

## **The Effect of E-Service Quality and E-Trust on E-Customer Satisfaction and E-Customer Loyalty on Users of E-Pharmacy K24klik in Indonesia**

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**ABSTRACT:** The rapid development of information technology and mobile applications has become a trend in facilitating various daily activities, including in terms of health services. The K24KLIK e-pharmacy application is one form of digital health technology advancement. This study aims to determine the effect of e-service quality and e-trust on e-customer satisfaction and e-customer loyalty of K24KLIK e-pharmacy users in Indonesia. The research method used is a survey with a quantitative approach, where data is collected through a questionnaire distributed to consumers who have made transactions 2 or more times within a period of 6 months on the K24Klik application. The number of respondents used as samples is 300 respondents. The data is processed using the SEM-PLS analysis technique with the Smart PLS application version 4.0. The results of the study found that e-service quality (website appearance, ease of use, reliability, security, personalization, fulfilment and responsiveness) has a positive and significant effect on e-satisfaction, e-trust has a positive and significant effect on e-satisfaction, e-trust has a positive and significant effect on e-loyalty, and e-satisfaction has a positive and significant effect on e-loyalty. The results of this study are expected to provide insight into the importance of e-service quality and e-trust for customer satisfaction and loyalty in the context of e-pharmacy services. The results of this study also provide managerial implications for e-pharmacy managers to improve service strategies and build better relationships with customers, in order to increase competitiveness and business sustainability in the digital era.

**KEYWORDS:** E-service quality, E-trust, e-satisfaction, e-loyalty, e-pharmacy, K24Klik, website appearance, ease of use, reliability, security, personalisation, fulfilment and responsiveness

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### **I. INTRODUCTION**

The rapid advancement of communication and technology has given rise to new media, most notably the internet (Rosana, 2010). The internet has fundamentally altered societal behaviors, cultural norms, and modes of thinking. In Indonesia, internet penetration reached 79.5% in 2024, with 221.5 million users out of a population of 278.6 million (APJII, 2024). This widespread internet access has significantly impacted various sectors, including education, the economy, and especially healthcare (Trilenda, 2023). One major development is the growth of electronic commerce (e-commerce), with the health sector experiencing a notable surge (Wisnel, 2022; Trilenda, 2023). A key innovation in this area is the emergence of electronic pharmacy (e-pharmacy) platforms, which allow consumers to purchase medications and health products via internet-connected devices. These platforms offer several advantages, including convenience, speed, cost-effectiveness, privacy, and broader product availability (Rachman, 2023). As public awareness grows, pharmacies in Indonesia are increasingly recognizing the commercial potential of such digital services. E-pharmacies are becoming essential in meeting the needs of digitally literate consumers and patients with chronic conditions. By enabling price comparisons, user reviews, and product access across multiple devices, these platforms can enhance pharmacy traffic and revenue. However, e-pharmacy operations must comply with national regulations such as Permenkes No. 9/2017, No. 73/2016, No. 31/2016, and No. 26/2018.

Despite the proliferation of e-pharmacy services, public utilization remains suboptimal. Many users lack knowledge or confidence in using these platforms, posing a challenge for industry stakeholders to deliver effective educational campaigns and involve licensed pharmacists in user outreach. One prominent platform, K24Klik, leads Indonesia's e-pharmacy market with 5.86 million monthly visits in 2024. Launched in 2016 by PT K-24, this service enables 24/7 medicine ordering and health consultations, offering multiple payment and delivery options, including One-Hour and One-Day Delivery (<https://www.k24klik.com>, 2025). While K24Klik has won accolades such as the Top 20 Franchisee Satisfaction Award 2023, consumer reviews still highlight issues

# **The Effect of E-Service Quality and E-Trust on E-Customer Satisfaction and E-Customer Loyalty on Users of E-Pharmacy K24klik in Indonesia**

such as application glitches, delivery delays, and transaction difficulties—factors that can undermine trust and satisfaction. "E-loyalty results from a process initiated through perceived e-service quality and enhanced by trust, leading to customer satisfaction, repurchase intentions, and positive word-of-mouth" (Putri, 2024). Satisfied customers are more likely to remain loyal (Ashiq & Hussain, 2024), and e-customer satisfaction is crucial in shaping these outcomes. As Kotler & Keller (2016) state, satisfaction arises when perceived benefits meet or exceed expectations. Thus, enhancing user experience and maintaining product reliability are vital for sustaining e-trust, which reflects customers' belief in the website's capacity to deliver a secure and satisfactory shopping experience (Wu et al., 2018).

## **II. LITERATURE REVIEW**

### **A. ELECTRONIC PHARMACY ( E-FARMASI )**

E-pharmacy refers to digital pharmacies that offer pharmaceutical services through online platforms. These services typically include the sale of prescription and non-prescription drugs, medical equipment, cosmetics, food and beverages, as well as health consultations. It has been suggested that the primary appeal of e-pharmacies lies in their ability to ensure safety while delivering high-risk medical products, functioning similarly to conventional pharmacies (Jain, 2023). Moreover, e-pharmacies allow patients to obtain medications without the need to visit clinics or hospitals for consultation with doctors or pharmacists.

By delivering required medicines directly to patients' homes, e-pharmacies enhance access to pharmaceuticals for individuals who are unable to travel to healthcare facilities due to financial constraints or limited accessibility (Agarwal & Parkhi, 2021). Most users of e-pharmacy applications possess a high level of technological literacy and opt for such platforms primarily for their convenience (Agarwal & Parkhi, 2021). Furthermore, users' willingness to engage in pharmaceutical transactions via e-pharmacy applications is significantly influenced by their satisfaction with the services provided (Chakraborty & Paul, 2023).

