfactory,' 'The description of the product description visualization effect in the image is satisfactory' and 'The product description visualization effect in the image is satisfactory in terms of product quality description. The measured qualities for trust in online vendors were, 'The product information in the image provides trust toward the product quality,' 'The composition of the product information in the image provides trust toward the product quality,' and 'The description of the product information in the image provides trust toward the product quality.'

〈Table 3〉 *Display Image Kinds in Providing Information*

Blank Background		
Sample 1	Sample 2	Sample 2
		
Stylized Background		
Sample 3	Sample 5	Sample 6
		

5. Test

5.1. Data Collection and Sample General Characteristics

Of the total of 297 people who responded to the survey, 20.2% were male and 79.8% female. By age, 44.5% were in their 50s, 24.6% were in their 60s, and 24.6% were over 70s. By educational attainment, 49.8% of the total had a 2-3 year college education, followed by a college graduate with 32.3%, and a high school graduate or less with 8.4%. By occupation, housewives accounted for nearly half of the total at 48.8%, followed by professionals at 20.2%, office workers at 16.2%, and self-employed at 12.1%. The sample general characteristics are listed in the below <Table 4>.

〈Table 4〉 *General Characteristics of the Sample* N=297 Participants

Participants	Categorization	Frequency	Percentage(%)
Sex	Male	60	20.2
	Female	237	79.8
Age	50s	132	44.5
	60s	92	31.0
	Over70s	73	24.6
Education	Highschool	25	8.4
	College Diploma	148	49.8
	University Graduation	96	32.3
	Above Graduate Studies	24	8.1
	No Response	4	1.3
Occupation	Office Worker	48	16.2
	Buisiness Owner	36	12.1
	Practitioner	60	20.2
	Housewife	145	48.8
	No Response	8	2.7

5.2. Reliability and Validity Analysis of Measurement Tools

To analyze the reliability and validity of the visualization effect of quality, perceived product clarity, perceived product information, and perceived product trust measurement tools, an exploratory factor analysis was conducted and the Cronbach value was obtained. In the exploratory factor analysis, the factor loading was estimated using the principal component method. The analysis results are shown in the following <Table 5>.

〈Table 5〉 *Measurement Tool Reliability and Validity Analysis*

Measurement	Measurement Question	Factor Loading	Eigen value	% Explained	Cronbach α Value
Visualization effect of quality	Quality 1	.923	3.411	90.275	.856
	Quality 2	.886			
	Quality 3	.917			
	Quality 4	.943			
Perceived Product Simplicity	Simplicity 1	.990	2.945	98.176	.991
	Simplicity 2	.991			
	Simplicity 3	.992			
Perceived Product Information	Product info 1	.994	2.977	99.236	.996
	Product info 2	.998			
	Product info 3	.997			
Perceived product reliability	Trust 1	.979	2.880	95.997	.979
	Trust 2	.977			
	Trust 3	.984			

As a result of the analysis, the factor loading values of the quality visualization effect, perceived product simplicity, perceived product information, and product trust measurement items were all over 0.7, all eigenvalues were over 1.0, and the explanatory power of variation explained by the factors was all over 50.0%, and the reliability and validity of the measurement tools were good. In addition, the Cronbach value, which

measures the internal consistency of measurement tools, was 0.856 for quality visualization effect, 0.991 for perceived product simplicity, 0.996 for perceived product information, and 0.979 for perceived product reliability, all of which were above 0.7, indicating that the internal consistency of measurement tools was also good.

5.3. Data Processing Method

In order to investigate the causal relationship between quality visualization effect, perceived product simplicity, perceived product awareness, and product trust, Model 6 of Process Macro 4.0, which improved the method of SPSS 22.0 and Baron & Kenny (1986), was applied. In addition, a frequency analysis was performed to identify the general characteristics of the sample, and an exploratory factor analysis was performed to analyze the reliability and validity of the measurement tool, and the Cronbach value was obtained. In addition, as a basic analysis, descriptive statistics of research variables were provided, and Pearson's correlation coefficient was presented to analyze the correlation between research variables. In addition, ANOVA (Analysis of Variance) was conducted to verify whether there was a significant difference in quality visualization effect, product quality, perceived product awareness, and product trust according to design type.

