

The Impact of Perceived Ease of use and Customer Trust on Service Attractiveness: Investigating the Moderating Effect of Age in Digital Healthcare Service



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ABSTRACT: Customer expectations for ease of use and trust when using digital healthcare services have also increased, urging the need to understand how these factors may impact service attractiveness. The study aims to test how ease of use and trust impact service attractiveness in the Halodoc application and whether older users can boost demand in the digital healthcare sector. The findings are that trust strongly impacts the old age group. The study also found that age affects the relationship between perceived ease of use and service attractiveness, as well as between trust and service attractiveness.

KEYWORDS: Perceived Ease of Use, Customer Trust, Service Attractiveness, Digital Healthcare Service, Halodoc.

I. INTRODUCTION

The healthcare model has become more advanced, allowing patients to access health services without visiting clinics. Patients can now view medical records, ask questions, and receive treatment recommendations through digital healthcare platforms (Mitchell & Kan, 2019). Digital healthcare has gained significant traction globally, especially during the COVID-19 pandemic (J. Lee & Kim, 2021). In Indonesia, digital health services have emerged as a solution to overcome challenges (Deloitte, 2022), such as reaching patients in remote areas with inadequate health facilities (Hui et al., 2022).

McKinsey (2021) projected that the digital healthcare market in Asia will reach \$100 billion by 2025, with significant growth in the number of users. Deloitte (2022) confirmed that the number of users and enthusiasts for digital health services will continue to increase. As such, many businesses have emerged in this sector in Indonesia. There are more than six non-hospital digital health services and 60 hospital digital health services, with most users being non-hospital digital health services (Deloitte, 2022). Halodoc excels in the market competition (McKinsey, 2021). making it a suitable case to research digital health services and find out what factors affect service attractiveness.

With the current market growth, competition among digital healthcare providers in Indonesia has intensified. Many providers are striving to develop increasingly user-friendly applications that are accessible to various age groups, aiming to attract more customers to their services. However, research on the link between ease of use and service attractiveness vary. Mahboob et al. (2022) and Lee et al. (2014) argue that perceived ease of use does not directly improve service attractiveness. However, Chai and Wang (2022), Gefen et al. (2000), and Davis et al. (2000) argue that perceived ease of use can improve service attractiveness. Aside from ease of use, customer expectations for security and trust when using digital health services highlight the importance of understanding how these factors influence the attractiveness of such services. Behi's (2023) research in the peer-to-peer (P2P) sector found that while trust can attract and retain customers, it can also lead to disappointment and negative reactions if expectations are not met. Motivated by these findings, the author seeks to investigate the digital health services sector.

Although perceived ease of use (PEOU) has been extensively examined in relation to consumer satisfaction and intention to use, its direct or intermediate impact on service attractiveness remains underexplored. Furthermore, in the context of digital healthcare applications, the role of PEOU in enhancing service attractiveness across diverse demographic groups, particularly older users, has not been sufficiently studied.

Baur et al. (2021) predict factors that can increase digital health service users, one of which is the increasing number of elderly populations. This statement is reinforced by data from Other McKinsey (2021), The United Nations (2023), and Other Development

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Countries (ODCs), having the number of elderly populations increasing by 17.4% by 2050. This presents an opportunity for increased demand in the digital healthcare sector, especially as the elderly population requires more frequent medical care (McKinsey, 2021). Dinakrisma et al. (2022) emphasized the importance of digital health services for the elderly, highlighting their potential to efficiently manage geriatric care. These services can alleviate the challenges faced by elderly patients, such as navigating crowded hospital queues, which are often inefficient for their needs (Liu et al., 2019).

However, previous research has predominantly focused on younger age groups. This study addresses the need for research on older adults and explores variables such as perceived ease of use and customer trust to provide broader insights into the digital healthcare sector. While the literature on perceived ease of use and customer trust in healthcare contexts exists (e.g., Saadatzi et al., 2020; Holden et al., 2012; Ramayah et al., 2022; Gur, 2020) further investigation is needed to deepen understanding and address gaps in this area.

However, the existing literature primarily focuses on perceived ease of use and customer trust in general contexts, with limited attention to their application in digital health services. This study aims to bridge this gap by contributing valuable insights into marketing-related issues in digital health services, particularly in developing countries—a subject that remains underexplored. This study contributes to the literature by addressing specific research questions and filling a critical research gap. It provides a detailed examination of how perceived ease of use and customer trust influence service attractiveness in digital health services. Additionally, the research uniquely examines these dynamics across two generational groups—older adults and youth.