### **B. E-SERVICE QUALITY**

E-service quality refers to the ability of online platforms to facilitate effective and efficient shopping, purchasing, and distribution activities via the internet (Purwanvto, 2022). It reflects the overall customer evaluation of service performance delivered virtually. As noted by Jameel (2021), e-service involves a two-way mechanism in which marketers offer personalized goods and services based on consumer data. From a customer standpoint, internet-based services provide greater efficiency in terms of time and cost, as well as ease of access to information and smooth transactions. These features—supported by adequate infrastructure and secure data systems—form the foundation for customer satisfaction (Juwaini, 2022). E-service quality serves as a strategic tool for businesses to build customer value, satisfaction, and loyalty, ultimately enhancing profitability (Çelik, 2021). In the e-commerce context, it encompasses the entire customer journey, including pre-purchase evaluation, product acquisition, and post-purchase activities. According to Olaleye (2021), improving e-service quality positively impacts customer satisfaction, retention, and long-term brand loyalty.

Ighomereho et al. (2022) developed the E-SERVQUAL model to assess e-service quality through seven core dimensions. Website Appearance encompasses all aspects of user experience related to the site's content, aesthetics, product selection, personalization, and usability, playing a critical role in shaping customer perceptions (Fattah, 2022; Rita, 2019). Ease of Use is considered essential, as simple and intuitive digital platforms enhance user behavior and satisfaction; conversely, complex systems deter usage (Narteh, 2015; Al-Hawary & Al-Smeran, 2017; Mumin, 2014). Reliability, defined as the accurate and consistent delivery of promised services, is a key determinant of customer satisfaction and trust in e-services (Yousaf, 2014; Narteh, 2015).

Security safeguards customers' personal data and builds trust by minimizing risks associated with cyber threats (Sarjita, 2020). Personalization enhances user experience by tailoring content and offerings based on user preferences, thereby strengthening customer loyalty (Kaynama & Black, 2000; Poon & Lee, 2012; Ojasalo, 2010; Ighomereho et al., 2022). Fulfillment refers to the accurate and timely delivery of products and services, aligning outcomes with what the website promises (Zeithaml et al., 2002; Ahmed, 2020). Lastly, Responsiveness, or the platform's ability to quickly address customer inquiries and problems, is a critical driver of customer satisfaction and positive service perception (Ighomereho et al., 2022).

**H1a: Website appearance has a significant effect on e-satisfaction. H1b: Ease of use has a significant effect on e-satisfaction.**

**H1c: Reliability has a significant effect on e-satisfaction. H1d: Security has a significant effect on e-satisfaction.**

**H1e: Personalization has a significant effect on e-satisfaction. H1f: Fulfillment has a significant effect on e-satisfaction.**

**H1g: Responsiveness has a significant effect on e-satisfaction.**

# **The Effect of E-Service Quality and E-Trust on E-Customer Satisfaction and E-Customer Loyalty on Users of E-Pharmacy K24klik in Indonesia**

## **C. E-TRUST**

Trust is defined as a consumer's descriptive belief about a subject (Kotler, 2016). In the online context, e-trust represents the consumer's confidence in initiating and completing online transactions (Hanifati & Samiono, 2018). It involves the perception that an e-commerce platform is reliable for online purchases. To foster trust, online vendors must provide accurate, clear, and complete information, demonstrating a commitment to quality service (Fernández-Bonilla, 2022). Customers expect sellers to act in their best interest, maintain transactional honesty, and fulfill their promises regarding goods and services. According to Oliver (1999), there are three factors that form a person's trust, namely Ability, Benevolence, Integrity.

When customers trust an online platform, they develop a sense of satisfaction (Juwaini, 2022). Building customer trust electronically on online platforms ultimately leads to customer loyalty (Ashiq and Husain, 2024). Suariedewi (2020) stated that e-trust has an effect on e-loyalty, where the greater the consumer's trust in an online business, the more loyal the consumer will be. Trust is the most important actor for customers in deciding to make purchases in an online context (Ashiq and Hussain, 2024)

**H2 = E-Trust has a significant effect on E-satisfaction .**

**H3 = E-Trust has a significant effect on E-customer loyalty**

## **D. E-SATISFACTION**

E-Satisfaction is the accumulation of satisfaction that consumers get every time they make a purchase and experience using goods or services over time on an online site. E-Satisfaction is when products and services exceed consumer expectations, the level of buyer satisfaction after comparing the experience and expectations felt with the post-purchase experience. E-Customer satisfaction is also interpreted as the result of consumer perceptions of online convenience, trading/transaction methods, site design, and services provided (Maulida and Utami, 2022). E-customer satisfaction is the result of consumer evaluation regarding whether or not consumer expectations are met based on the transaction experience on the application (Akbar, 2017).

E-customer satisfaction can be measured using dimensions developed by According to Szymanski and Hise (2000), Convenience, Refers to consumers not having to leave home or travel to make transactions online. Merchandising, Refers to the many superior alternatives that can increase the possibility that consumer needs can be met and satisfied. Website Design, Refers to reports that website design is about good organization and is not difficult to find. Security, Refers to the emphasis on security. Serviceability, Refers to feedback Refers to general feedback. According to research by Khristianto and Suyadi (2012), it is emphasized that when customers feel higher satisfaction on an online platform, they tend to show loyalty to the business. In Pasaribu's research (2022), a positive correlation was found between customer satisfaction and loyalty.

