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The Impact of Website Usability and Mobile Optimization on Customer Satisfaction and Sales Conversion Rates in E-commerce Businesses in Indonesia

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ABSTRACT

This study investigates the impact of website usability and mobile optimization on customer satisfaction and sales conversion rates in e-commerce businesses in Indonesia. Utilizing a quantitative approach, data were collected from 170 respondents using a Likert scale ranging from 1 to 5. The analysis was conducted using Structural Equation Modeling-Partial Least Squares (SEM-PLS 3). The results indicate that all hypothesized relationships are positive and significant. Specifically, improvements in website usability and mobile optimization significantly enhance customer satisfaction, which in turn positively influences the sales conversion rate. The findings underscore the critical importance of optimizing website usability and mobile interfaces to boost customer satisfaction and drive higher sales conversions in the competitive e-commerce landscape of Indonesia.

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1. INTRODUCTION

In Indonesia's rapidly growing e-commerce sector, enhancing online presence and driving customer engagement are critical for business success. As competition intensifies, the usability of websites and optimization of mobile platforms have become pivotal in influencing customer satisfaction and sales conversion rates. Key factors such as user interface (UI) and user experience (UX) design play a significant role in this regard. Research indicates that intuitive and visually appealing UI/UX elements attract and engage users, leading to increased website traffic and higher conversion rates, which directly correlate with substantial revenue growth [1]. Additionally, the integration of emerging technologies like virtual reality (VR) and augmented reality (AR) can transform product presentation, offering immersive and interactive shopping experiences that enhance customer engagement and reduce uncertainty in virtual shopping [2]. Digital marketing practices, including social media usage, search engine optimization (SEO), and content strategy, also significantly contribute to business growth by enhancing customer engagement and driving sales [3]. Furthermore, personalized content and recommendations, live chat support, and prioritizing responsiveness and page loading speed are essential strategies to deliver gratifying customer experiences and strengthen loyalty [4]. The development of

user-friendly and visually appealing e-commerce platforms using technologies like HTML, CSS, and React further underscores the importance of well-designed interfaces, intuitive navigation, and responsive design in enhancing customer satisfaction and driving business growth [5].

Website usability is a critical factor that determines how easily users can navigate and interact with a website, impacting overall user experience and business outcomes. Key elements of usability include design, navigation, content clarity, and responsiveness, all of which contribute to a seamless user experience. A well-designed, user-friendly website can significantly enhance customer satisfaction, fostering trust and loyalty. For instance, usability factors such as Individualization and User Adaptation, Privacy and Business Policies, Link Design, Search, and Help are crucial, as they are often associated with severe usability problems that can detract from the user experience if not properly addressed [6]. Effective usability is also essential for digital marketing success, as a website that is easy to use and well-organized can improve user engagement, reduce bounce rates, and increase conversion rates, thereby maximizing the effectiveness of digital marketing campaigns [7]. Moreover, good website usability is vital for business success, as it helps create a positive impression on visitors, who may become potential clients, thus directly influencing the success of online business ventures [8]. In specific applications, such as tourism websites, usability is crucial for providing up-to-date and comprehensive information, which enhances user satisfaction and effectiveness. For example, the Pekanbaru City government's tourism website was found to be less effective and satisfying due to usability issues, highlighting the importance of continuous usability improvements [9]. Usability testing, including methods like User Acceptance Testing (UAT), is essential to evaluate and ensure that websites meet user needs and provide a good user experience. This testing helps identify and rectify deficiencies in website interactivity and responsiveness, ensuring that the website performs well across various devices and scenarios [10].

Mobile optimization is crucial in today's digital landscape, especially with the widespread use of smartphones and the increasing reliance on mobile internet. This is particularly relevant in regions like Indonesia, where mobile internet penetration is high, and a significant portion of online shopping is conducted via mobile devices. Effective mobile optimization involves tailoring websites to function seamlessly on mobile platforms, ensuring a consistent and efficient browsing experience regardless of the device used. One method to achieve this is by optimizing the touch screen user interface, which involves configuring graphical user interface controls to be easily accessible and accurately operable with one hand, enhancing user interaction and satisfaction [11]. Additionally, tools and algorithms have been developed to optimize web pages by identifying and extracting the main content, thereby removing redundant information and creating a streamlined view that contains only useful information. This not only minimizes data transfer but also ensures that users can access the essential content quickly and efficiently [12], [13]. Furthermore, advancements in convolutional neural networks (CNNs) have enabled the transformation of CNN layers to better reflect specific values, which can be applied to enhance the performance and accuracy of mobile applications, including those used for web content optimization [14]. Collecting and analyzing data related to a user's activities from multiple devices and sources can also play a significant role in optimizing the user experience. By forecasting future locations and activities, users can be geo-targeted and provided with relevant suggestions, further enhancing their browsing and shopping experience on mobile devices [15].

