

## PREDICTORS OF HALODOC'S USER SATISFACTION

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### ABSTRAK

Sejak pandemi Covid19, industri kesehatan digital telah bertumbuh pesat di seluruh dunia, ditandai dengan keterlibatan konsumen yang lebih besar dalam kesehatan, disertai kenaikan minat yang lebih tinggi akan layanan kesehatan virtual jarak jauh yang sering terlihat dalam bentuk aplikasi smartphone/ mHealth. Namun, Indonesia masih menghadapi beberapa kendala mengenai implementasi kesehatan digital. Untuk mendorong penggunaan aplikasi mHealth, promosi teknologi informasi dan komunikasi harus dikedepankan. Namun, praktik saat ini menunjukkan bahwa masih ada aspek yang menghambat efektivitas dan efisiensi layanan kesehatan aplikasi smartphone. Oleh karena itu, tantangan penting yang hadir dalam pengguna mHealth akan menjadi fokus dalam penelitian ini. Penelitian ini berupaya menyelidiki prediktor kepuasan pengguna Halodoc, salah satu aplikasi kesehatan seluler terbesar dan sukses di Indonesia. Data yang digunakan dalam penelitian ini adalah skor kegunaan yang dirasakan (PU), kemudahan penggunaan (EU), harga yang dirasakan (PP), antarmuka pengguna grafis (GU), ketergantungan penggunaan (RU), dan kepuasan (SA). Sampel diambil secara pengambilan sampel acak kenyamanan. Responden studi ini melibatkan 100 pengguna Halodoc mulai dari pemula hingga pengguna lama. Data kemudian dianalisis dengan uji-T sampel independen dan analisis varians (ANOVA). Hasil penelitian mempertegas kemudahan penggunaan bagi pengguna yang secara signifikan terkait dengan desain tombol, penggunaan warna, dan informasi obat paling. Selain itu, keandalan pada informasi dokter, yang memungkinkan layanan kesehatan pribadi secara signifikan terkait dengan kepuasan pengguna. Selain itu, ada beberapa fitur profil yang menyarankan tingkat pendidikan mempengaruhi tingkat penerimaan terhadap penggunaan dan kepuasan mHealth. Penelitian di masa depan disarankan untuk melibatkan sampel pengguna dalam jumlah yang lebih besar dan melakukan penelitian selama periode jangka panjang untuk mengukur kepuasan pengguna mHealth dari waktu ke waktu.

**Kata Kunci:** mHealth, Halodoc, aplikasi seluler, kepuasan pengguna, Indonesia.

### ABSTRACT

Since the COVID19 pandemic, the digital health industry has been accelerated worldwide, with greater consumers engagement in healthcare, and higher interest of remote virtual care found through smartphones application/ mHealth. However, Indonesia still faces several obstacles regarding the implementation of digital health. To encourage the use of the mhealth app, the promotion of information and communication technology must be at the forefront. However, current practice shows that they are still aspects hampering the effectiveness and efficiency of mobile health care. Therefore, crucial challenges present in the user of mHealth would be the focus of this study. This study seeks to investigate the predictors of Halodoc, one of the largest and successful mobile health application's user satisfaction. The data used in this study are scores of Perceived Usefulness (PU), Ease of Use (EU), Perceived Price (PP), Graphical User Interface (GU), Reliance of Use (RU), and Satisfaction (SA). Samples are taken using random convenience sampling. The respondent of this study is 100 Halodoc users starting from beginners to long time users. Data was then analyzed by the Independent Sample T-Test and Analysis of Variance (ANOVA). The study results reemphasize ease of use for users that is significantly associated with the design of buttons, use of colors, and drug information the most. In addition, reliability on doctor information, and enabling personal health care to be significantly associated with user satisfaction. In addition, there are several profile features that suggest, the level of education affects the level of acceptance to mhealth use and satisfaction. Future research is suggested to include a larger sample of users and over a period to better measure the long-term predictor of mHealth user satisfaction over time.

**Keywords:** mHealth, Halodoc, mobile application, user satisfaction, Indonesia.

**1. INTRODUCTION**

Since the COVID19 pandemic, the digital health industry has be accelerated worldwide, with investment in telemedicine alone reaching around US\$ 21.6 billion (Pwc, 2021). The rise of digital health is coupled with people’s desire for convenient and safe health delivery system found mostly through virtual care. With COVID-19, there is also greater consumers engagement in healthcare. Among 75% individuals who track their health, experience moderate change in their behavior, especially related to monitoring personal health, measuring fitness, and ordering prescription (Deloitte, 2021). The extremely high interest of remote virtual care are conducted through phone calls (83%), smartphones applications (80%), email (80%), and text (78%) (Pwc, 2021). Either fully online or a mix with in-person care, people are much more willing to connect and are even willing to continue virtual healthcare post COVID19. This indicates a promising future for mobile health application.