II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

A. *Perceived Ease of Use*

Systems that are considered easy to use require little effort, thus making them more attractive to users (Davis et al., 1989). If Halodoc users perceive digital health services as easy to use and not overly complicated, the platform will likely gain wider acceptance and usage. This, in turn, could drive the adoption of digital health technology, enhancing the efficiency of healthcare services as users find it convenient to access care services through the application (Alharbi et al., 2021). The relationship between perceived ease of use (PEOU) and information technology adoption suggests that a higher PEOU can enhance the attractiveness of the service by making it more user-friendly and accessible (Gefen et al., 2000). When consumers find a service easy to learn and use, their perception of its usability improves, making the service more engaging and likely to encourage continued use (Chai & Wang, 2022).

B. *Customer Trust*

Liu et al. (2023) defined customer trust as the customer's confident belief in the reliability and honesty of the seller. The increasing threat of personal data theft by hackers has made customers more cautious about the potential misuse of their data, including personal information, medical history, diagnosis results, or contact details, which can be exploited for fraud or phishing. This growing concern underscores the importance of customer trust, as users seek not only functional services but also those that can effectively safeguard their data. Apps that can demonstrate a commitment to data security tend to have an edge in attracting and retaining customers.

According to Chen and Barnes (2007), initial trust can significantly influence a customer's decision to use a service in the future, making security a crucial factor in establishing trust from the outset. Ensuring robust data protection and privacy measures is essential to build and maintain customer confidence in digital health services. Trust is an essential component of online transactions and has a significant relationship with the customer's intent to continue using the service (Rahman et al., 2020). Trust can make customers feel safe and confident in their online interactions (Rahman et al., 2020). According to Ruotsalainen and Blobel (2022), factors that can shape customer trust in the digital healthcare sector are data security, privacy issues, transparency and availability of information, legal regulations, and previous experience.

C. *Service Attractiveness*

Service attractiveness plays a crucial role in the service industry, particularly in today's highly competitive market. It shapes consumer perceptions, influences decision-making, and enhances the overall consumer experience, ultimately driving customer satisfaction and loyalty (Akarsu et al., 2020). The attractiveness of a service refers to the offerings available on a platform, particularly in the sharing economy. These elements play a critical role in shaping consumer perception, loyalty, and satisfaction. In the online marketplace, a service's attractiveness is key to attracting potential consumers and retaining existing ones (Akarsu et al., 2020). The attractiveness of a service is pivotal in influencing consumer behavior and loyalty in an online shopping environment. It enhances customer satisfaction and encourages repeat purchases, fostering long-term customer relationships (King et al., 2016). Visibility, accessibility, uniqueness, a highly automated social presence, and service design all play key roles in

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enhancing the appeal of a service. Together, these factors contribute to a positive consumer experience, driving interest and engagement (van Doorn et al., 2017). These factors influence the customer's perception of the service and their willingness to engage with it, ultimately impacting their decision to use or continue using the service.

D. The Relationship between Perceived Ease of Use and Service Attractiveness

Stafford et al. (2021) reported that many users experienced frustration or difficulty with navigation tools, highlighting that perceived ease of use becomes a key concern once users engage with a platform. Addressing these concerns is crucial to maintaining service attractiveness, particularly in a highly competitive digital market (Lecheler et al., 2020). Perceived ease of use is an important factor in determining user satisfaction and loyalty. Hence, user-friendly design is needed to increase consumer satisfaction, trust, and, ultimately, loyalty (Flavián et al., 2006). By lowering cognitive effort and improving usability, ease of use directly affects user attitudes and perceptions of the service, as suggested in the Technology Acceptance Model (TAM) (Davis, 1989). In the context of digital health services, as observed in this study, the perceived ease of use refers to how intuitive and easy the Halodoc application is for users. This is especially important for services such as telemedicine, appointment booking, and medical administration. Previous research has consistently shown the importance of ease of use in increasing customer engagement adoption (Gefen & Straub, 2000). Platforms that successfully provide an easy-to-use interface usually have a greater level of service attractiveness, as consumers are more likely to find it reliable and efficient (Filiari et al., 2021). Therefore, the author presents the following hypothesis:

H.1a: Perceived ease of use has a significant, positive effect on service attractiveness in the digital healthcare market.

