

The Effect of Website/Application Quality, Product Quality and Last Mile Delivery Quality on Customer Satisfaction and Loyalty in Online Grocery Shopping¹

Ayşe Doğa BULUT, ID 0000-0002-2723-8858

Hasan Kalyoncu University Faculty of Economics, Master Graduate, Türkiye, dogabulut@icloud.com

Ahmet ÇETİNDAS, ID 0000-0003-2262-4204

Hasan Kalyoncu University, Türkiye, ahmet.cetindas@hku.edu.tr

Abstract

The technological developments lead to many improvements in different industries. The retailers also improved their services by providing online shopping and home delivery services. This is also a result of COVID-19 pandemic that caused lockdowns, which boomed the home delivery and online shopping industry. In this context, online shopping services' ability to meet customer expectations depends on a good service quality. Service quality in online grocery shopping services is determined as website/application quality, product quality and last mile delivery quality. The effect of each quality dimension on customer satisfaction and loyalty was examined and website/application quality and last mile delivery quality affected customer satisfaction and loyalty. It was observed that product quality did not affect both dependent variables. In this context, retailers that offer online shopping and home delivery are recommended to have a simple and easy-to-understand interface and an accurate and fast delivery process.

Key Words: Online Grocery Shopping, Service Quality, Website/Application Quality, Product Quality, Last Mile Delivery Quality, Customer Satisfaction, Loyalty

1. Introduction

Online shopping services meet the needs of individuals living in urban areas who want their grocery shopping delivered to their designated locations which is generally their apartment or workplace. This is made possible through the internet, which acts as a quick channel for daily shopping activities. Additionally, the ability of consumers to conveniently search and compare product prices online through grocery stores website or mobile applications has been greatly enhanced by the evolution of Internet technology (Ganapathi and Shanab, 2020). The growth in the use of smartphones has also triggered the growth in the use of online shopping services (Thamaraiselvan, et al., 2019).

Mobile shopping has experienced a boom especially during the COVID-19 pandemic. As customers do not want to enter indoor areas and due to social distance rules, the need for home delivery services of grocery shopping has increased (Mehroliya, et al., 2020).

The online grocery shopping industry creates virtual retailers through websites and mobile applications and delivers the ordered products to the customers' door. Customers save time since they do not need to visit retailers and wait in queues. The ordering process involves searching for nearby grocery stores, filtering different product groups, and selecting a delivery location. Payment can be made by cash or other electronic methods (Ganapathi and Shanab, 2020). Online grocery shopping services use two different ways to deliver orders. Retailers deliver with their own couriers, or use a third-party delivery service provider (Ling, et al., 2021:191). In this study, retailers that provide their insourced last mile delivery services are investigated.

Many grocery items are "touch and feel" products that customers prefer to examine before purchasing. The information gained from physical stores, where people smell and touch fruits to assess whether they are fresh and ripe, cannot be done online (Jelassi, et al. 2001, Ives and Piccoli, 2002). The labor-intensive structure of online grocery

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shopping services needs to ensure customer satisfaction. Achieving customer satisfaction in the online grocery shopping services is only possible by providing high service quality.

The aim of the study is to examine consumers' quality perceptions of online grocery shopping and to determine the effect of each quality dimension on satisfaction and loyalty. The exploratory and confirmatory factor analysis, reliability analysis and normal distribution test proved the validity, reliability and normal distribution of the scales. Factor analysis was used to determine the quality dimensions in online grocery shopping services. The scale was validated with a 3-factor structure. These factors were determined as application quality, product quality and last mile delivery quality. These concepts are explained below.

1.1. Website/Application Quality

Web/Application quality has a great impact on customers' choice of online grocery shopping provider (Kedah, et al., 2015). The web/application serves as a shopping tool that allows customers to effectively compare prices between different products, shop comfortably in their spare time, and have the product delivered to them as soon as possible (Yeo, et al., 2017; Chang, et al., 2014).

Customers who shop online expect a high level of website/application quality (Caruana & Ewing, 2010). Website/application quality is crucial in retaining customers and ensuring their repeat visits and ultimately securing their loyalty. The success of online businesses is related to having a high-quality website or application (Parasuraman et al., 2005; Pee et al., 2018).