Customer satisfaction is indeed a pivotal factor in the success of e-commerce platforms, as it directly influences customer loyalty, repeat purchases, and word-of-mouth promotion. Satisfied customers are more likely to return and make repeat purchases, which is essential for sustained business

growth. This is supported by the finding that customer satisfaction levels are closely monitored and improved by businesses to ensure higher sales and customer retention [16]. The design and usability of the e-commerce application play a significant role in enhancing customer satisfaction. A user-friendly, easy-to-navigate, and visually appealing application design has been shown to have a highly positive relationship with e-satisfaction [17]. Additionally, factors such as fast transaction capabilities and robust security and privacy protections are crucial in building trust and satisfaction among customers [17]. The convenience of online shopping, which allows customers to shop 24/7 without the need to wait, also contributes significantly to customer satisfaction [16]. Moreover, specific factors like ease of use, timeliness, and fulfillment have been identified as significant determinants of user satisfaction on e-commerce platforms like Shopee, explaining a substantial portion of user satisfaction [18]. Price is another critical factor that strongly affects customer satisfaction, as evidenced by research conducted among online shoppers in Oman, where it was found to have a significant impact on satisfaction levels [19]. Conversely, social influence was found to have the weakest impact on customer satisfaction in the same study [19]. This study employs a quantitative research approach, utilizing data from 170 respondents to explore the relationships between website usability, mobile optimization, customer satisfaction, and sales conversion rates.

2. LITERATURE REVIEW

2.1 Website Usability

Website usability is indeed a pivotal factor in the success of e-commerce businesses, as it directly influences user experience, satisfaction, and ultimately, customer loyalty and trust. A well-designed website should be easy to navigate, allowing users to find what they are looking for quickly and efficiently, which is crucial for retaining potential clients and preventing them from moving to competitor sites [8]. Key elements of website usability include intuitive design, fast loading times, clear and concise content, and an efficient navigation system, all of which contribute to a positive user experience [20]. For instance, a home page with clear calls to action, an optimized checkout process, and a responsive design for mobile use are essential for improving conversion rates and user engagement [20]. Additionally, incorporating accessibility features for visually challenged users, such as screen readers and voice synthesizers, can enhance usability for a broader audience, making the website more inclusive and effective in the long term [21]. The impact of website usability on digital marketing is also significant, as a user-friendly website can reduce bounce rates, increase session durations, and improve conversion rates, thereby maximizing the effectiveness of digital marketing campaigns [7]. Furthermore, understanding and addressing usability problems through systematic approaches, such as cognitive walkthroughs and severity level assessments, can help identify critical factors like individualization, privacy policies, link design, search functionality, and help features, which are essential for creating a seamless user experience [6].

2.2 Mobile Optimization

The shift towards mobile internet usage has indeed necessitated the optimization of websites for mobile devices, particularly in regions with high mobile internet penetration like Indonesia, where over 70% of web traffic comes from mobile devices according to Statista (2021). Mobile optimization involves several critical aspects such as responsive design, fast loading times, and touch-friendly navigation, all of which significantly

influence user behavior and satisfaction. Research underscores the importance of these elements; for instance, a study by Deepak Bansal highlights that well-implemented SEO techniques, including mobile responsiveness, directly improve website performance and foster more engaged users by enhancing loading speeds and overall user experience [22]. Similarly, H. D. Pandey and Ms. Roopali Gupta emphasize the necessity of mobile responsiveness and performance optimization in e-commerce websites to cater to the increasing usage of mobile devices for online shopping, which in turn drives sales and expands digital presence [23]. Furthermore, Vipin Kumar, Shivam Raj Singh, and N. Muhindro Singh's research reveals that mobile optimization is crucial for customer satisfaction and loyalty, with ease of navigation, speed of page loading, and visual design being key factors that enhance the shopping experience on mobile devices [24]. Additionally, Yibin Yan's study on the Chinese mobile app market corroborates these findings by demonstrating that mobile optimization, including aesthetic design and user satisfaction, significantly impacts app profitability and user engagement [25]. Collectively, these studies illustrate that mobile optimization is not just a technical necessity but a strategic imperative for e-commerce success, particularly in markets with high mobile internet usage like Indonesia, where it can lead to increased user satisfaction, engagement, and ultimately, higher sales conversions [26].