**H4 = E-satisfaction has a significant effect on E-customer loyalty**

## **E. E-LOYALTY**

Customer loyalty entails a long-term commitment, reflected in repeated purchases and advocacy behavior (Hidayati, 2021). Loyal customers not only continue buying from a company but also recommend its products and services to others. E-loyalty extends traditional loyalty into the online domain, incorporating behaviors unique to digital consumer engagement. According to Scheffer and Reichheld (Suhari, 2003), e-loyalty is influenced by factors such as reliable customer support, timely delivery, clear product presentation, reasonable shipping costs, and trusted privacy practices. Ting (2016) emphasizes that e-loyalty is built upon e-service quality and e-trust, which together enhance customer satisfaction. Over time, consistent positive experiences lead to repeated purchases and the transformation of customers into brand advocates (Khristianto & Suyadi, 2012). According to Oliver, (1999), customer loyalty stages are divided into four stages, namely Cognitive Loyalty, Affective Loyalty, Conative Loyalty, Action Loyalty. There are 5 dimensions of e-loyalty (Anderson & Srinivasan, 2003), Positive word of mouth, Recommend to others, Encourage others to use, First choice for future, Do more business future. Therefore, consumer loyalty is something that can be relied on to predict future growth for a company.

# The Effect of E-Service Quality and E-Trust on E-Customer Satisfaction and E-Customer Loyalty on Users of E-Pharmacy K24klik in Indonesia

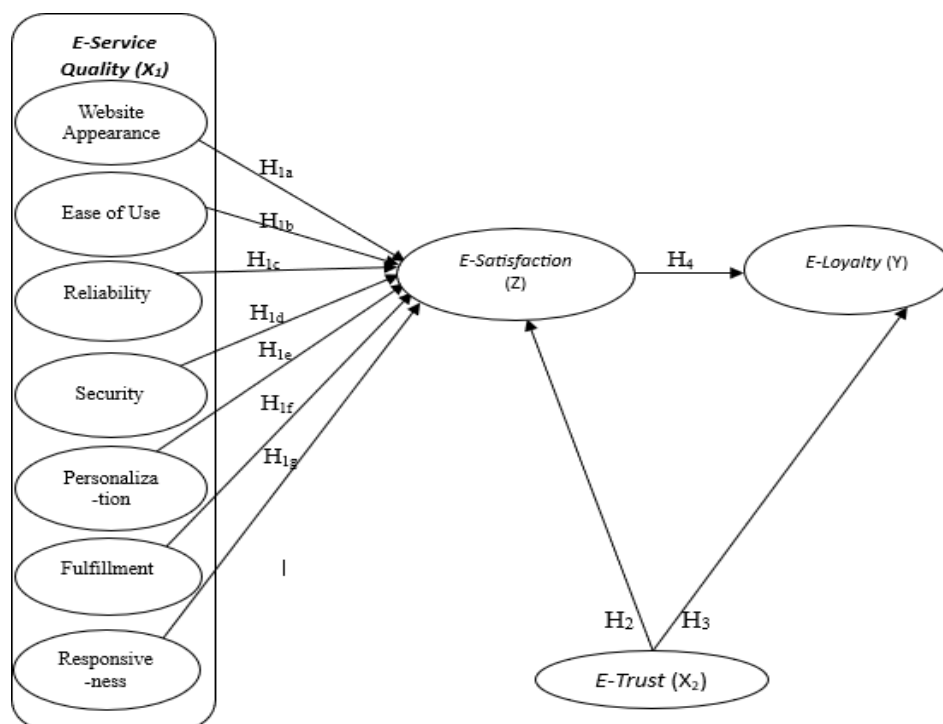


Figure 1. Framework

## III. METHODOLOGY

This research employs a quantitative approach, where data analysis is performed using statistical methods aimed at testing the predetermined hypotheses (Hair & Brunsveld, 2019). Based on the time dimension, this study is categorized as a cross-sectional study, wherein data is collected from each sample within the population during a single period (Sekaran & Bougie, 2016). This study uses both primary data, obtained directly from questionnaires distributed to selected sample respondents (Suliyanto, 2018), and secondary data, acquired from external sources such as research reports, survey books, newspapers/magazines, documentation, or official archives.

According to Sugiyono (2016), a population is defined as a generalization region consisting of objects or subjects with specific characteristics set by the researcher to be studied and drawn as conclusions. The target population in this study consists of users of the K24Klik e-pharmacy service in Indonesia. The sampling technique employed is non-probability sampling, specifically purposive sampling, where the elements of the population do not have a known or equal chance of being selected (Sekaran, 2009). Following Hair (2019)'s guideline for determining the minimum sample size for Structural Equation Modeling (SEM), this study includes 300 respondents who are K24Klik e-pharmacy users.

## IV. RESULT AND DISCUSSION

This study utilizes the Partial Least Squares Structural Equation Modeling (SEM-PLS) method, processed through SmartPLS version 4. The analysis includes evaluation of the measurement model (outer model)—involving convergent validity, discriminant validity, and reliability testing—followed by the structural model (inner model) analysis and hypothesis testing.

### A. CONVERGENT VALIDITY AND DISKRIMINANT VALIDITY TEST

Convergent validity for reflective constructs is evaluated using outer loadings and Average Variance Extracted (AVE). An outer loading value above 0.70 indicates that the construct explains more than 50% of the variance in its indicators (Hair, 2019). AVE values should exceed 0.50, demonstrating that the latent factor explains at least half of the indicator variance (Hair, 2019).