1.2. Product Quality

Product quality is defined as the characteristics of a product or service based on its ability to meet stated or implied customer needs (Kotler, et al., 2011). Product quality has also been defined as the consistency between the quality specification in the online store, and the actual quality of the physical product (Ahn, Ryu, & Han, 2004). Customers are likely to visit an online store that has a variety of high-quality products. If the product quality does not meet customers' expectations, customers do not find the online store useful and tend not to visit again. So it is clear that product quality is the characteristics of a product that contribute to its ability to meet customer needs (Handoko, 2016).

Product quality is a broad concept that includes the freshness, durability, appearance and packaging of the product in online grocery shops (Namkung and Jang, 2007). It is the responsibility of delivery drivers to maintain product quality during the delivery process (He, et al., 2019). In addition, it is important for retailers that offer mobile grocery shopping services to provide high quality products that not only meet the needs of consumers but are also comparable to competitors' products (Tribhuvan, 2020).

1.3. Last Mile Delivery Quality

Last mile delivery service includes all steps from purchasing to last mile delivery (Lee, 2017). Last mile Delivery service is one of the most important factors that determine the success of businesses in online shopping. In particular, unlike companies where customers purchase goods directly from physical stores, online shopping customers can only receive the products through a last-mile delivery service (Seo, Kwon, and Choi, 2013). This service can be offered by the company itself or purchased from third party courier providers.

Delivery time and quality in online grocery shopping play a crucial role in customer satisfaction and loyalty. There are two types of delivery methods used by retailers in online shopping. While some retailers collaborate with a third-party courier company, some handle the delivery task in-house. In this study, retailers that make their insourced deliveries were taken into consideration. The research question to be answered under this title is "Does the delivery quality of retailers' affect customer satisfaction and loyalty?" (Dholakia and Zhao, 2010).

2. Literature Review and Research Hypotheses

The hypotheses of the study were formulated by reviewing previous studies related to the topic, which are discussed in this section. Each hypothesis, along with the findings from previous research is explained in this section.

2.1. The Impact of Website/Application Quality on Satisfaction and Loyalty

In online shopping services, website/application quality has been mostly investigated in the food delivery industry (Lin et al., 2023; Yeo, et al., 2021; Alalwan, 2020). Many researchers have found that application quality affects

customer satisfaction and loyalty in the food delivery industry (Ganapathi and Shanab, 2020; Rita, et al., 2022). Kedah et al. (2015) conducted a research in Malaysia to examine the determinants of customer satisfaction and loyalty, including application quality. They found significant positive impact of application quality on customer satisfaction and loyalty.

There have also been studies examining mobile grocery shopping with the Technology Acceptance Model (TAM). It has been observed that perceived ease of use, perceived benefit and perceived pleasure are mostly effective in the acceptance of online grocery shopping applications (Bauerova and Klepek, 2018; Gutama and Intani, 2017; Kurnia and Chen, 2003).

To investigate the effect of website/application quality on customer satisfaction and loyalty in online grocery shopping, the first two hypotheses of the study were developed as follows.

H1: Website/Application quality positively affects customer satisfaction.

H2: Website/Application quality positively affects loyalty.

2.2. The Impact of Last Mile Quality on Satisfaction and Loyalty

Delivery service is considered as the driving force of customer satisfaction since it is the link in the supply chain that deals directly with customers (Hedin, et al. 2006). Many researchers have revealed that customer satisfaction is related to delivery performance (Yoopetch et al., 2022; Dholakia and Zhao, 2010).

Kerdngern, et al. (2021) validated service quality in online shopping in a 3-factor such as tangibles, assurance and empathy which have affected customer satisfaction. Handoko (2016) conducted a research with 100 participants to determine the impact of product quality and delivery service on online customer satisfaction and showed that both product quality and delivery service have significant effects on online customer satisfaction. Ziaullah, et al. (2014) analysed data from 415 e-retail customers to determine the impact of product quality and delivery services on e-trust, e-satisfaction and e-loyalty in China. As a result of the analysis, they stated that product quality and delivery services (i.e. product variety, quality, availability, reliable delivery, package security and on-time delivery) directly affect e-satisfaction and e-trust.

These studies show that there may be an impact of delivery quality on customer satisfaction and loyalty. Thus, the first two hypotheses of the study emerged as:

H3: Last mile delivery quality positively affects customer satisfaction

H4: Last mile delivery quality positively affects loyalty.