2.3 Customer Satisfaction

Customer satisfaction is indeed a crucial metric for e-commerce businesses, as it directly influences customer loyalty, positive word-of-mouth, and sales conversions. Satisfaction arises when a product's perceived performance meets or exceeds customer expectations, leading to feelings of pleasure or delight [27]. Measuring customer satisfaction allows businesses to identify strengths and areas for improvement in their products, services, and internal processes, ultimately enhancing their sales skills and offerings [28]. The convenience of online shopping, characterized by 24/7 availability and the elimination of waiting times, significantly contributes to customer satisfaction by saving time and effort [29]. In the competitive landscape of Indonesia's digital economy, e-service quality and sales promotions are pivotal in driving e-customer satisfaction, although they do not directly translate to e-customer loyalty without other intervening factors [30]. Furthermore, the primary dimensions of online shopping convenience—such as access, search, evaluation, transaction, and possession/post-possession—play a significant role in enhancing customer satisfaction, behavioral intentions, and fostering electronic word-of-mouth (E-WOM) [31].

2.4 Sales Conversion Rate

The sales conversion rate (CVR) is indeed a pivotal performance indicator for e-commerce businesses, reflecting the percentage of visitors who complete a purchase. Several factors influence CVR, including website design, usability, mobile optimization, and overall user experience. Research by Hanane Meslem and Ayoub Abbaci highlights the importance of landing page design, noting that specific components such as call-to-action buttons and user-friendly layouts significantly impact conversion rates [32]. Additionally, Robert Zimmermann and Andreas Auinger emphasize the need for a comprehensive digital retail strategy

that leverages various online and offline touchpoints to enhance customer experience and drive sales [33]. However, during sales promotions, conventional CVR prediction models often underperform due to data distribution shifts. To address this, Zhangming Chan and colleagues propose a Historical Data Reuse (HDR) approach, which reuses historical promotion data to fine-tune CVR prediction models, thereby better adapting to promotional modes and improving both ranking and calibration metrics [34]. This approach has been successfully deployed in Alibaba's display advertising system, resulting in a 9% increase in RPM and a 16% lift in CVR during the Double 11 Sales in 2022 [34].

2.5 Hypotheses Development

Based on the literature review, the following hypotheses are proposed for this study:

H1 : Website usability has a positive and significant effect on customer satisfaction.

H2 : Mobile optimization has a positive and significant effect on customer satisfaction.

H3 : Customer satisfaction has a positive and significant effect on the sales conversion rate.

H4 : Website usability has a positive and significant effect on the sales conversion rate.

H5 : Mobile optimization has a positive and significant effect on the sales conversion rate.

2.6 Conceptual Framework

The conceptual framework for this study is based on the relationships between website usability, mobile optimization, customer satisfaction, and sales conversion rates. It posits that improvements in website usability and mobile optimization lead to higher customer satisfaction, which in turn enhances the sales conversion rate. This framework is supported by the theoretical and empirical findings discussed in the literature review.

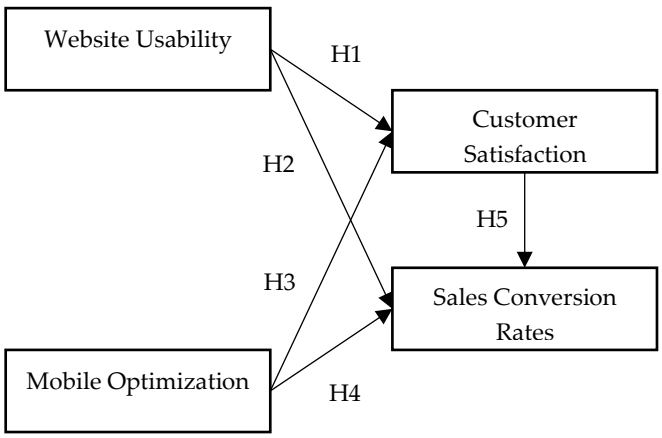

Figure 1. Conceptual and Hypothesis
Source: Literature Review, 2024

3. RESEARCH METHODS

3.1 Research Design

This study adopts a quantitative research design to investigate the impact of website usability and mobile optimization on customer satisfaction and sales conversion rates in e-commerce businesses in Indonesia. The research design involves the collection and

analysis of numerical data to identify patterns, relationships, and effects among the variables of interest. A structured survey was administered to gather data from respondents, and the collected data were analyzed using Structural Equation Modeling-Partial Least Squares (SEM-PLS 3).

3.2 Sample and Sampling Technique

The study sample comprised 170 respondents, selected using a purposive sampling technique. This technique was chosen to ensure that the respondents had relevant experience and knowledge regarding online shopping and e-commerce platforms. The criteria for selection included individuals who had made at least one purchase from an e-commerce website within the past six months and were familiar with both desktop and mobile versions of the websites. The sample size of 170 was deemed sufficient for SEM-PLS analysis, which requires a minimum of 100-150 samples for reliable results (Hair et al., 2011).