However, it should be noted that Smrke et al. (2024) found that older users generally show a higher rate of technophobia compared to the younger generation. Older users experience higher levels of anxiety and confusion when using technology than younger users (Smrke et al., 2024). The older the user, the lower the level of understanding of new technologies is. Chee et al. (2023) and Falzarano (2023) examined the challenges faced by older users when using technology compared to younger users. Their challenges stem from higher levels of technophobia and cognitive difficulties, which diminish the willingness to adopt new technology. As a result, age may moderate the perceived ease of use of technology, influencing its impact on the attractiveness of services. Based on this, we propose the following hypothesis:

H.1b: There is a significant difference between old and young age groups in the H.1a hypothesis (Perceived ease of use has a significant positive effect on service attractiveness in the digital health services market)

E. The Relationship between Customer Trust and Service Attractiveness

Customer trust has been extensively studied in marketing literature, and it plays a critical role in the context of telemedicine platforms for rehabilitation treatment. Trust in these platforms is essential, which involves the reliability of the services, the security of personal and medical data, and the overall effectiveness of the treatment provided (Van Velsen et al., 2016). Meanwhile, service attractiveness relates to how customers perceive the value and benefits (Oriade & Schofield, 2019). Together, customer trust and service attractiveness have garnered increasing attention in academic literature, particularly in the field of digital services. Trust is crucial in shaping user perception and experience, significantly influencing how users engage with and evaluate these services (Mou et al., 2017). Trust in digital healthcare services affects not only users' willingness to adopt services but also their perception of the attractiveness of those services, making them an important determinant of engagement and loyalty. Binzer et al. (2024) and Connolly et al. (2023) shows that customer trust is closely related to other marketing factors, such as perceived value and consumer satisfaction. Therefore, platforms that establish strong user trust are more likely to enhance the attractiveness of their services in today's competitive market. Based on this, the following hypothesis is proposed:

H.2a: Customer trust has a significant, positive effect on service attractiveness in the digital healthcare market.

Liu et al. (2023) suggest that older individuals may show skepticism towards new digital health services due to their reliance on existing trusted services. This skepticism can hinder the adoption of innovative technologies, as individuals may perceive new services as unreliable or irrelevant. Consequently, a lack of trust in digital health services can reduce the appeal of these services and hinder their acceptance among older age groups, as observed in a study based in Hong Kong (Liu et al., 2023). Changes or new features introduced to a service can be intimidating for older adults, leading to a reduced appeal, even if they had previously trusted the service (Bae et al., 2021). This is particularly relevant for the older age group, which values the stability of the app's services more than the introduction of new features. Therefore, the following hypothesis is proposed:

H.2b: There is a significant difference between older and younger age groups in the H.2a hypothesis (Customer Trust has a significant positive effect on Service Attractiveness in the digital healthcare market.

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F. The Relationship Between Perceived Ease of Use and Customer Trust

with a website, ensuring they can access and use its features without difficulty or frustration (Rodriguez et al., 2012). Sarkar et al. (2020) argue that perceived ease of use has a significant positive relationship with customer trust in the e-commerce sector. Therefore, the easier a system is to use, the more likely users will trust the service. Martínez-Navalón et al. (2023) provide strong evidence that perceived ease of use has a positive impact on customer trust in digital banking applications. They emphasized that the greater the ease of use, the greater the user's trust in the application. Therefore, the following hypothesis is proposed:

H.3a: Perceived ease of use has a significant, positive effect on customer trust in the digital healthcare market.

The perceived ease of use typically influences trust, but its impact can differ across age groups, highlighting the significance of user experience in the adoption of technology (Hua et al., 2021). Older users place a higher emphasis on ease of use to develop confidence in the app's technical competence (Hua et al., 2021). This trust is crucial to controlling their behavior and intention to use technology (Rajaobelina et al., 2021). Therefore, older age requires an app that is easier to use to build trust and control over technology. Following the above statement, the author presents the following hypothesis:

H.3b: There is a significant difference between old and young age in the H.3a hypothesis (Perceived Ease of Use has a significant positive effect on Customer Trust in the digital healthcare market)