2.3. The Impact Product Quality on Satisfaction and Loyalty

Product quality is another consideration when it comes to online shopping. Since consumers can not touch and feel the products before purchase, quality has to be right from the beginning. Online shopping allows also to return unliked products to the seller. Sometimes comments made by other consumers on products can help to make the right decision. A product's basic quality is what customers anticipate from an excellent product or service (Schaupp and Bélanger, 2005). Improving the quality of the product will benefit customer satisfaction and loyalty.

Saad (2020) proved that product quality influences customers' decision to choose their online grocery shopping provider. Annaraud and Berezina (2020) found that product quality significantly affects customer satisfaction in online shopping. Handoko (2016) researched the online fashion retailer Zalora Indonesia and found that product quality has significant effects on online customer satisfaction.

Based on these findings from previous studies, the idea that product quality will affect customer satisfaction and loyalty came up, and the fourth and fifth hypotheses of the study were established as follows:

H5: Product quality positively affects customer satisfaction.

H6: Product quality positively affects the level of loyalty

3. Research Method

Due to the design of the study, quantitative research techniques were used. Within the scope of the data collected through surveys, exploratory and confirmatory factor analysis were conducted for each variable and the model was tested with structural equation model (SEM).

3.1. Research Model

The research model developed as a result of the literature review is given in Figure 1.

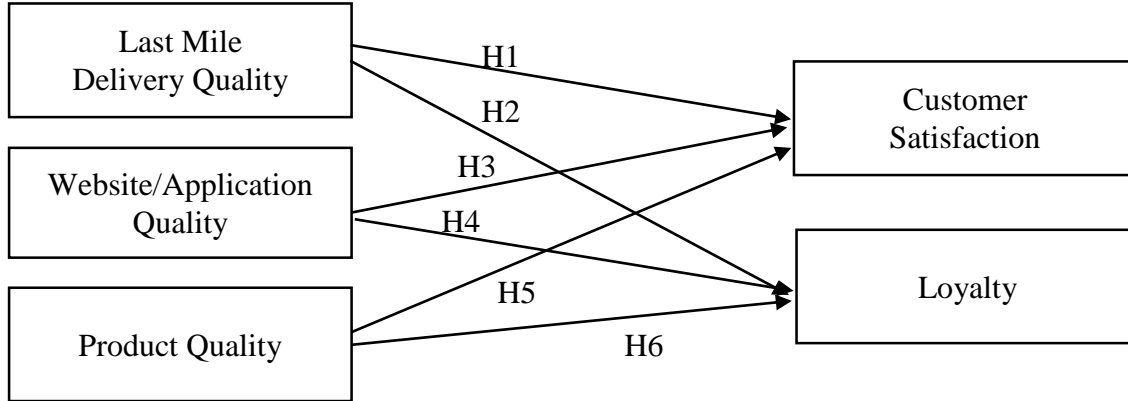


Figure 1. Research Model

3.2. Demographic Characteristics of the Research Sample

The research was conducted on adults who make grocery shopping through a website or a mobile application in Gaziantep. The study has obtained ethical approval according to the decision E-97105791-050.01.01-27775 dated 15 December 2022 of the Hasan Kalyoncu University Scientific Research and Publication Ethics Committee. The sample of the research consists of 357 participants selected from the population. The demographics of the participants are shown in table 1.

Table 1. Demographics of Participants

| <u>Gender</u> | <u>Frequency</u> | <u>Percentage</u> |
|------------------------|------------------|-------------------|
| Female | 156 | 43.7 |
| Male | 201 | 56.3 |
| Total | 367 | 100 |
| <u>Age</u> | <u>Frequency</u> | <u>Percentage</u> |
| 18-25 | 135 | 37.8 |
| 26-33 | 63 | 17.6 |
| 34-41 | 66 | 18.5 |
| 42-49 | 56 | 15.7 |
| More than 50 | 37 | 10.4 |
| Total | 357 | 100 |
| <u>Education</u> | <u>Frequency</u> | <u>Percentage</u> |
| Primary -Middle School | 7 | 2 |
| High School | 55 | 15.4 |
| Associate degree | 84 | 23.5 |
| Bachelor | 133 | 37.3 |
| Master/Phd | 78 | 21.8 |
| Total | 357 | 100 |
| <u>Income</u> | <u>Frequency</u> | <u>Percentage</u> |
| Less than 5. 500 TL | 88 | 24.6 |
| 5. 501- 8. 000 TL | 50 | 14 |
| 8. 001-11. 000 TL | 57 | 16 |
| 11. 001-15. 000 TL | 57 | 16 |
| More than 15. 001 TL | 105 | 29.4 |
| Total | 357 | 100 |
| <u>Profession</u> | <u>Frequency</u> | <u>Percentage</u> |
| Student | 96 | 26.9 |