Indonesia’s COVID19 situation has also led it towards several health service problems. Amongst the many issues faced is lack of referral hospitals, limited facilities, and infrastructure. There is also different levels of awareness amongst people and government officials, namely some still underestimate the pandemic, too many bureaucratic procedures slowing response, and overall failure to meet many of the medical personnel and patient’s needs (Tosepu *et al.*, 2021). Consequently, Indonesia’s massive population demand served an opportunity space for eHealth industry development and innovation. However, Indonesia still faces several obstacles regarding the implementation of digital health. This includes competence of the users, limited access to electricity in certain regions, and internet penetration. Indonesia is considered to have low internet penetration compared to developed countries that has implemented more advanced eHealth technology.

The landscape of private ehealth has offered several features for consumer and health personnel (Table 1). Halodoc amongst different other health application came forth as an innovative mobile application. Halodoc is at the forefront in providing services pertaining tele-consultation, tele-pharmacy, health medical news, and e-prescribing. Halodoc, established in 2016, became the first most complete health solution in Indonesia with a tagline "Simplifying Healthcare." Halodoc facilitates health access to all communities in Indonesia, including online health services such as consulting with doctors online, and online drug services available in more than 100 cities and districts in Indonesia. During the Covid-19 pandemic situation, Halodoc also launched special services such as consulting with veterinarians for those who have sick pets where they can also send pictures and videos to be directly reviewed by veterinarians.

Table 1 A Comparison of Private eHealth in Indonesia  
Sumber tabel: Deloitte (2021)

	Patient Hospital Data Management	E-Prescribing	Clinical Decision Support	Patient Self-Care Informatics	Health Medical News	Virtual Health care Teams	Research Big Data	Tele-pharmacy	Tele-consultation	Tele-laboratory	Tele-radiology	Appointment Scheduling
Halodoc		v			v			v	v			
Alo Dokter				v	v				v			
Medico	v											
Periksa.id	v											
Prosehat		v										
Tele-CTG			v				v		v		v	
MIMS Indonesia			v		v							

ACAP Indonesia		v	v
Gesehat	v	v	
Sehati		v	v
Homedika		v	
PesanLab			v
Homecare24			v
K24Klik			v
Medika App			v
RSPI Mobile			v
IKO		v	

Healthcare in Indonesia has been increasingly in need for ubiquity and efficiency. This would involve heavy investment in medical services, enabling continuous and more high-quality testing/ diagnostics. Core infrastructure would then include access to technology and security, affordability, mobility and connectivity of devices, consumer skills and readiness, and an enabling regulatory and innovation environment. Indonesia has ranked in the lower-middle scale of ICT rankings amongst other countries (EY, 2017).

The adoption of mobile health application (mHealth from here on) has been tied to performance expectancy and effort expectancy especially for new adopters (Duarte and Pinho, 2019). In addition, young and well-educated people, as well as women are found to more likely adopt mHealth (idem). The likeliness to mobile app is associated with the of receive of health counseling and information and in setting up reminders. To encourage the use of the mhealth app, the promotion of information and communication technology must be at the forefront. Since low usability is often found in users aged over 65 years. A large proportion of these adults, have or will have a chronic condition that requires regular care, often family members and or partners also play a key role in monitoring their health. Therefore, when the percentage of these demographic user have adopted and are accustomed to mHealth, then the mHealth will be well established (Puig, 2021).

Current practice, however, shows that they are still aspects hampering the effectiveness and efficiency of mobile health care. There are five critical factors were identified specific smart technology applications for mobile health which are unobtrusiveness, supporting online social networking, the relaxation of the related medical laws, the size of the health care market, and the correct identification of the need and situation of a user (Chen, 2020b). The three most critical factors approximately 44% should be allocated to the relaxation of the related medical laws, unobtrusiveness, and 26% the correct identification of the need and 15% on situation of a user (idem). This then constitute possible predictors and area of investment for mHealth in the future. Past studies have also highlighted some rating domains and criteria for mHealth (Levine, 2020) (Table 2). The overall usability of mobile application severity associated with each heuristic violation. In general, heuristics related to user control and freedom, consistency and standards, and readability and glanceability area found to be the most critical (Islam *et al.*, 2020). Education and knowledge of healthcare stakeholders contribute to how comfortable user use such mobile health applications (Osei and Mashamba-Thompson, 2021). Therefore, crucial challenges in the several barriers and challenges presents in the user of mHealth would be the focus of this study.