6. Empirical Analysis

6.1. Basic Analysis of Research Variables

〈Table 6〉 *Basis Analysis of Research Variables*

Variables	Visualization effect of quality	Perceived Product Simplicity	Perceived Product Information	Perceived product trust
Visualization effect of quality	1			
Perceived Product Simplicity	.554***	1		
Perceived Product Information	.495***	.612***	1	
Perceived Product Trust	.482***	.507***	.613***	1
m±s.e.	3.48±1.09	3.63±1.17	3.59±1.36	3.56±1.08

*** p<.001

<Table 6> shows Pearson correlation to identify the correlation between basic descriptive statistics such as quality visualization effect, perceived product clarity, perceived product awareness, and mean and standard deviation of product trust, which are research variables. This is a table summarizing the correlation coefficient. According to the table, perceived product clarity came out the highest with an average of 3.63, followed by perceived product awareness with an average of 3.59, product trust with an average of 3.56, and quality visualization effect with an average of 3.48. Looking at the correlation coefficients between variables, all of them were between 0.4 and 0.7, showing very high significant correlations.

6.2. Analysis of Differences in Research Variables According to Product Description Visualization Styles

〈Table 7〉 *Analysis of Differences in Research Variables according to Product Description Visualization Styles*

Variables	Visualization Styles	mean	standard deviation	F-value	Post-hoc test
Visualization effect of quality	Style 1	3.45	0.86	72.735***	3,6<1,4<2,5
	Style 2	4.41	0.46		
	Style 3	2.47	1.01		
	Style 4	3.58	0.71		
	Style 5	4.50	0.50		
	Style 6	2.48	0.71		
Perceived Product Simplicity	Style 1	3.64	0.61	110.530***	3,6<1,4<2,5
	Style 2	4.64	0.43		
	Style 3	2.33	1.20		
	Style 4	3.79	0.58		
	Style 5	4.86	0.32		
	Style 6	2.60	0.63		
Perceived Product Information	Style 1	3.41	1.08	97.753***	6,3<1,4<2,5
	Style 2	4.87	0.31		
	Style 3	2.46	1.23		
	Style 4	3.61	1.03		
	Style 5	4.89	0.00		
	Style 6	2.22	0.57		
Perceived Product Trust	Style 1	3.56	0.65	88.998***	3,6<1,4<2,5
	Style 2	4.41	0.44		
	Style 3	2.49	0.92		
	Style 4	3.76	0.90		
	Style 5	4.67	0.39		
	Style 6	2.54	0.69		

*** p<.001

<Table 7> shows the result of ANOVA to verify whether there is a significant difference in quality visualization effect, perceived product simplicity, perceived product awareness, and product trust by design type. As a result of the analysis, F=72.735 (p<.001) in quality visualization effect, F=110.530 (p<.001) in perceived product clarity, F=97.753 (p<.001) in perceived product awareness, and F=97.753 (p<.001) in product trust. There was a significant difference by design type with F=88.998 (p<.001). In the Sheffe post-test, design 1 and design 4 came out higher than design 3 and design 6, and design 2 and design 5 came out higher than design 1 and design 4. Although not significant, design 5 was slightly higher than design 2, and design 4 was slightly higher than design 1. In addition, when design 3 and design 6 are compared, design 6 is slightly higher than design 3 except for perceived product awareness.

6.3. Causal Relationship Verification

〈Table 8〉 *Casual Relationship Verification*

Steps	Dependent Variable	Independent Variable	β	t	p value	model statistics
1	Perceived Product Simplicity	Visualization effect of quality	.854	28.221	.000***	R^2=.730, F=796.398***
2	Perceived Product Information	Visualization effect of quality	.428	11.062	.000***	R^2=.881, F=1090.721***
		Perceived Product Simplicity	.547	14.142	.000***	

3	Perceived Product Trust	Visualization effect of quality	.251	5.381	.000***	R^2=..878, F=705.824 ***
		Perceived Product Simplicity	.385	7.587	.000***	
		Perceived Product Information	.337	5.704	.000***	