| | | |
|----------------------------------|-------------------------|--------------------------|
| Civil servant/Worker | 133 | 37.3 |
| Private sector | 81 | 22.7 |
| Self-employment | 15 | 4.2 |
| Retired | 12 | 3.4 |
| Housewife | 15 | 4.2 |
| Unemployed | 5 | 1.4 |
| Total | 357 | 100 |
| <u>Marital Status</u> | <u>Frequency</u> | <u>Percentage</u> |
| Married | 180 | 50.4 |
| Single | 177 | 49.6 |
| Total | 357 | 100 |
| <u>Shopping Frequency</u> | <u>Frequency</u> | <u>Percentage</u> |
| All of it (%100) | 18 | 5 |
| More than the half (%75) | 49 | 13.7 |
| Half (%50) | 96 | 26.9 |
| Less than the half (%25) | 194 | 54.3 |
| Total | 357 | 100 |
| <u>Online Shop</u> | <u>Frequency</u> | <u>Percentage</u> |
| Getir | 121 | 0.34 |
| Migros | 88 | 0.24 |
| A101 | 59 | 0.17 |
| Cepte Şok | 26 | 0.08 |
| Bim | 28 | 0.08 |
| Macronline | 30 | 0.08 |
| Oli | 5 | 0.01 |
| Total | 357 | 100 |

3.4. Research Scales

The scales of the study aim to measure the quality of online ordering services of retailers. These scales were adapted from previous studies. Although a direct scale has not been found, inferences from previous studies and expert opinion have concluded that the quality of this service consists of 3 stages. The sources of the scales are shown in table 2. Quality dimensions in online grocery shopping service have been determined as website/application quality, product quality and last mile delivery quality.

Table 2. Quality Dimensions in Online Shopping Services

| Scale | Source |
|-----------------------------|--|
| Last Mile Delivery Quality | Shipman (2019) ve Yoopetch, vd., (2022) |
| Website/Application Quality | Shipman (2019) |
| Product Quality | Shipman (2019), Yoopetch, vd., (2022) ve Sidharta, vd., (2021) |

Furthermore, the customer satisfaction scale used in the study was taken from the Shipman (2019), and the loyalty scale from Chou and Lu (2009). In the translation process, 4 English speaking academicians and 1 English linguist were used. Firstly, the scales were translated into Turkish by 3 of these experts. Then, the scales were retranslated to English by 2 of the experts. The original English items and the items translated from Turkish to English were checked. So the decision has been made for the final scales. The translated scales were asked to the participants on a 5-point Likert scale, as in the original studies.

3.5. The Construct Validity and Reliability of Scales

First, the construct validity and reliability of the scales were tested by applying exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and reliability analyses.

EFA results of the Quality scale in online grocery shopping are given in Table 3.

Table 3. Service Quality in Online Grocery Shopping Scale Factor Loadings and Reliability Analysis

| Items | Last Mile Delivery Quality | Website/Application Quality | Product Quality |
|--|----------------------------|-----------------------------|-----------------|
| LM6: Delivery time is convenient and reasonable. | .852 | | |