### Research Problem

In terms of mhealth value, several aspects are expected by the users. According to the user experience questionnaire (UEQ Scale), Halodoc has good attractiveness, good perspicuity, good efficiency, good dependability, good stimulation, and good novelty (Mochammad Aldi Kushendriawan *et al.*, 2021). A value is good if it is amongst the 25% best results from this benchmark data set. Therefore, the overall quality of the Halodoc does not yet fall into the excellent that corresponds to the 10% best results, there are still area of improvement. Therefore, given the importance of end-users and some the obstacles faced in Indonesia digital health industry, this study seeks to investigate the predictors of Halodoc, one of the largest mobile health application's user satisfactions.

### Theoretical Framework

Technology Acceptance Model (TAM) is well established concept where it proposes an individual's behavioural intention towards system usage is determined by perceived usefulness and perceived ease of use (Venkatesh *et al.*, 2003). Both are deemed equally crucial in determining a person's intentions in using a technology. Perceived usefulness (PU) is then defined as the extent to which a person believes that using a particular technology will help them (Davis, 1989). Meanwhile perceived ease of use (EU) is the extent to which a person believes that using a new technology will be effortless for them (Davis, 1989).

In addition TAM has also been investigated in relation with socio-demographic such as age, gender, educational background and certain competitive factors (Pierpaoli *et al.*, 2013). This suggest that the user's profile and background could be preidctors in the perception of usefulness and ease of use on technology. In the case of social networking technology, where users become depenent and habitual users when they perceive the technology used is flexible to use requires less effort to use (Pitafi, 2020). Therefore perceived usefulness is seen a motivating factor in adopting new technology (Elkaseh *et al.*, 2016).

Perceived prices refer to the subjective form of the monetary value of a product or service based on the purchasing power of consumers (Calvo-Porrall and Lévy-Mangin, 2017). Consumers could then hold different perceived price and that could be more important for consumers than the real value of the product or service itself. The benefit or value of product or service is expected to measure up to the price that the customer's are willing to pay for it (Katyal, 2019). Perceived price then could be compared to other similar businesses in the market, while prices not justifiable by valid market conditions can be deemed unfair by customers (Liu and Chou, 2015). In a competitive market environment, perceived price and value acquired by customers could be the determining factor for customer revisit (Cakici, 2019).

Another part essential to mobile application us Graphical User interface (GUI) usually refers to tools that that allow communication with a digital technology. GUI is the "two-dimensional display that allows interaction between the electronic device and the user using images rather than text commands" (Africa, 2019). Therefore, GUI design tools would allow interaction and efficiency including speed of tools, various arrangements of graphic buttons, placement, numbers of the software (Cybulski, 2020). GUI then could drive interactivity of the users. Attention towards this GUI of softwares becomes the most important human-computer interaction. How well this GUI serve the users would affect their perception towards the software and user satisfaction.

Finally, all components would serve as predictors to customer satisfaction. Satisfaction acquainted to customers using specific products or services. Satisfied users, where product of services meets their expectations would become more loyal customers. Consequently, waiting time and interruptions often constitute negative user experiences. So, the degree of feedback and experienced time correlates to user satisfaction (Willermark, 2021). In addition, perceived utility, quality of information, quality of the system and quality of services are most important in influencing user satisfaction (Mariano, 2020). This is also true in the case of user loyalty in Indonesia, where perceived value has a important impact towards user satisfaction and user loyalty (Andiyani, 2020).

## 2. RESEARCH METHOD

The method of analysis used in this research is using quantitative methods. The purpose of data analysis is to produce conclusions from the data that has been obtained. In the analysis process, data will be classified using certain tables. User rate their experience in using Halodoc according to the items in Table 2 using a five likert Scale. Then the rates were calculated the overarching domain score by computing the mean of each item including the validity and reliability of each variable. ANOVA was used to determine if there were significant differences among groups. Then crosstab analysis was also conducted, considered  $p < 0.05$  to be significant, data analysis is conducted using the Statistical Program for Social Sciences (SPSS) application.