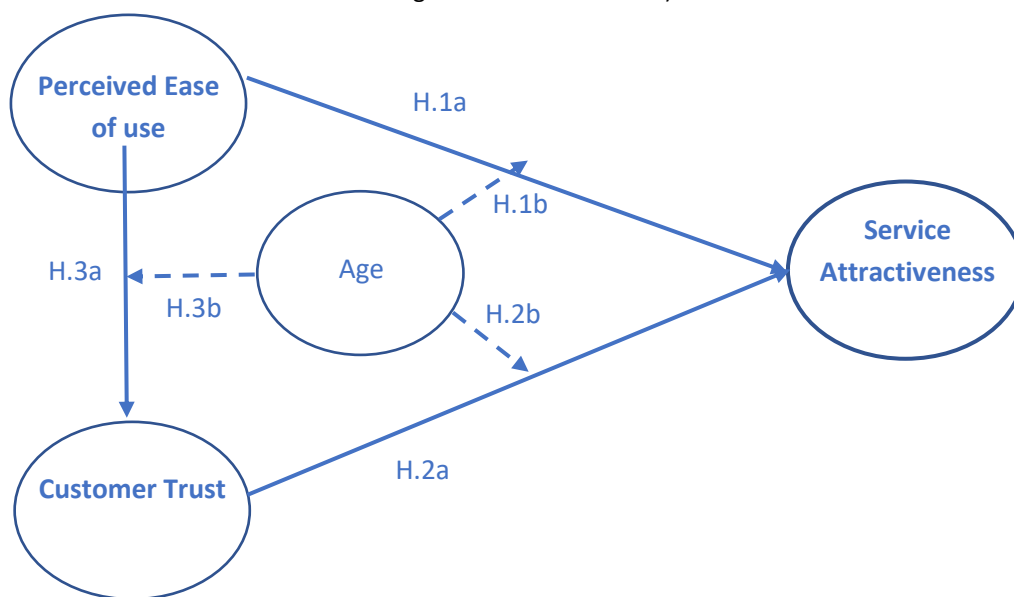


Figure 1. Conceptual Framework

III. RESEARCH METHODS

According to Cresswell (2009), A quantitative method involves the process of collecting, analyzing, interpreting, and writing the results of research. The Likert Scale is often used in academia to convert qualitative answers into quantitative data (Roszkowski & Soven, 2010). This research was conducted across several major cities in Indonesia, targeting respondents aged 17-59 who had used the Halodoc application. The age range was chosen based on United Nations (2023) data, which projects a 17.4% increase in the elderly population in Other Development Countries (ODCs) by 2050, highlighting the growing demand for digital health services. Purposive sampling was used to ensure representation of Generation X, Y, and Z, with a sample size of 100 respondents. Data was collected via a Google Form, distributed through social media, the Halodoc user community and relevant online forums to reach respondents across various provinces. The collected data was analyzed using quantitative methods, with data processing performed using SmartPLS 4 statistical software.

Table 1. Sample Characteristics (N100)

Classification & variable	Frequency	Percentage
Gender		
Female	85	85%
Male	15	15%
Age		
17 – 27	55	55%

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28 – 43	34	34%
44 – 59	11	11%
Island/Regions		
Jakarta	21	21%
Banten	11	11%
West Java	13	13%
Central Java	4	4%
East Java	13	13%
Yogyakarta	1	1%
Bali	2	2%
West Nusa Tenggara	28	28%
East Nusa Tenggara	1	1%
South Sumatra	1	1%
South Sulawesi	2	2%
North Sumatra	1	1%
West Sumatra	1	1%
West Kalimantan	1	1%
Occupation		
Unemployed / student / student	52	52%
PNS/POLRI/TNI	7	7%
Private employees	30	30%
Self employed	5	5%
Other	6	6%
Last Education		
SMA	53	53%
D3	1	1%
S1	40	40%
S2	4	4%
Other	2	2%
Income/Monthly allowance		
< Rp 2.000.000	48	48%
IDR 2,000,001 - IDR 5,000,000	21	21%
IDR 5,000,001 - IDR 10,000,000	18	18%
IDR 10,000,001 - IDR 15,000,000	11	11%
> Rp 15.000.001	2	2%

The type of measurement scale in this study is the Likert scale. Measurement intervals range from strongly agree "5" to strongly disagree "1" (Alismail & Zhang, 2018). The descriptive analysis in this study showed that there were more female respondents than male respondents the number of female respondents was 85%, and the number of male respondents was 15%.

IV. RESULTS AND DISCUSSION

To find out how much the old age group and young age group influenced this study, we tested with several analyses. First-order measurement items to simplify complex data and analyze reliability (Spencer et al., 1994).