| | |
|---|------|
| LM7: Delivery time is reliable. | .837 |
| LM2: Products are delivered at the promised time | .774 |
| LM8: I can reach the company employees when I want to make changes to my order. | .602 |
| LM4: Products sent from the retailer are well packaged | .526 |
| LM5: Couriers deliver products efficiently | .523 |
| <hr/> | |
| W/A3: I can find all the detailed information I need on website/application | .781 |
| W/A4: The information on the website/application is well organized | .757 |
| W/A5: The website/application is visually appealing | .752 |
| W/A6: I found the website/application easy to navigate | .724 |
| W/A2: The information provided on the website/application can be easily understood | .662 |
| W/A7: The website/application is user friendly | .622 |
| <hr/> | |
| PQ4: The quality of the products is well maintained. | .757 |
| PQ7: Products are well presented | .750 |
| PQ6: The products sent are fresh. | .734 |
| PQ3: Products are delivered without any errors | .726 |
| PQ2: The website/application offers healthy products | .703 |
| PQ5: The way products are packaged prevents leakage and contamination | .684 |
| PQ1: The delivered products are compatible with the images on the website/application | .646 |
| PQ8: The website/application offers a wide variety of products. | .581 |
| <hr/> | |
| KMO: 0.953 Total Variance Explained: % 68.525 | |

The results of the first EFA showed some cross-loadings between the statements LM1, LM3 and W/A1. When the EFA was applied again without these items, the 3 dimensional scale showed a perfect fit. Factor loadings of the dimensions were obtained between 0.525 and 0.852 for last mile delivery quality, 0.622 and 0.781 for website/application quality, and 0.581 and 0.757 for product quality. KMO value was found to be 0.953 and $p < 0.01$. It was determined that the scale explained 68.525% of the total variance. As a result of the reliability analysis, the alpha coefficient was found to be 0.0.902. These findings determine the validity and reliability of the scales.

EFA results of the Customer Satisfaction Scale are given in Table 4.

Table 4: Customer Satisfaction Scale Factor Loadings and Reliability Analysis

| Items | Customer Satisfaction |
|--|-----------------------|
| CS2: The experience while using the Online grocery shopping website/application meets my expectations. | .934 |
| CS1: I am satisfied with the use of the online grocery shopping website/application. | .896 |
| CS4: Online grocery shopping website/application meets all my expectations. | .892 |
| CS3: I am satisfied with the tenants of the online grocery shopping website/application. | .887 |
| KMO: . 0.825 Total Variance Explained: % 81.46 | |

The outcome of EFA indicated the factor loadings of the customer satisfaction scale between 0.887 and 0.934 and KMO value as 0.825 ($p < 0.01$). The scale explained 81.46% of the total variance. As a result of the reliability analysis, the alpha coefficient was found to be 0.924. These findings determine the validity and reliability of the scale.

The EFA and reliability analysis results of the loyalty scale are given in Table 5.

Table 5: Loyalty Scale Scale Factor Loadings and Reliability Analysis

| Items | Loyalty |
|--|---------|
| L8: I have said positive things to other people about this online grocery shopping website/application. | .927 |
| L9: I encourage other people to use the services of this online grocery shopping website/application. | .900 |
| L5: I recommend this online grocery shopping website/application to others. | .881 |
| L6: I will continue to use the home delivery services of this online grocery shopping website/application in the future. | .873 |
| L7: I consider this online grocery shopping website/application to be my first choice for home delivery services. | .859 |

KMO: 0.884 Total Variance Explained: % 78.89

The outcome of EFA indicated the factor loadings of the loyalty scale between 0.859 and 0.927 and KMO value as 0.884 ($p < 0.01$). The scale explained 78.90% of the total variance. As a result of the reliability analysis, the alpha coefficient was found to be 0.933. These findings determine the validity and reliability of the scale.

After EFA and reliability analysis, CFA was applied. As a result of CFA, the fit values obtained for the scales are given in Table 6.

Table 6: CFA Fit Values

| Variable | CMIN | DF | CMIN/DF | GFI | NFI | TLI | RMSEA |
|---------------------------------|--------|-----|---------|-------|-------|-------|-------|
| Online Grocery Shopping Quality | 516.02 | 165 | 3.127 | 0.876 | 0.909 | 0.927 | 0.077 |
| Customer Satisfaction | 52.782 | 18 | 2.932 | 0.969 | 0.983 | 0.978 | 0.074 |
| Loyalty | 5.612 | 4 | 1.403 | 0.994 | 0.996 | 0.997 | 0.034 |

The CFA results showed that the scales proved acceptable fit values (Bayram, 2013; Civelek, 2018). After EFA, CFA and reliability analysis, correlation analysis was performed to see the relationship between the variables. Findings regarding the correlation analysis are given in Table 7.