3.3 Data Collection

Data were collected using a structured questionnaire, which was distributed online to the selected respondents. The questionnaire was designed to measure the variables of website usability, mobile optimization, customer satisfaction, and sales conversion rate. It included multiple items for each construct, using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire was pre-tested with a small group of respondents to ensure clarity and reliability of the items.

The constructs were operationalized as follows:

a. Website Usability: Items measured the ease of navigation, clarity of content, responsiveness, and overall design of the website.
b. Mobile Optimization: Items assessed the responsiveness, ease of use, loading speed, and navigability of the website on mobile devices.
c. Customer Satisfaction: Items evaluated the overall satisfaction with the online shopping experience, including satisfaction with the website's usability and mobile optimization.
d. Sales Conversion Rate: Items measured the respondents' likelihood of completing a purchase, frequency of purchases, and intention to make future purchases.

3.4 Data Analysis

The collected data were analyzed using Structural Equation Modeling-Partial Least Squares (SEM-PLS 3), a statistical technique suitable for exploratory research and studies with complex models and small to medium sample sizes (Henseler, Ringle, & Sinkovics, 2009). The data analysis process involved several steps: descriptive statistics summarized the demographic characteristics of the respondents and the central tendencies and dispersions of the constructs; the measurement model was evaluated for reliability using Cronbach's alpha and composite reliability, and for validity using convergent validity (Average Variance Extracted, AVE) and discriminant validity (Fornell-Larcker criterion); the structural model was assessed to test the hypothesized relationships among the constructs, with path coefficients, t-values, and p-values calculated to determine the significance of the relationships, and the model's explanatory power evaluated using the coefficient of determination (R^2) for each endogenous construct; and hypothesis testing was conducted based on the significance of the path coefficients, with a hypothesis considered supported if the path

coefficient was positive and statistically significant ($p < 0.05$).

4. RESULTS AND DISCUSSION

4.1 Results

a. Descriptive Statistics

The demographic profile of the 170 respondents is summarized in Table 1. The sample consisted of a diverse group of e-commerce users in Indonesia, with varying ages, genders, and online shopping frequencies.

Table 1. Demographic Profile of Respondents

Characteristic	Frequency	Percentage (%)
Gender		
Male	82	48.2
Female	88	51.8
Age		
18-25	64	37.6
26-35	74	43.5
36-45	24	14.1
46 and above	8	4.7
Online Shopping Frequency		
Once a month	102	60.0
Twice a month	45	26.5
More than twice a month	23	13.5

Source: Data processing results (2024)

The sample comprises 82 males (48.2%) and 88 females (51.8%), ensuring a relatively balanced gender distribution that well-represents the perspectives of both male and female online shoppers, which can help e-commerce businesses tailor their strategies to meet diverse customer needs. The age distribution shows that the majority of respondents fall within the 18-35 age range, with 64 respondents (37.6%) aged 18-25 and 74 respondents (43.5%) aged 26-35, while a smaller proportion are aged 36-45 (14.1%) and 46 and above (4.7%). Regarding online shopping frequency, 60.0% of respondents shop online once a month, 26.5% shop twice a month, and 13.5% shop more than twice a month.

b. Measurement Model

The measurement model assesses the reliability and validity of the constructs used in the study. Reliability refers to the consistency of the measurement, while validity indicates whether the instrument measures what it intends to measure. The constructs in this study include Website Usability, Mobile Optimization, Customer Satisfaction, and Sales Conversion Rates. Each construct was evaluated using Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE) to ensure their reliability and validity.

Table 2. Measurement Model

Variable	Indicator and Code	LF	VIF
Website Usability	Cronbach's Alpha = 0.901, Composite Reliability = 0.931, AVE = 0.771.		
	WU.1 Accessibility	0.867	2.473
	WU.2 Download Speed	0.910	2.158
	WU.3 Ease of Use	0.886	2.635
	WU.4 Acceptability	0.848	2.248