Table 2. First-order measurement items

	Outer loadings	Cronbach's alpha	rho_a	Composite Reliability	AVE
Customer Trust		0.850	0.856	0,893	0,625
(CT.1) The service on the Halodoc application always meets my expectations.	0.826				

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(CT.2) The Halodoc application can be relied on to provide quality health services.	0,809				
(CT.3) I can trust the services provided by the Halodoc application.	0.772				
(CT.4) The Halodoc application is a trustworthy digital healthcare platform	0.734				
(CT.5) The quality of service provided on the Halodoc application is always consistently high	0.808				
Perceived Ease of Use		0.908	0.912	0,927	0,645
(PEOU.1) I feel comfortable when using the Halodoc application	0.852				
(PEOU.2) Interacting with the services on the Halodoc app feels good to me	0.730				
(PEOU.3) The Halodoc application system is flexible and easy to use	0.759				
(PEOU.4) I find it easy to make an appointment or order a service at my own pace	0.828				
(PEOU.5) The Halodoc application system often works as I expected	0.797				
(PEOU.6) I feel that the Halodoc application system is very practical to use	0.785				
(PEOU.7) Overall, I feel that the Halodoc application system is very easy to use	0.860				
Service Attractiveness Customer Service		0.883	0.884	0,928	0,810
(SA-CS.1) The Halodoc application provides cancellation and return of good products or services.	0.778				
(SA-CS.2) Returning unwanted products through the Halodoc application is easy.	0.748				
(SA-CS.3) The Halodoc application provides good delivery services.	0.728				
Flexibility		0.864	0.864	0,907	0,710
(SA-Flex.1) The Halodoc app is flexible in responding to my requests.	0.719				
(SA-Flex.2) This Halodoc application has the ability to customize its products/services to meet my specific needs.	0.734				
(SA-Flex.3) The Halodoc application has the ability to handle changes.	0.731				
(SA-Flex.4) The Halodoc app has the ability to provide custom delivery requests for purchased products and services.	0.751				
Reliability		0.892	0,893	0,925	0,756
(SA-Ral.1) The Halodoc application provides reliable information.	0.734				
(SA-Ral.2) Transactions on the Halodoc application are reliable.	0.783				

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(SA-Reli.3) The Halodoc application performs the service correctly the first time.	0.730				
(SA-Ral.4) Customer service is reliable on the Halodoc app.	0.735				
Responsiveness		0.884	0,885	0,915	0,684
(SA-Resp.1) The Halodoc app responds well to my questions or requests	0.741				
(SA-Resp.2) The response time of the Halodoc application is in line with my expectations.	0.742				
(SA-Resp.3) The process of searching for information in the Halodoc application is fast.	0.727				
(SA-Resp.4) The time required to search for information on the Halodoc application feels reasonable.	0.751				
(SA-Resp.5) The loading time of a feature or page in the Halodoc application feels reasonable.	0.762				

A Cronbach alpha value equal to or greater than 0.70 is generally recognized as a good indicator of reliability (Petreson, 1994; Hair et al., 2020). Table 2 shows that the Cronbach alpha value is more than 0.70, and all Cronbach alpha meets the requirement. The value of the loading factor is above 0.70, while 0.70 is the general threshold for significance (See Russell, 2005). AVE is calculated by averaging the square charge of the construction indicators (Hair et al., 2021), all AVE values in Table 2 are acceptable.

Table 3. Discriminant Validity HTMT

	Customer Trust	Perceived Ease of Use	IN-Customer Service	SA-Flexibility	SA-Reliability	SA-Responsiveness
Customer Trust						
Perceived Ease of Use	0,647					
SA-Customer Service	0,661	0,625				
SA-Flexibility	0,719	0,607	0,768			
SA-Reliability	0,622	0,489	0,658	0,781		
SA-Responsiveness	0,707	0,560	0,780	0,766	0,802	

Table 3 shows the validity of discrimination and the recommended HTMT (Henseler et al., 2015). The aim is to determine the efficacy of certain variables in distinguishing between subjects (Wells et al., 1992). Therefore, in Table 3, the construct can be considered to have adequate discriminant validity.