# The Effect of E-Service Quality and E-Trust on E-Customer Satisfaction and E-Customer Loyalty on Users of E-Pharmacy K24klik in Indonesia

**Table 1. Convergent Validity Test Result**

| Variable                | Indicator | Loading Factor | AVE   | Decision |
|-------------------------|-----------|----------------|-------|----------|
| Website Appearance (WA) | WA1       | 0.900          | 0.800 | Valid    |
|                         | WA2       | 0.885          |       | Valid    |
|                         | WA3       | 0.898          |       | Valid    |
| Ease of use (EOU)       | EOU1      | 0.918          | 0.824 | Valid    |
|                         | EOU2      | 0.879          |       | Valid    |
|                         | EOU3      | 0.926          |       | Valid    |
| Reliability (RLB)       | RLB1      | 0.931          | 0.810 | Valid    |
|                         | RLB2      | 0.864          |       | Valid    |
|                         | RLB3      | 0.903          |       | Valid    |
| Security (SCY)          | SCY1      | 0.906          | 0.809 | Valid    |
|                         | SCY2      | 0.897          |       | Valid    |
|                         | SCY3      | 0.894          |       | Valid    |
| Personalisation (PRS)   | PRS1      | <b>0.935</b>   | 0.852 | Valid    |
|                         | PRS2      | 0.907          |       | Valid    |
|                         | PRS3      | 0.927          |       | Valid    |
| Fulfilment (FUL)        | FUL1      | 0.875          | 0.773 | Valid    |
|                         | FUL2      | 0.886          |       | Valid    |
|                         | FUL3      | 0.877          |       | Valid    |
| Responsiveness (RESP)   | RESP1     | <b>0.827</b>   | 0.721 | Valid    |
|                         | RESP2     | 0.845          |       | Valid    |
|                         | RESP3     | 0.875          |       | Valid    |
| E-Trust (TRU)           | TRU1      | 0.912          | 0.813 | Valid    |

As shown in Table 1, all factor loadings exceed 0.7 and AVE values surpass 0.5, indicating that all indicators are valid and effectively measure their respective latent variables.

Discriminant validity is assessed through Fornell-Larcker Criterion, Cross Loadings, and the Heterotrait-Monotrait Ratio (HTMT). A latent variable is said to better predict its indicators than others when the correlation between a variable and its indicators is higher than with other variables (Hair et al., 2019). In the cross loading assessment, an indicator meets discriminant validity if its loading on its associated construct is higher than on others.

**Table 2. Cross Loading Result**

|       | ECS   | ELYL  | EOU   | FUL   | PRS   | RESP  | RLB   | SCY   | TRU   | WA    | max   |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| ECS1  | 0.877 | 0.663 | 0.673 | 0.671 | 0.690 | 0.647 | 0.607 | 0.673 | 0.686 | 0.668 | 0.877 |
| ECS2  | 0.893 | 0.725 | 0.688 | 0.694 | 0.673 | 0.664 | 0.661 | 0.688 | 0.671 | 0.685 | 0.893 |
| ECS3  | 0.893 | 0.677 | 0.705 | 0.666 | 0.688 | 0.690 | 0.672 | 0.673 | 0.694 | 0.707 | 0.893 |
| ELYL1 | 0.684 | 0.878 | 0.657 | 0.617 | 0.647 | 0.637 | 0.639 | 0.650 | 0.659 | 0.663 | 0.878 |
| ELYL2 | 0.672 | 0.876 | 0.672 | 0.661 | 0.634 | 0.619 | 0.641 | 0.658 | 0.660 | 0.665 | 0.876 |
| ELYL3 | 0.697 | 0.894 | 0.715 | 0.705 | 0.710 | 0.659 | 0.670 | 0.707 | 0.683 | 0.703 | 0.894 |
| EOU1  | 0.703 | 0.705 | 0.918 | 0.672 | 0.685 | 0.682 | 0.638 | 0.673 | 0.666 | 0.723 | 0.918 |
| EOU2  | 0.681 | 0.702 | 0.879 | 0.673 | 0.702 | 0.691 | 0.599 | 0.696 | 0.691 | 0.677 | 0.879 |
| EOU3  | 0.728 | 0.696 | 0.926 | 0.665 | 0.681 | 0.689 | 0.643 | 0.679 | 0.675 | 0.709 | 0.926 |
| FUL1  | 0.683 | 0.647 | 0.610 | 0.875 | 0.632 | 0.631 | 0.629 | 0.669 | 0.640 | 0.668 | 0.875 |
| FUL2  | 0.672 | 0.682 | 0.677 | 0.886 | 0.682 | 0.655 | 0.618 | 0.663 | 0.647 | 0.685 | 0.886 |
| FUL3  | 0.655 | 0.648 | 0.660 | 0.877 | 0.636 | 0.628 | 0.630 | 0.635 | 0.625 | 0.679 | 0.877 |
| PRS1  | 0.710 | 0.707 | 0.724 | 0.684 | 0.935 | 0.662 | 0.696 | 0.702 | 0.675 | 0.705 | 0.935 |
|       | ECS   | ELYL  | EOU   | FUL   | PRS   | RESP  | RLB   | SCY   | TRU   | WA    | max   |

## The Effect of E-Service Quality and E-Trust on E-Customer Satisfaction and E-Customer Loyalty on Users of E-Pharmacy K24klik in Indonesia

|       |       |       |       |       |       |              |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|--------------|-------|-------|-------|-------|-------|
| PRS2  | 0.704 | 0.693 | 0.669 | 0.659 | 0.907 | 0.645        | 0.653 | 0.642 | 0.664 | 0.673 | 0.907 |
| PRS3  | 0.717 | 0.683 | 0.708 | 0.703 | 0.927 | 0.659        | 0.685 | 0.675 | 0.681 | 0.686 | 0.927 |
| RESP1 | 0.625 | 0.611 | 0.608 | 0.588 | 0.577 | <b>0.827</b> | 0.548 | 0.588 | 0.582 | 0.587 | 0.827 |
| RESP2 | 0.637 | 0.612 | 0.669 | 0.583 | 0.592 | 0.845        | 0.588 | 0.585 | 0.620 | 0.606 | 0.845 |
| RESP3 | 0.652 | 0.620 | 0.652 | 0.676 | 0.638 | 0.875        | 0.605 | 0.649 | 0.656 | 0.643 | 0.875 |
| RLB1  | 0.687 | 0.691 | 0.644 | 0.668 | 0.680 | 0.632        | 0.931 | 0.613 | 0.646 | 0.657 | 0.931 |
| RLB2  | 0.633 | 0.631 | 0.606 | 0.635 | 0.661 | 0.615        | 0.864 | 0.603 | 0.593 | 0.642 | 0.864 |
| RLB3  | 0.646 | 0.665 | 0.613 | 0.617 | 0.640 | 0.597        | 0.903 | 0.585 | 0.642 | 0.642 | 0.903 |