Mobile Optimization	Cronbach's Alpha = 0.837, Composite Reliability = 0.884, AVE = 0.605.		
	MO.1 Efficiency	0.821	2.781
	MO.2 Usefulness	0.812	2.643
	MO.3 Experience Metrics	0.765	2.190
	MO.4 Waiting Delays	0.768	1.768
	MO.5 Network Adaptability	0.719	1.616
Customer Satisfaction	Cronbach's Alpha = 0.753, Composite Reliability = 0.859, AVE = 0.671.		
	CS.1 Responsibility of product and delivery	0.749	1.337
	CS.2 Customer services in transportation and distribution	0.861	1.755
	CS.3 Customer communication in transportation and distribution	0.842	1.672
Sales Conversion Rates	Cronbach's Alpha = 0.844, Composite Reliability = 0.889, AVE = 0.616.		
	SCR.1 Historical Data Reuse (HDR)	0.787	2.070
	SCR.2 Foot Traffic	0.798	2.109
	SCR.3 Total Sales	0.809	2.235
	SCR.4 Ticket Mean Value	0.736	2.039
	SCR.5 Lead Conversion Rate	0.793	1.869

Source: Data processing results (2024)

The measurement model assessment confirms that the constructs used in this study are reliable and valid, with high Cronbach's Alpha values indicating strong internal consistency, and Composite Reliability (CR) and AVE values meeting required thresholds, ensuring reliability and validity. Factor loadings for all indicators are above 0.70, confirming good convergent validity, and VIF values are below 5, indicating no issues with multicollinearity, supporting the robustness of the measurement model. Website Usability and Mobile Optimization significantly positively affect both Customer Satisfaction and Sales Conversion Rates, highlighting the importance of enhancing website usability and optimizing mobile interfaces to improve user experience. E-commerce businesses in Indonesia can benefit from focusing on these areas to increase customer satisfaction and drive higher sales conversions. Customer Satisfaction mediates the relationship between website usability, mobile optimization, and sales conversion rates, as satisfied customers are more likely to complete purchases and return for future transactions, underscoring the importance of providing a seamless and satisfying online shopping experience.Top of FormBottom of Form

c. Internal VIF

Variance Inflation Factor (VIF) is a measure used to detect multicollinearity in regression models. Multicollinearity occurs when independent variables in a model are highly correlated, leading to unreliable and unstable estimates of regression coefficients. A VIF value above 3.000 indicates problematic multicollinearity. In this study, VIF values were calculated for the relationships among the constructs, and the results are discussed below.

Table 3. Internal VIF

Variable	VIF
Customer Satisfaction → Sales Conversion Rates	2.177
Mobile Optimization → Customer Satisfaction	1.505
Mobile Optimization → Sales Conversion Rates	2.026

Website Usability → Customer Satisfaction	1.505
Website Usability → Sales Conversion Rates	1.748

Source: Data processing results (2024)

The VIF value of 2.177 for the relationship between Customer Satisfaction and Sales Conversion Rates indicates no significant multicollinearity, suggesting that Customer Satisfaction can reliably predict Sales Conversion Rates, aligning with literature that higher customer satisfaction leads to increased sales conversion rates (Anderson & Sullivan, 1993). The VIF value of 1.505 for the relationship between Mobile Optimization and Customer Satisfaction indicates low multicollinearity, confirming Mobile Optimization as an independent predictor of Customer Satisfaction, well-documented in regions with high mobile internet usage like Indonesia (Lim, Widdows, & Park, 2006). Similarly, the VIF value of 2.026 for the relationship between Mobile Optimization and Sales Conversion Rates supports the hypothesis that Mobile Optimization directly influences Sales Conversion Rates, emphasizing the importance of a mobile-friendly interface in converting visitors into buyers (Huang & Benyoucef, 2013). The VIF value of 1.505 for the relationship between Website Usability and Customer Satisfaction suggests low multicollinearity, indicating Website Usability as a reliable predictor of Customer Satisfaction, consistent with research highlighting the role of a well-designed, easy-to-navigate website in enhancing user satisfaction (Palmer, 2002; Zviran, Glezer, & Avni, 2006). Lastly, the VIF value of 1.748 for the relationship between Website Usability and Sales Conversion Rates supports the direct impact of Website Usability on Sales Conversion Rates, underscoring the importance of usability in driving e-commerce success (Gregg & Walczak, 2010; Tarafdar & Zhang, 2005).

d. Discriminant Validity

Discriminant validity is a measure of the extent to which constructs in a model are distinct from one another. It ensures that a construct is truly unique and captures phenomena not represented by other constructs in the model. Discriminant validity is assessed by comparing the Average Variance Extracted (AVE) for each construct with the squared correlations between constructs. The Fornell-Larcker criterion is commonly used, which states that the square root of the AVE for each construct should be greater than the highest correlation with any other construct.