Table 7: Correlation Analysis

| Variable | Mean | Std. Devi. | Last Mile Delivery Quality | Website/ Application Quality | Product Quality | Customer Satisfaction | Loyalty |
|------------------------------|-------|------------|----------------------------|------------------------------|-----------------|-----------------------|---------|
| Last Mile Delivery Quality | 3.888 | .971 | 1 | | | | |
| Website/ Application Quality | 3.983 | .853 | .787** | 1 | | | |
| Product Quality | 3.867 | .915 | .789** | .792** | 1 | | |
| Customer Satisfaction | 3.922 | .868 | .830** | .759** | .719** | 1 | |
| Loyalty | 3.804 | .997 | .694** | .688** | .656** | .759** | 1 |

As a result of the correlation analysis, it was determined that there was a correlation in the same direction between the variables at the 0.01 significance level.

3.6. Structural Equation Model (SEM)

The hypotheses developed in the study were tested with the SEM. The model is presented in Figure 2, the SEM fit values are presented in Table 6. Finally the results of the analyzes are presented in Table 8.

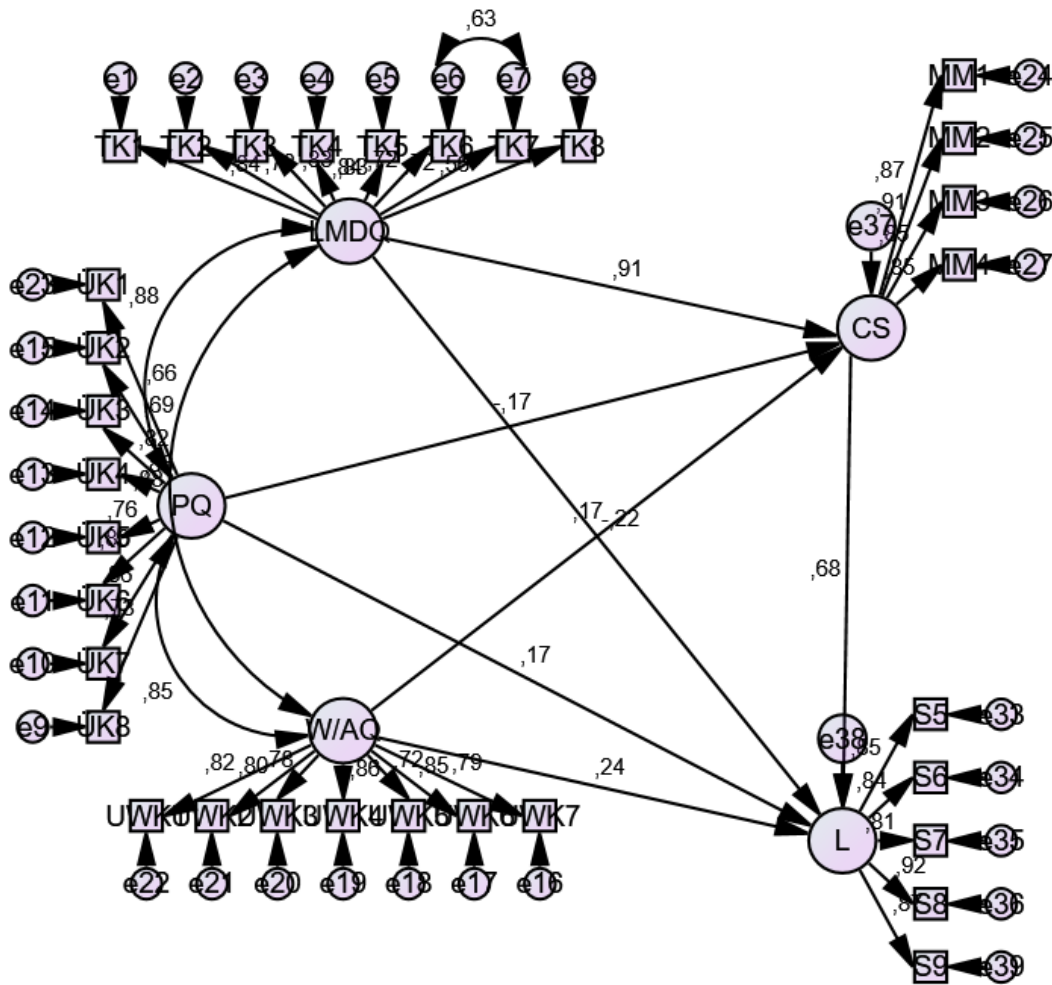


Figure 2: Structural Equation Model (SEM)