Table 2 shows that all indicators have higher cross loading values on their respective constructs compared to others, confirming discriminant validity.

**Table 3. Fornell-Larcker Criterion Result**

|      | ECS          | ELYL         | EOU          | FUL          | PRS          | RESP         | RLB          | SCY          | TRU          |
|------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| ECS  | <b>0.888</b> |              |              |              |              |              |              |              |              |
| ELYL | 0.775        | <b>0.883</b> |              |              |              |              |              |              |              |
| EOU  | 0.776        | 0.772        | <b>0.908</b> |              |              |              |              |              |              |
| FUL  | 0.762        | 0.749        | 0.738        | <b>0.879</b> |              |              |              |              |              |
| PRS  | 0.770        | 0.752        | 0.759        | 0.739        | <b>0.923</b> |              |              |              |              |
| RESP | 0.751        | 0.723        | 0.757        | 0.725        | 0.710        | <b>0.849</b> |              |              |              |
| RLB  | 0.729        | 0.737        | 0.690        | 0.712        | 0.734        | 0.683        | <b>0.900</b> |              |              |
| SCY  | 0.764        | 0.761        | 0.752        | 0.746        | 0.729        | 0.716        | 0.667        | <b>0.899</b> |              |
| TRU  | 0.770        | 0.756        | 0.746        | 0.724        | 0.729        | 0.730        | 0.697        | 0.767        | <b>0.902</b> |
| WA   | 0.773        | 0.767        | 0.775        | 0.770        | 0.745        | 0.721        | 0.719        | 0.743        | 0.738        |

Table 3 presents the Fornell-Larcker Criterion results, where each construct shows the highest AVE square root on the diagonal, compared to its correlation with other constructs. While some scholars argue that cross loadings and the Fornell-Larcker Criterion may lack sensitivity, the HTMT ratio provides a more robust assessment. A HTMT value above 0.90 indicates a potential lack of discriminant validity. Based on the HTMT test results, all constructs yield values below 0.90, confirming discriminant validity.

**Table 4. Heterotrait-Monotrait Ratio (HTMT) Result**

|      | ECS          | ELYL  | EOU   | FUL   | PRS   | RESP  | RLB   | SCY   | TRU   | WA |
|------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|----|
| ECS  |              |       |       |       |       |       |       |       |       |    |
| ELYL | <b>0.899</b> |       |       |       |       |       |       |       |       |    |
| EOU  | 0.882        | 0.882 |       |       |       |       |       |       |       |    |
| FUL  | 0.886        | 0.875 | 0.846 |       |       |       |       |       |       |    |
| PRS  | 0.866        | 0.849 | 0.841 | 0.837 |       |       |       |       |       |    |
| RESP | 0.899        | 0.869 | 0.892 | 0.874 | 0.827 |       |       |       |       |    |
| RLB  | 0.833        | 0.846 | 0.778 | 0.820 | 0.819 | 0.810 |       |       |       |    |
| SCY  | 0.873        | 0.874 | 0.847 | 0.859 | 0.812 | 0.848 | 0.756 |       |       |    |
| TRU  | 0.880        | 0.868 | 0.839 | 0.834 | 0.811 | 0.863 | 0.789 | 0.868 |       |    |
| WA   | 0.888        | 0.885 | 0.877 | 0.891 | 0.833 | 0.858 | 0.819 | 0.845 | 0.839 |    |

### B. RELIABILITY TEST RESULT

Reliability testing assesses how consistently an instrument measures a variable. A construct is considered reliable if its Cronbach's alpha and Composite Reliability are greater than 0.70 (Hair, 2014).

# The Effect of E-Service Quality and E-Trust on E-Customer Satisfaction and E-Customer Loyalty on Users of E-Pharmacy K24klik in Indonesia

Table 5. Reliability Test Result

|      | Cronbach's alpha | Composite reliability | Critical point | Decision |
|------|------------------|-----------------------|----------------|----------|
| ECS  | 0.866            | 0.918                 | 0.7            | Reliabel |
| ELYL | 0.858            | 0.914                 | 0.7            | Reliabel |
| EOU  | 0.893            | 0.934                 | 0.7            | Reliabel |
| FUL  | 0.853            | 0.911                 | 0.7            | Reliabel |
| PRS  | 0.913            | 0.945                 | 0.7            | Reliabel |
| RESP | 0.807            | 0.86                  | 0.7            | Reliabel |
| RLB  | 0.882            | 0.927                 | 0.7            | Reliabel |
| SCY  | 0.882            | 0.927                 | 0.7            | Reliabel |
| TRU  | 0.885            | 0.929                 | 0.7            | Reliabel |
| WA   | 0.875            | 0.923                 | 0.7            | Reliabel |

As shown in Table 4, all variables have Cronbach's alpha and Composite Reliability values above 0.70, indicating the measurement instruments are reliable and consistent for evaluating the research constructs.