*** p<.001

In order to verify the causal relationship of the research model, model 6 of the process macro was applied. As a result of the analysis, the quality visualization effect had a significant positive (+) effect on perceived product simplicity with =0.854 (p<.001) as shown in <Table 8>. Therefore, hypothesis H2 was accepted. In addition, in perceived product information, the quality visualization effect had a significant positive (+) effect with =0.428 (p<.001), and the perceived product simplicity also had a significant positive (+) effect with =0.547 (p<.001).) had an influence. Therefore, hypotheses H3.1 and H3.2 were accepted. Meanwhile, in product trust, quality visualization effect =0.251 (p<.001), perceived product simplicity =0.385 (p<.001), and perceived product information =0.227 (p<.001), all with significant positive effects. (+) had an effect. Therefore, hypotheses H4.1, H4.2, and H4.3 were accepted.

6.4. Verification of Mediation Effect

〈Table 9〉 *Verification of Mediation Effect*

Route	Effect	BootSE	LCI	UCI
Visualization Effect of Quality -> Perceived Product Simplicity -> Perceived Product Trust	.329	.039	.249	.405
Visualization Effect of Quality -> Perceived Product Information -> Perceived Product Trust	.144	.030	.092	.207
Visualization Effect of Quality -> Perceived Product Simplicity -> Perceived Product Information -> Perceived Product Trust	.157	.031	.103	.225

<Table 9> shows the verification of mediation effect. Bootstrap was conducted to verify the mediating effect of perceived product simplicity and perceived product information between the quality visualization effect and product trust. At this time, the number of simulations was set to 5,000, and the confidence level of the confidence interval was set to 95%. First, the mediating effect of perceived product simplicity between quality visualization effect and product trust was =0.329, and the 95% confidence interval was [0.249, 0.405], which did not include 0, so the mediating effect of perceived product simplicity was significant. Hypothesis 5.1 was therefore accepted. In addition, the mediating effect of perceived product information between the quality visualization effect and product trust was =0.144, and the confidence interval was [0.092, 0.207], which did not include 0, so the mediating effect of perceived product information was also significant. Hypothesis H5.2 was therefore accepted. In addition, the mediating effect of perceived product simplicity and perceived product information between the quality visualization effect and product trust is =0.157, and the confidence interval is [0.103, 0.225], which

does not include 0, so the mediating effect of perceived product simplicity and perceived product information was noted. Therefore, Hypothesis H5.3 was also accepted.

7. Conclusion

Online shopping has been a convenient platform for purchasing groceries for a reduced time and cost; plus, ordering heavy items such as rice though online markets is even more convenient as it is delivered to the door. However, online food and grocery vendors need improvements in diverse aspects to include all generations of online shoppers, especially older adult consumers. Visual elements such as product display images to support the description of product details and quality can effectively support older adults in online food and grocery shopping through improved product quality trust. Providing such effective images will help generate trust and reliability in product quality, which can further relate to trust and reliability in online vendors with trustworthy content of effectively displayed products. In order for older adults to adapt to the online sales platform to conduct grocery shopping without much stress and frustration, the study has proven that utilization of adequate visual product quality description images can be a suggestion for effective product display designs in online sales environment. As for direct suggestions, the images below <Table 10> show the visualized comparison of the existing most commonly utilized visual description styles and the suggested visual description styles according to the result from this study. As the image 2 and image 4 in the below table demonstrates, composition of requested product quality information in a mixed banner format in either blank or stylized backgrounds will support in gaining trust in older adult consumers.

〈Table 10〉 *Display Image Suggestions According to the Result of the Study*

For Blank Background		For Stylized Background	
Existing (Image 1)	Suggestion (Image 2)	Existing (Image 3)	Suggestion (Image 4)
			

7.1. Implication of Study

The result of the study is beneficial information for rice product companies and online food and grocery vendors to gain consumer trust, which may further influence sales. Merchants first must gather consumer complaints and requests to analyze what product quality information is mostly requested, then visually ensure the consumers by providing such necessary details in a practical, simple, and concise format. In addition, the visualization style should be composed with multiple forms and shapes of visual information, such as mixed styles of banners, for improved cognition of product quality information.

7.2. Limitation and Proposal of Further Study

The study focused on rice products as one of the representative products in the heavy category in the food and grocery markets; because of this, rice products with content

weight over 10kg and up have been studied, and the results are not appliable to rice products sold in lighter weights.

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List of Figures

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