Table 8: SEM Goodness of Fit Values

| Analysis | CMIN | DF | CMIN/DF | GFI | NFI | TLI | RMSEA |
|----------|---------|-----|---------|-------|-------|-------|-------|
| SEM | 1343.37 | 453 | 2.965 | 0.809 | 0.877 | 0.906 | 0.074 |

As a result of CFA, it was found that the scales provided acceptable goodness of fit values. Table 9 shows the analysis results.

Table 9: SEM Analysis Results

| | Path | | Std. β | Std. Error | C.R. | P |
|-----------------------|------|------------------------------|--------------|------------|--------|-------|
| Customer Satisfaction | → | Last Mile Delivery Quality | 0.817 | 0.099 | 8.268 | *** |
| Sadakat | → | Last Mile Delivery Quality | 0.669 | 0.116 | 5.747 | *** |
| Customer Satisfaction | → | Website/ Application Quality | 0.247 | 0.078 | 3.159 | 0.002 |
| Loyalty | → | Website/ Application Quality | 0.313 | 0.105 | 2.970 | 0.003 |
| Customer Satisfaction | → | Product Quality | -0.207 | 0.092 | -2.257 | 0.224 |

| | | | | | | |
|---------|---|-----------------|--------|-------|--------|-------|
| Loyalty | → | Product Quality | -0.096 | 0.118 | -0.814 | 0.416 |
|---------|---|-----------------|--------|-------|--------|-------|

As a result of the analysis, last mile delivery quality and website/application quality significantly affected both customer satisfaction and loyalty positively (H1, H2, H3, H4 were accepted). No effect of product quality on customer satisfaction and loyalty was observed (H5, H6 were rejected).

Conclusion

Technological developments, which have a significant impact on our daily lives and save people time by making some tasks easier. Nowadays, where new technological developments occur every day, businesses adapt their processes according to these innovations. E-Commerce emerged in this way and has become an indispensable part of our lives, as seen during the COVID-19 epidemic.

Nowadays, almost every product is available online. Also most of the service sector is provided online. These include second-hand shopping, real estate, retail, etc. The focus of this study is the retail industry. In this study, online shopping and home delivery services of retailers are examined. The questionnaire consists of 3 parts. The first part contains questions to determine the demographic characteristics of consumers. The second part contains questions to measure consumers' perceptions of the 3 quality dimensions. In the last part questions about consumers' satisfaction and loyalty levels were asked. The data is collected by the convenience sampling method and consists of 357 people.

The majority of participants stated that they do less than half (25%) of their grocery shopping online. Most of the participants in the research are male, and the highest age group is 18-25 years old. While the majority of participants have bachelor degree; the group with the highest income level is over 15.000 TL. This income level corresponds to three minimum wages in 2022. It can be said that those who use online grocery shopping are middle-high income people. It was determined that most of the participants in the study were married. Finally, when the professional groups of the participants were examined, it was determined that the highest number of participants were civil servants.

The results of the SEM showed that website/application quality and last mile delivery quality significantly positively affects both customer satisfaction and loyalty (H1, H2, H3, H4 were accepted). Similar results were also found by previous studies (Ganapathi and Shanab, 2020, Rita, et al., 2022). Product quality on the other hand, had no effect on customer satisfaction and loyalty (H5, H6 were rejected). The reason for these insignificancies could be that groceries in Gaziantep sell more or less the same products and brands. Thus, online grocery consumers did not see a difference between groceries in terms product quality. Another reason could be that online grocery shopping consumers are also shopping face-to-face from the same retailer. So the perception about product quality may have arisen in face-to-face shopping beforehand. Thus, it can be said that customers have prior knowledge about the quality of the products. Therefore, product quality did not affect satisfaction and loyalty in online grocery shopping.

Research results have shown that retailers offering online grocery shopping services can achieve customer satisfaction and loyalty through improving their website and application quality. Retailers who will expand their services in this field are recommended to have a simple and easy-to-understand interface and a accurate and fast delivery process.

Kaynakça

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