Table 2 Variable Constructs

Variable	Indicators	Code
<b>Perceived Usefulness (PU)</b>	Halodoc application can be an instrument in providing information about initial treatment and producing effective treatment.	PU1
	Halodoc application can provide accurate information about health as well as professional advice from doctors.	PU2
	The use of the Halodoc application can make personal health care better.	PU3
	The use of the Halodoc application can encourage users to care more about their personal health.	PU4
	The use of the Halodoc application will not harm the user's health.	PU5
<b>Perceived Ease of Use (EU)</b>	Halodoc application is easy to use and easy to understand.	EU1
	Halodoc application runs fast and stable on mobile device platforms.	EU2
	The Delivery Pharmacy Service is useful for finding drugs and pharmacies more quickly and easily.	EU3
	The Doctor Chat function can help to communicate directly with specialist and certified doctors.	EU4
	The Hospital Appointment function makes it easy to save time to get health services without the need to queue (example: COVID-19 test, radiology, surgery, medical checkup).	EU5
	The Doctor Appointment function in the Halodoc application for face-to-face consultations can make it easier for users to save time without the need to queue at the hospital.	EU6
	The Lab Test function can help to order lab tests from trusted laboratories and view the results in the application easily.	EU7
	The profile function can help users to track drug orders or	EU8

	consultation history.	
<b>Perceived Price (PP)</b>	Compared to other health applications, the cost of using Halodoc's health services is relatively higher (example: consultation with a specialist).	PP1
	I face several financial obstacles such as Internet access fees to use Halodoc health services.	PP2
<b>Graphical User Interface (GU)</b>	The buttons on the Halodoc application screen are very easy to use.	GU1
	The text size in the Halodoc application is appropriate so that it is not difficult to read.	GU2
	The menu images contained in the Halodoc application represent understandable functionality.	GU3
	The screen color in the Halodoc application corresponds to its functions.	GU4
	Overall, the user interface design in the Halodoc application is very good.	GU5
<b>Reliance of Use (RU)</b>	I believe that Halodoc provides accurate drug information (Examples: general indications, dosage, directions for use).	RU1
	I believe the information about health from the articles provided by the Halodoc application is correct and trustworthy.	RU2
	I believe that the doctors at Halodoc are experienced doctors.	RU3
	I'm sure that the doctors on the Halodoc app give the right advice.	RU4
<b>Satisfaction (SA)</b>	The experience of using the Halodoc application is very satisfying (Examples: chat with doctors, make hospital appointments, lab tests, purchase drugs).	SA1
	I am satisfied with the Halodoc application which offers the most complete health services.	SA2
	Overall, I am satisfied with the Halodoc application from all aspects.	SA3

A distinction could be made between Perceived Usefulness (PU) that shows the benefits that users feel as it should when using the Halodoc application. Meanwhile Perceived Ease of Use (EU) is related to whether the Halodoc application itself is easy to access, to used and whether it is efficient for users. Perceived Price (PP) themselves can be defined as the subjective perception of consumers of what is sacrificed to obtain products or services. Graphical User Interface (GUI) is an interaction felt by the user or respondent to electronic devices such as computers and smartphones using icons, menus and other visual indicators or representatives (graphs). And finally, Satisfaction (SA) in this study is how Halodoc fulfills the desires, expectations, or needs of its users.

### 3. RESULTS AND DISCUSSION

Descriptive of the data used in this study is provided. To better know the competitive advantage possessed by Halodoc, a questionnaire by distributed to 100 respondents who were Halodoc application users. Respondents consisted of 51% men and 49% women, 69% were 20-29 years old of which are students living in Jakarta, Bandung, Bekasi, and Tangerang (Table 3).

Among Halodoc application users, we divide them into three categories:

- Beginner users (used the app 1-5 times)
- Loyal users (used the app 6-20 times)

- Long time users (used the app >20 times)

Respondents in this study include 66% are new beginner users using the Halodoc application (1-5 times), 25% is a loyal user who often uses the Halodoc application (6-20 times ) And 9% are old users who use the Halodoc application for quite a long time (more than 20 times) (Table 4).