Table 4. MICOM

Construct	Confi. Inv	Composition s. Inv		Partial Measure Invariance Established	Equal Mean Assessment			Equal Variance Assessment			Full Measurement Invariance Established
		C=1	THERE		Diff.	Confi. Interval	Equal	Diff.	Confi. Interval	Equal	
Trust	YES	0,998	0,993	YES	-0,528	(-0,401/0,400)	NO	0,349	(-0,559/0,590)	YES	NO

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PEOU	YES	0,951	0,992	NO	-0,441	(-0,403/0,382)	NO	0,793	(-0,596/0,682)	NO	YES
Attractiveness	YES	0,999	0,997	YES	-0,246	(-0,412/0,378)	YES	0,518	(-0,553/0,664)	YES	YES

Note: Confi. Inva= Configural Invariance; Compos Inv=Compositional Invariance; CI=Confidence Interval; Diff=Difference

A value can be said to be invariant if it is a linear combination of depressed cells that produces a unique viable value (Kao & Gusfield, 1993). Table 4 shows that Perceived Ease of Use and Service Attractiveness have complete invariances. However, in Customer Trust, there is an unbiased variation.

Table 5. Results of Bootstrapping for Younger and Older Age Groups

	Younger Age				Older Age			
	Original sample	STDEV	T Statistics	P Values	Original sample	STDEV	T Statistics	P Values
CT → SA	0,306	0,133	2,289	0,022	0,615	0,146	4,212	0,000
PEOU → CT	0,699	0,098	7,095	0,000	0,347	0,309	1,123	0,262
PEOU → SA	0,649	0,142	4,580	0,000	-0,173	0,185	0,935	0,350

From the results of the analysis in Table 5, the effect of PEOU → SA is significant for the younger age group, but not significant for the older age group. This means that the age variable can be moderated. Therefore, the easier the application is to use, the more attractive the service will be in the younger age group.

Table 6. Multigroup hypothesis testing

Path Coefficient				Confidence Interval (2,5%; 97,5%)	P Value
	Relationship	Young Age	Old Age		
H.1.b CT → SA	0,306	0,615	-0,309	(0,307; 0,715)	0,000
H.2.b PEOU → CT	0,699	0,347	0,352	(0,402; 0,737)	0,000
H.3.b PEOU → SA	0,649	-0,173	0,822	(0,059; 0,523)	0,011

The permutation p-value value was less than or equal to 0.10 indicating a significant difference between the two groups (Hair et al., 2019). Table 7 shows that the three hypothetical relationships above have significant differences between young age and old age.

V. CONCLUSION

This study aims to examine the influence of perceived ease of use (PEOU) and customer trust on service attractiveness in digital health services, particularly in the Halodoc application. The results of the previous analysis revealed that PEOU had a significant impact on service attractiveness for the younger age group, but this effect was less pronounced in the older age group. In the older age group, the impact was less significant due to cognitive decline, which includes challenges such as memory retention and sensory impairments, hindering the elderly's ability to fully understand and use technology (Alyamani, 2019). In contrast, consumer confidence had a significant impact on both age groups, with a stronger effect on the older age group. Older consumers, particularly the baby boomer generation, tend to be more discerning and cautious, requiring a strong relationship with companies to build trust and confidence in their purchasing decisions (Leventhal, 1997). These findings highlight the importance of improving a tech-friendly user experience and building customer trust, especially among different demographic groups. This highlights the importance for developers to prioritize trust-building mechanisms in their products (Kaewkitipong et al., 2022). In addition, the study also found that age affects the relationship between the perception of ease of use and the

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attractiveness of the service, as well as between customer trust and the attractiveness of the service. The results of these findings emphasize the need for marketing tactics that are tailored to the preferences of users and their needs.

VI. THEORETICAL AND MANAGERIAL IMPLICATIONS

Perceived ease of use may significantly enhance service attractiveness among younger users, but it does not have a significant positive effect on older users. Digital healthcare managers can focus on improving the ease of use of apps to attract younger users (Russell, 2005). These findings offer valuable insights for other digital health service managers. For older customers, who are more focused on trust, app developers should prioritize transparency in user data management to strengthen customer confidence.

VII. LIMITATION AND FUTURE RESEARCH

This study has some limitations, as it focuses solely on the Halodoc application, which may limit the generalizability of the findings to other digital health services. Future research could examine other digital health platforms, such as Alodokter or KlikDokter, to compare strategies and explore how differences between platforms influence user perceptions. Additionally, the sample size of 100 respondents may not fully represent all digital health service users in Indonesia. Future studies could also investigate other variables, such as user satisfaction, perceived risk, or perceived usefulness, to provide a broader understanding of user behavior.

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