Table 4. Discriminant Validity

Variable	Customer Satisfaction	Mobile Optimization	Sales Conversion Rates	Website Usability
Customer Satisfaction	0.819			
Mobile Optimization	0.683	0.778		
Sales Conversion Rates	0.747	0.756	0.785	
Website Usability	0.618	0.579	0.661	0.878

Source: Data processing results (2024)

The constructs of Customer Satisfaction (CS), Mobile Optimization (MO), Sales Conversion Rates (SCR), and Website Usability (WU) all demonstrate good discriminant validity. The square root of AVE for Customer Satisfaction is 0.819, with correlations of 0.683 with Mobile Optimization, 0.747 with Sales Conversion Rates, and 0.618 with Website Usability, all being less than 0.819. Similarly, Mobile Optimization

has a square root of AVE of 0.778, with correlations of 0.683 with Customer Satisfaction, 0.756 with Sales Conversion Rates, and 0.579 with Website Usability, all below 0.778. For Sales Conversion Rates, the square root of AVE is 0.785, with correlations of 0.747 with Customer Satisfaction, 0.756 with Mobile Optimization, and 0.661 with Website Usability, all less than 0.785. Lastly, Website Usability has a square root of AVE of 0.878, with correlations of 0.618 with Customer Satisfaction, 0.579 with Mobile Optimization, and 0.661 with Sales Conversion Rates, all below 0.878.

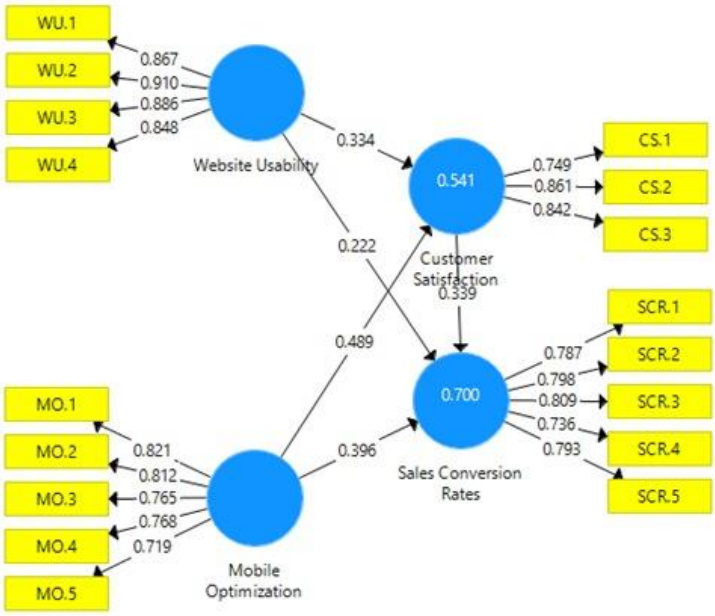

Figure 2. Internal Assessment Model

e. Model Fit

Model fit indices provide a measure of how well the proposed model fits the observed data. The following results detail the model fit statistics for the Structural Equation Modeling-Partial Least Squares (SEM-PLS 3) analysis conducted in this study: The Standardized Root Mean Square Residual (SRMR), a measure of the difference between the observed correlation and the model-implied correlation matrix, is 0.057, well below the threshold of 0.08, indicating a good fit (Hu & Bentler, 1999). The Normed Fit Index (NFI), which assesses model fit by comparing the chi-square value of the model to the chi-square of the null model, is 0.921, close to 1, suggesting a significantly better fit compared to the null model. The Chi-Square/df ratio, which is the chi-square fit index divided by the degrees of freedom, is 1.873, below the threshold of 3, indicating an acceptable fit (Tabachnick & Fidell, 2007). These indices collectively indicate that the proposed model has a good fit with the observed data, suggesting that the model is a good representation of the underlying relationships among website usability, mobile optimization, customer satisfaction, and sales conversion rates in the context of Indonesian e-commerce.

The R Square (R^2) and R Square Adjusted (Adjusted R^2) values are crucial indicators of a model's explanatory power, representing the proportion of variance in the dependent variable explained by the independent variables. For Customer Satisfaction, the R^2 value is 0.541, indicating that 54.1% of the variance in Customer Satisfaction can be

explained by Website Usability and Mobile Optimization, while the Adjusted R^2 value is 0.536, suggesting a well-specified model with appropriate predictors. This substantial explanatory power indicates that while Website Usability and Mobile Optimization are critical, other factors like product quality, customer service, and pricing may also contribute to Customer Satisfaction. For Sales Conversion Rates, the R^2 value is 0.700, indicating that 70.0% of the variance in Sales Conversion Rates can be explained by Customer Satisfaction, Website Usability, and Mobile Optimization. The Adjusted R^2 value of 0.695 confirms the model's robustness, suggesting that these factors are highly influential in determining Sales Conversion Rates without overfitting.

f. Hypothesis Testing

Hypothesis testing is a critical component of the research process, providing evidence for or against the proposed relationships between variables. In this study, hypothesis testing was conducted using the Structural Equation Modeling-Partial Least Squares (SEM-PLS) method. The results include the Original Sample (O), Sample Mean (M), Standard Deviation (STDEV), T Statistics (|O/STDEV|), and P Values for each hypothesis.