Table 3 Respondent Profiles

	<b>Profile</b>	<b>Percentage</b>
<b>Age</b>	< 20 years old	14
	20-29 years old	69
	30-39 years old	9
	40- 49 years old	7
	50-59 years old	1
	> 60 years old	0
<b>Gender</b>	Male	51
	Female	49
<b>Latest Education</b>	SD/ SMP	4
	SMA/SMK	44
	D3	2
	S1	43
	S2	7
<b>City of Residence</b>	Bandung	8
	Bekasi	19
	Jakarta	32
	Semarang	7
	Tangerang	15
	Others	19
<b>Occupation</b>	Housewife	3
	Private employee	18
	Student	53
	Entrepreneur	26
<b>Salary/ Month</b>	< Rp.1.000.000	13
	Rp. 1.000.000 - Rp.5.000.000	34
	Rp. 5.000.000 - Rp. 10.000.000	28
	Rp, 10.000.000 - Rp. 15.000.000	9
	Rp. 15.000.000 - Rp. 20.000.000	5
	Rp. 20.000.000 - Rp. 25.000.0000	4
	Rp. 25.000.000 - Rp 30.000.000	2
	> Rp. 30.000.000	5

Table 4 Respondent User Profiles

Year start use of app	User Category			Total
	<b>Beginner</b>	<b>Loyal</b>	<b>Long time</b>	
<b>2016</b>	5	1	1	<b>7</b>
<b>2017</b>	2	1	2	<b>5</b>
<b>2018</b>	7	2	6	<b>15</b>
<b>2019</b>	11	10	0	<b>21</b>
<b>2020</b>	31	11	0	<b>42</b>
<b>2021</b>	10	0	0	<b>10</b>
<b>Total (%)</b>	<b>66</b>	<b>25</b>	<b>9</b>	<b>100</b>

Then based on the rated items based on the values of Perceived Usefulness dimensions, Perceived Ease of Use, Perceived Price, Graphical User Interface, Reliance of Use and Satisfaction to measure the perspective of Haloodoc users related to competitive advantage (Table 5). All items are rated in a 5-point Likert scale with 1 (strongly disagree) up to 5 (strongly agree).

Table 5 Mean Rate for Items

Variable	Items	Mean
<b>Perceived Usefulness (PU)</b>	PU1	4,4
	PU2	4,2
	PU3	4,1
	PU4	4
	PU5	4,1
<b>Perceived Ease of Use (EU)</b>	EU1	4,3
	EU3	4,2
	EU3	4,4
	EU4	4,5
	EU5	4,1
	EU6	4,1
	EU7	4,2
	EU8	4,4
<b>Perceived Price (PP)</b>	PP1	2,9
	PP2	2,1
<b>Graphical User Interface (GU)</b>	GU1	4,4
	GU2	4,2
	GU3	4,2
	GU4	4,3
	GU5	4,4
<b>Reliance of the Use of Application Functionality (RU)</b>	RU1	4,2
	RU2	4,1
	RU3	4,2
	RU4	4
<b>Satisfaction (SA)</b>	SA1	4,3
	SA2	4,3
	SA3	4,3

In a survey of 100 respondents carried out there are five indicators, with the overall average result is worth 4.1 which can be concluded that Halodoc application users felt it provided information about first or initial aid to online patients. In addition, information provided from professional advice from doctors are deemed good. The Halodoc application encourages users to care more about personal health, supported by features such as personal health of users, measuring BMI, menstrual calendars, pregnancy calendars, drug reminders, and others. Out of the eight indicators convenience score is an average of 4.3. With the advent of online health applications, Halodoc has features that make it easier for users to get desired services or items such as drugs, or other healthcare products from the nearest pharmacies. In addition, respondents also sufficiently felt the convenience through the Halodoc application in getting Lab test results online without having to return to the hospital to take the Lab test results. Each item also showcased good reliability in each item variable (Table 6).

Table 6 Reliability of Items

	<b>Cronbach's Alpha</b>	<b>Cronbach's Alpha Based on Standardized Items</b>	<b>N of Items</b>
<b>PU</b>	0,783	0,785	5
<b>EU</b>	0,811	0,814	8
<b>PP</b>	0,776	0,780	2
<b>GU</b>	0,792	0,793	5
<b>RU</b>	0,711	0,714	4
<b>SA</b>	0,768	0,769	3

In the Graphical User Interface, there are five indicators given to respondents, with an average of 4.3 which can conclude that users have good interactions on the Halodoc application through the graphical display. The button used in Halodoc screen is very easy to use, the text is in a suitable size and easy to read. Not only that, users also sufficiently agree that the menu images contained in Halodoc have a functionality that can be understood by respondents easily. The color of the screen on the Halodoc is also appropriate when viewed directly by users. Overall, respondents also agree that the graphical user interface design of Halodoc application is good. Lastly, the Reliance of the Use of Application Functionally there are 4 indicators given to users and produce an average of 4.1, which indicate a good reliance of user on Halodoc application.