## C. Inner Model Test

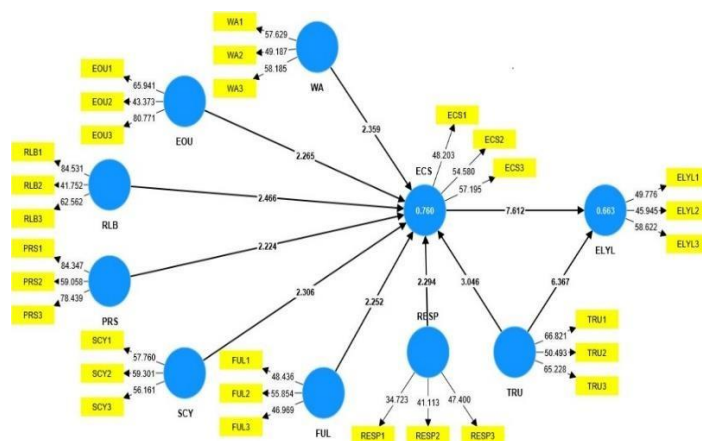


Figure 2. Inner Model Result

The structural model is evaluated using  $R^2$  values for dependent constructs and  $Q^2$  values for predictive relevance, along with significance testing via bootstrapping (t-table value of 1.96 at a 0.05 significance level) (Hair et al., 2019; Malhotra, 2010).

Table 6. Coefficient of Determination ( $R^2$ ) Test Result

|      | R-square | R-square adjusted |
|------|----------|-------------------|
| ECS  | 0.759    | 0.753             |
| ELYL | 0.663    | 0.661             |

According to Hair (2019), the higher the  $R^2$  value, the better the model's predictive accuracy. An  $R^2$  value of 0.70 or higher is considered strong. As indicated in Table 5, the  $R^2$  values in this study demonstrate strong explanatory power.

Table 7. Predictive Relevance ( $Q^2$ )Test Result

|      | SSO     | SSE     | $Q^2 (=1-SSE/SSO)$ |
|------|---------|---------|--------------------|
| ECS  | 900.000 | 370.092 | 0.588              |
| ELYL | 900.000 | 438.496 | 0.513              |

## The Effect of E-Service Quality and E-Trust on E-Customer Satisfaction and E-Customer Loyalty on Users of E-Pharmacy K24klik in Indonesia

Table 6 shows that the  $Q^2$  values for e-customer satisfaction (ECS) and e-customer loyalty (ELYL) are greater than 0.5, which indicates strong predictive relevance (Hair, 2019). Additionally, the effect size ( $f^2$ ) is assessed to determine the strength of relationships between constructs.

**Table 8. Effect size (F square) Test Result**

|      | ECS           | ELYL                  |
|------|---------------|-----------------------|
| ECS  |               | <b>0.272 (medium)</b> |
| ELYL |               |                       |
| EOU  | 0.017 (small) |                       |
| FUL  | 0.014 (small) |                       |
| PRS  | 0.024 (small) |                       |
| RESP | 0.019 (small) |                       |
| RLB  | 0.016 (small) |                       |
| SCY  | 0.019 (small) |                       |
| TRU  | 0.026 (small) | <b>0.185 (medium)</b> |
| WA   | 0.017 (small) |                       |

According to Hair (2022), an  $f^2$  value of 0.02 is small, 0.15 is medium, and 0.35 is large. Values below 0.02 are considered negligible.

### D. HYPOTHESIS TESTING

**Table 10. Hypothesis Test Result**

| Hipotesis | Hubungan                                                      | Original sample (O) | T statistics ( O/STDEV ) | P values | Decision |
|-----------|---------------------------------------------------------------|---------------------|--------------------------|----------|----------|
| H1a       | <i>Website Appearance</i> $\Rightarrow$ <i>e-satisfaction</i> | 0.124               | 2.359                    | 0.018    | Accepted |
| H1b       | <i>Ease of use</i> $\Rightarrow$ <i>e-satisfaction</i>        | 0.127               | 2.265                    | 0.024    | Accepted |
| H1c       | <i>Reliability</i> $\Rightarrow$ <i>e-satisfaction</i>        | 0.103               | 2.466                    | 0.014    | Accepted |
| H1d       | <i>Security</i> $\Rightarrow$ <i>e-satisfaction</i>           | 0.124               | 2.306                    | 0.021    | Accepted |
| H1e       | <i>Personalisation</i> $\Rightarrow$ <i>e-satisfaction</i>    | 0.142               | 2.224                    | 0.026    | Accepted |
| H1f       | <i>Fulfilment</i> $\Rightarrow$ <i>e-satisfaction</i>         | 0.109               | 2.252                    | 0.024    | Accepted |
| H1g       | <i>Responsiveness</i> $\Rightarrow$ <i>e-satisfaction</i>     | 0.119               | 2.294                    | 0.022    | Accepted |
| H2        | <i>E-Trust</i> $\Rightarrow$ <i>e-satisfaction</i>            | 0.147               | 3.046                    | 0.002    | Accepted |
| H3        | <i>E-Trust</i> $\Rightarrow$ <i>e-customer loyalty</i>        | 0.391               | 6.367                    | 0.000    | Accepted |
| H4        | <i>e-satisfaction</i> $\Rightarrow$ <i>e-customer loyalty</i> | 0.474               | 7.612                    | 0.000    | Accepted |

#### The Effect of Website Appearance on E-Satisfaction

The results show that website appearance has a significant positive effect on e-satisfaction, as indicated by a t-value of 2.359 ( $> 1.96$ ) and a p-value of 0.018 ( $< 0.05$ ), supporting Hypothesis H1a. This finding implies that a visually appealing and functionally efficient website enhances users' satisfaction. A high-quality website design, particularly in terms of visual aesthetics and user interface, positively influences consumer attitudes by encouraging deeper exploration and engagement. As noted by Igohomero et al. (2022), "when the website design quality is perceived as 'good' by customers, they are more likely to explore further the information contained on the website." The K24Klik website has been developed with a user-friendly and visually appealing interface, which facilitates efficient product search and selection. Additionally, the platform incorporates features such as ease of contact, order placement, payment flexibility, cancellation, and customer support—all of which contribute to a satisfying online shopping experience (Anderson & Srinivasan, 2003). A high-quality web design is thus seen as a strategic investment that not only supports user satisfaction but also enhances customer loyalty and business performance. This result aligns with Bessie (2023), who reported that e-service quality—particularly website design—has a significant partial effect on customer satisfaction.