Table 5. Bootstrapping Test

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Customer Satisfaction -> Sales Conversion Rates	0.339	0.337	0.064	5.342	0.000
Mobile Optimization -> Customer Satisfaction	0.489	0.487	0.056	8.763	0.000
Mobile Optimization -> Sales Conversion Rates	0.396	0.401	0.057	6.892	0.000
Website Usability -> Customer Satisfaction	0.334	0.336	0.066	5.073	0.000
Website Usability -> Sales Conversion Rates	0.222	0.219	0.068	3.287	0.001

Source: Data processing results (2024)

The study tested several hypotheses, yielding significant results: Hypothesis 1 found that Customer Satisfaction positively affects Sales Conversion Rates with a path coefficient of 0.339 ($p < 0.001$) and a T-statistic of 5.342, supporting that higher customer satisfaction increases sales conversions. Hypothesis 2 showed a strong positive relationship between Mobile Optimization and Customer Satisfaction, with a path coefficient of 0.489 ($p < 0.001$) and a T-statistic of 8.763. Hypothesis 3 indicated that Mobile Optimization positively impacts Sales Conversion Rates, with a path coefficient of 0.396 ($p < 0.001$) and a T-statistic of 6.892. Hypothesis 4 demonstrated that Website Usability significantly enhances Customer Satisfaction, with a path coefficient of 0.334 ($p < 0.001$) and a T-statistic of 5.073. Lastly, Hypothesis 5 confirmed a positive relationship between Website Usability and Sales Conversion Rates, with a path coefficient of 0.222 ($p = 0.001$) and a T-statistic of 3.287, highlighting the importance of a user-friendly website in converting visitors into customers.

4.2 Discussion

a. Impact of Website Usability on Customer Satisfaction and Sales Conversion Rates

The study confirmed that website usability has a positive and significant effect on both customer satisfaction ($\beta = 0.334$, $p < 0.001$) and sales conversion rates ($\beta = 0.222$, $p < 0.001$). This aligns with previous research indicating that user-friendly websites enhance the overall shopping experience, leading to higher satisfaction and increased likelihood of purchases (1,2,3). The evolution of User Interface (UI) and User Experience (UX) design has been shown to significantly impact business revenue by improving user interactions and satisfaction on e-commerce platforms. Enhanced UI/UX design elements, such as simplified navigation, faster loading times, and aesthetically pleasing layouts, have been correlated with increased website traffic, higher conversion rates, and substantial revenue growth [1]. Furthermore, user experience design (UXD) plays a crucial role in shaping customer satisfaction and loyalty, with factors like ease of navigation, clarity of product information, visual design, and page loading speed being particularly influential. Personalization and customization features also enhance customer satisfaction by providing a more engaging shopping experience, and mobile optimization is increasingly important as more customers shop via mobile devices [24]. Trust is another critical factor, as it strengthens the effects of website design on customer satisfaction and loyalty. High trust levels amplify the positive impact of website design on satisfaction, while usability's effect on satisfaction is moderated by trust [35]. Despite the advantages of e-commerce, such as low prices, a wide range of products, and convenience, there are drawbacks like the lack of social interaction and difficulty in assessing product quality. However, the use of advanced technologies like big data analysis, machine learning, and augmented reality can mitigate these issues and improve user experience [36]. Finally, the quality of information and system usability on e-commerce platforms significantly affects user experience and purchase decisions, as evidenced by research on the Tokopedia platform, where better information quality and usability led to improved user experiences and higher purchase rates [37].

E-commerce businesses should invest in improving website usability by ensuring intuitive navigation, fast loading times, clear content, and responsive design, as enhancing these aspects can lead to better customer retention and higher conversion rates, ultimately driving revenue growth. These findings contribute to the existing body of knowledge by providing empirical evidence from the Indonesian e-commerce context, thereby expanding the generalizability of usability theories.

b. Influence of Mobile Optimization on Customer Satisfaction and Sales Conversion Rates