#### The Effect of Ease of Use on E-Satisfaction

Ease of use was also found to significantly and positively impact e-satisfaction, as evidenced by a t-value of 2.265 and a p-value of 0.024, validating Hypothesis H1b. This finding suggests that users' ability to interact easily with the K24Klik platform plays a critical

## **The Effect of E-Service Quality and E-Trust on E-Customer Satisfaction and E-Customer Loyalty on Users of E-Pharmacy K24klik in Indonesia**

role in shaping their satisfaction. Gefen (2003) and Singh (2020) observed that “positive assessments occur when consumers believe that learning and using new systems is easy, requiring minimal time and effort.” The K24Klik application allows customers to complete the ordering process in just a few intuitive steps—from product selection to payment. It further supports users with categorized search options, real-time product availability, and flexible order retrieval at nearby pharmacies. Multiple payment options—including bank transfer, credit card, e-wallets, and cash-on-delivery—further streamline the shopping experience. The findings corroborate prior research by Amin et al. (2014), which confirmed that ease of use exerts a positive influence on customer satisfaction. A poorly performing website can diminish consumer expectations of convenience, whereas a user-friendly platform can foster satisfaction and repeat use.

### **The Effect of Reliability on E-Satisfaction**

Reliability was shown to have a positive and significant effect on e-satisfaction ( $t = 2.466$ ,  $p = 0.014$ ), supporting Hypothesis H1c. This indicates that users' trust in the consistent and accurate performance of the K24Klik platform influences their overall satisfaction. In e-commerce, reliability entails fulfilling customers' needs while safeguarding their personal information (Semeijn et al., 2005; Jiang et al., 2016). K24Klik ensures this by partnering with over 700 affiliated K-24 pharmacies across Indonesia to maintain inventory availability and communicate stock status transparently. According to Narteh (2015), “reliability refers to the platform's ability to deliver promised services dependably and accurately.” Furthermore, reliable customer service capable of handling complaints effectively also contributes to perceived platform dependability. Famiyeh et al. (2018) emphasized that “reliability—measured by employees' ability to handle complaints and deliver error-free services—is the single most important factor affecting customer satisfaction.” These findings are consistent with Jiang et al. (2016), who highlighted that reliability significantly influences customers' perceived value of an e-commerce website, thereby enhancing satisfaction.

### **The Effect of Security on E-Satisfaction**

Security was also found to significantly impact e-satisfaction ( $t = 2.306$ ,  $p = 0.021$ ), affirming Hypothesis H1d. The findings emphasize that data security during transactions is essential in shaping users' confidence and satisfaction when purchasing pharmaceuticals through the K24Klik platform. Wilson, Alvita, and Wibisono (2021) noted that “when companies implement high-security platforms, customers believe that transactions will be safe, with no security issues arising from online purchases.” Given that both buyers and sellers operate virtually, users often provide sensitive data such as credit card numbers and personal contact details, which makes trust in platform security paramount. Enhanced transaction security boosts users' willingness to purchase, as secure payment processes directly contribute to overall satisfaction. These results underscore the importance of robust cybersecurity features in e-commerce platforms as a means to improve user trust and satisfaction.

### **The Effect of Personalization on E-Satisfaction**

The results show that personalization has a positive and significant effect on e-satisfaction ( $t = 2.224 > 1.96$ ;  $p = 0.026$ ), confirming hypothesis H1e. Personalization allows companies to tailor experiences according to individual customer preferences and needs. By utilizing customer data, businesses can generate product recommendations, relevant communication, and personalized offers, thereby enhancing satisfaction and loyalty (Widodo, 2017). K24Klik applies personalization by recommending products based on users' browsing and purchase history, which increases the probability of quickly finding needed items. Effective personalization depends heavily on accurate data collection and analysis. In the era of big data, personalized services have become increasingly expected by consumers, and the role of electronic personalization is more prominent (Levin & Datnow, 2012). Through data analytics and machine learning algorithms, firms can continuously adapt e-personalization strategies in real time to meet evolving customer preferences (Chandra, 2022). Effective personalization at K24Klik has the potential to significantly improve user satisfaction, foster loyalty, and ultimately enhance business performance, as supported by Rane (2022). This finding is further supported by Halimi, Chavosh, and Choshali (2011), who found a significant relationship between personalization and customer satisfaction. Additionally, Sumarsid (2024) emphasized that e-service quality has a positive correlation with both e-personalization and e-satisfaction.