Mobile optimization was found to have a strong positive effect on customer satisfaction ($\beta = 0.489$, $p < 0.001$) and sales conversion rates ($\beta = 0.396$, $p < 0.001$). The high mobile internet penetration in Indonesia significantly influences the user experience, particularly with mobile-friendly websites and applications. This is evident in various sectors, including health, entertainment, and online services. For instance, the Mobile JKN application by BPJS Kesehatan, designed to enhance health service accessibility, has faced

challenges in user experience, primarily due to issues related to security, ease of use, and timeliness, which are critical for improving user satisfaction [38]. Similarly, the PeduliLindungi Mobile App, essential during the COVID-19 pandemic for contact tracing and vaccination verification, has been scrutinized for its privacy and responsiveness issues, despite its efficiency and system availability being positively rated [39]. In the entertainment industry, the Vidio mobile application, a leading over-the-top service in Indonesia, shows that user experience significantly impacts customer satisfaction, necessitating continuous innovation to maintain a competitive edge [40]. Furthermore, the design and usability of online ticketing service websites like Traveloka, Pegi-Pegi, and Tiket.com highlight that simplicity and ease of interaction on smartphone displays enhance user comfort and perceived security, which are crucial for a positive user experience [41]. Lastly, the rise of online meal delivery applications during the COVID-19 pandemic underscores the importance of convenience, time savings, and ease of use in driving consumer behavior, although privacy and security concerns remain areas needing improvement [42].

E-commerce businesses must prioritize mobile optimization to cater to the growing number of mobile shoppers by developing responsive designs, reducing load times, and ensuring seamless navigation on mobile devices. These efforts can significantly enhance user satisfaction and increase the likelihood of conversions, making mobile optimization a strategic focus area for e-commerce platforms. The study reinforces the importance of mobile optimization in the e-commerce landscape, particularly in emerging markets like Indonesia, where mobile usage is prevalent, thus extending the applicability of mobile optimization theories to a new geographic context.

c. Role of Customer Satisfaction in Mediating Sales Conversion Rates

Customer satisfaction was shown to have a direct and significant impact on sales conversion rates ($\beta = 0.339$, $p < 0.001$). The finding that customer satisfaction is crucial in driving purchase behavior and loyalty is well-supported by existing literature. For instance, research on online purchasing behavior emphasizes that customer satisfaction is significantly influenced by factors such as website usability, product information, security, and customer service quality, which in turn foster loyalty and repeat purchases [43]. Similarly, in the textile industry, customer satisfaction and loyalty are driven by product quality, customer support, and overall customer experience, which help businesses differentiate themselves from competitors and build long-lasting relationships with customers [44]. The central role of product quality in enhancing customer satisfaction, loyalty, and repeat purchase behavior is further corroborated by studies highlighting the importance of performance, reliability, durability, and perceived quality [45]. In the telecommunication sector, customer satisfaction has been shown to have a significant effect on brand loyalty, with factors such as service promptness, responsiveness, staff courtesy, and customer understanding playing pivotal roles in enhancing loyalty [46]. Additionally, in the context of yoghurt companies in Nigeria, customer satisfaction is found to be a critical determinant of customer loyalty, suggesting that effective

customer relations and service delivery are essential for retaining customers [47].

Practical implications suggest that businesses should focus on strategies that enhance customer satisfaction, such as improving customer service, offering high-quality products, and providing personalized shopping experiences, as satisfied customers are more likely to make repeat purchases and recommend the business to others, thus driving higher sales conversion rates. Theoretical implications indicate that this study provides further evidence supporting the mediating role of customer satisfaction in the relationship between website usability, mobile optimization, and sales conversion rates, adding depth to the understanding of these dynamics in the e-commerce context.

4.3 Future Research Directions

While this study provides valuable insights, it also opens avenues for further research: future studies could explore additional factors influencing customer satisfaction and sales conversion rates, such as product quality, pricing strategies, and customer service; longitudinal studies could provide deeper insights into how improvements in website usability and mobile optimization impact customer behavior and business performance over time; and comparative studies across different countries or regions could help generalize the findings and understand cultural or market-specific differences in e-commerce dynamics.

5. CONCLUSION

This study reveals the significant impact of website usability and mobile optimization on customer satisfaction and sales conversion rates in the Indonesian e-commerce sector. The research shows that improving website usability and mobile optimization increases customer satisfaction, leading to higher sales conversion rates. Key findings indicate that user-friendly design, intuitive navigation, fast loading times, and a seamless mobile experience are crucial. Customer satisfaction mediates the relationship between these factors and sales conversion rates, highlighting the need for e-commerce businesses to focus on enhancing user experience. Practically, e-commerce businesses should invest in website and mobile optimization to drive sales and customer loyalty. Theoretically, the study extends the applicability of these concepts to the Indonesian context and supports the mediating role of customer satisfaction in e-commerce performance. Future research should explore additional factors like product quality, pricing strategies, and customer service, conduct longitudinal studies for long-term insights, and compare findings across regions or countries to identify cultural differences.

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