### **The Effect of Fulfillment on E-Satisfaction**

Fulfillment significantly affects e-satisfaction ( $t = 2.252 > 1.96$ ;  $p = 0.024$ ), validating hypothesis H1f. In the e-commerce context, especially for health products, fulfillment encompasses the ability to deliver services as promised, including product availability, accuracy, and speed of delivery. At K24Klik, fulfillment includes every stage from product search to final delivery. Ensuring product availability and timely, accurate deliveries plays a vital role in customer satisfaction. Fulfillment activities also involve ensuring that the right product arrives in good condition and within the expected timeframe, as emphasized by Ashoer (2020). K24Klik's 24-

## **The Effect of E-Service Quality and E-Trust on E-Customer Satisfaction and E-Customer Loyalty on Users of E-Pharmacy K24klik in Indonesia**

minute delivery service can significantly enhance user experience if expectations are met. Improving fulfillment processes, including return and refund systems, can further boost satisfaction, strengthen customer loyalty, and improve K24Klik's market standing. This is aligned with findings by Bessie (2023), who demonstrated that fulfillment significantly influences customer satisfaction, with most respondents rating the fulfillment dimension highly.

### **The Effect of Responsiveness on E-Satisfaction**

Responsiveness has a significant positive impact on e-satisfaction ( $t = 2.294 > 1.96$ ;  $p = 0.022$ ), supporting hypothesis H1g. Responsiveness refers to the application's ability to promptly and effectively respond to users' needs and inquiries. This includes order processing, customer service responses, and handling of complaints. K24Klik offers 24/7 online medical consultations, allowing users to receive real-time medical advice and prescriptions, particularly during emergencies outside of clinic hours. Fast and accurate responses enhance user experience and satisfaction, building customer loyalty and trust. Users who receive quick responses feel more valued and are more likely to remain engaged. Responsiveness in e-service implies timely digital support, which minimizes friction during the purchasing process (Bessie, 2023). Furthermore, Behjati (2012) defines responsiveness as timely service delivery that promptly assists customers in resolving issues. These findings are consistent with both Bessie (2023) and Behjati (2012), confirming responsiveness as a critical component of service quality influencing satisfaction and loyalty.

### **The Effect of E-Trust on E-Satisfaction**

The results indicate a significant and positive influence of e-trust on e-satisfaction ( $t = 3.046 > 1.96$ ;  $p = 0.002$ ), confirming the second hypothesis. Trust plays a central role in shaping user experience and satisfaction in e-commerce. In the case of K24Klik, ensuring the authenticity of healthcare products is paramount, especially when product quality directly affects health outcomes. K24Klik guarantees 100% authentic products through partnerships with Apotek K-24 and trusted affiliates. Moreover, the platform provides transparent and accurate information regarding product specifications, pricing, and return policies, fostering user trust. Trust in transaction security is another critical factor; users must feel confident in the safety and integrity of their purchases. Transparent operations and consistent quality assurance contribute substantially to building long-term trust, which is closely tied to overall e-satisfaction.

### **The Effect of E-Trust on E-Customer Loyalty**

The hypothesis testing results demonstrate that e-trust has a significant and positive effect on e-customer loyalty, as indicated by a t-value of 3.046 (greater than the critical value of 1.96) and a p-value of 0.002 (less than 0.05). This confirms the acceptance of the hypothesis that e-trust significantly influences loyalty among users of the K24Klik e-pharmacy application. Trust in the platform—rooted in data security, product authenticity, and transactional transparency—emerges as a critical driver of sustained customer relationships. A high level of e-trust reinforces user confidence, encouraging repeat transactions and long-term loyalty. As emphasized by Roca et al. (2009), "Increasing consumer confidence in system security not only enhances the probability of transactional engagement but also reinforces the intention to continue making additional purchases." Furthermore, Ashiq et al. (2023) assert that electronic service quality on e-commerce websites positively impacts customer loyalty, reinforcing the importance of trust in e-commerce platforms.

### **The Effect of E-Satisfaction on E-Customer Loyalty**

The analysis also confirms that e-satisfaction exerts a strong and statistically significant effect on e-customer loyalty, supported by a t-value of 6.347 and a p-value of 0.000. This indicates that user satisfaction is a pivotal factor in fostering loyalty on the K24Klik platform. Factors such as service quality, delivery speed, and product reliability significantly influence customer satisfaction. Satisfied users are more likely to engage in repeat purchases and recommend the application to others. As noted by Ting et al. (2016), e-loyalty emerges from a process initiated through high-quality electronic service, strengthened by trust, and culminating in customer satisfaction. Enhanced satisfaction does not only lead to improved business performance but also transforms users into brand advocates (Khristianto & Suyadi, 2012). Echoing this, Ashiq et al. (2023) highlight that electronic satisfaction mediates the positive relationship between electronic service quality and customer loyalty. Thus, continuous enhancement of service responsiveness, transparency, and user experience is essential for maintaining long-term customer loyalty on digital platforms.

## **V. CONCLUSIONS**

This study provides empirical evidence on the relationships among e-service quality, e-trust, e-customer satisfaction, and e-customer loyalty in the context of the K24Klik e-pharmacy platform. The findings reveal that e-service quality significantly enhances customer satisfaction by ensuring system reliability, usability, security, personalization, and responsiveness.

## The Effect of E-Service Quality and E-Trust on E-Customer Satisfaction and E-Customer Loyalty on Users of E-Pharmacy K24klik in Indonesia

Furthermore, e-trust emerges as a critical mediating factor that not only improves customer satisfaction but also directly influences customer loyalty. Trust is cultivated through transparent information, consistent service, and robust data protection, which in turn strengthen user engagement and loyalty. Lastly, high levels of e-customer satisfaction are shown to positively impact customer loyalty, highlighting the importance of continuously improving service experiences to foster repeat usage and positive word-of-mouth. These insights suggest that digital health platforms like K24Klik must strategically invest in both service innovation and customer relationship management to sustain competitive advantage. By aligning technological enhancements with user-centric strategies, e-pharmacies can improve satisfaction and build long-term loyalty in an increasingly digital healthcare landscape.

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