Based on the data, a crosstab analysis was conducted, and results show certain profile data significantly associate with certain items (Table 7 and Table 8). From the results we could conclude that:

- Gender is significantly associated with EU4 “The Doctor Chat function can help to communicate directly with specialist and certified” and GU4 “The screen color in the Halodoc application corresponds to its functions.”

Table 7 Crosstab Analysis

	<b>PU4</b>	<b>EU4</b>	<b>EU7</b>	<b>EU8</b>	<b>PP1</b>	<b>GU4</b>	<b>GU5</b>	<b>SA2</b>	<b>SA3</b>
<b>Gender</b>		v				v			
<b>Age</b>			v			v			
<b>Latest Education</b>			v	v		v	v	v	v
<b>Location</b>	v				v				
<b>Occupation</b>									

<b>Income</b>		
<b>Start Year using app</b>	v	v
<b>User Category</b>		

- Age is significantly associated with EU7 “The Lab Test function can help to order lab tests from trusted laboratories and view the results in the application easily.” and also GU4 “The screen color in the Halodoc application corresponds to its functions.”
- Location is significantly associated with PU4 “The use of the Halodoc application can encourage users to care more about their personal health.” And PP1 “Compared to other health applications, the cost of using Halodoc's health services is relatively higher.”
- The year user start using Halodoc is significantly associated with PU4 “The use of the Halodoc application can encourage users to care more about their personal health.” and GU5 “Overall, the user interface design in the Halodoc application is very good.”
- Latest education is significantly associated with a few items EU7 “The Lab Test function can help to order lab tests from trusted laboratories and view the results in the application easily,” and EU8 “The profile function can help users to track drug orders or consultation history,” GU4 “The screen color in the Halodoc application corresponds to its functions,” GU5 “Overall, the user interface design in the Halodoc application is very good,” SA2 “I am satisfied with the Halodoc application which offers the most complete health services,” and SA3 “Overall, I am satisfied with the Halodoc application from all aspects.”

Table 8 Pearson Chi Square Results

Association	Value	df	Asymptotic Significance (2-sided)
Gender --> EU4	8.083 <sup>a</sup>	3	0,044
Gender --> GU4	7.194 <sup>a</sup>	2	0,027
Age --> EU7	25.409 <sup>a</sup>	12	0,013
Age --> GU4	19.322 <sup>a</sup>	8	0,013
Education -->EU7	33.887 <sup>a</sup>	12	0,001
Education -->EU8	23.578 <sup>a</sup>	12	0,023
Education -->GU4	16.591 <sup>a</sup>	8	0,035
Education -->GU5	29.827 <sup>a</sup>	8	0,000
Education -->SA2	26.563 <sup>a</sup>	12	0,009
Education -->SA3	27.174 <sup>a</sup>	12	0,007
Location --> PU4	51.095 <sup>a</sup>	36	0,049
Location --> PP1	22.756 <sup>a</sup>	12	0,030
Year Start --> PU4	31.044 <sup>a</sup>	15	0,009
Year Start --> GU5	24.083 <sup>a</sup>	10	0,007

From the results profile variable of latest education is most significantly associated with the items related to mHealth and how satisfied users are with Halodoc. This further supports the suggestion that education is one of the significant influences on the acceptance of mhealth adoption and satisfaction. The results of this study is supported by the finding of previous research that contends that age, gender, and education (of high school or higher) were all significantly associated with the with likelihood of having adopted health apps (Carroll, 2017). The main users of health apps were younger individuals who had more education, reported

excellent health, and had a higher income. Application use was associated with intentions to change diet and getting recommendation for physical activities.

So, this further support the results of this study that the certain user profiles are significantly associated with perceived usefulness, perceived ease of use, perceived price, GUI of the mobile health application. The results are also challenges previous findings, that some cases, gender has no significant effect on the intention to purchase but has a significant perceptual influence towards perceived price (Büyükdag, 2020). Our study results contends that gender has impact on the perceived ease of use and use of graphical user interface interactions.

To further explore those predictors, then a regression tree analysis is conducted. The regression tree shows (Figure 2):

- The most significant item influencing Halodoc user satisfaction is EU1 “Halodoc application is easy to use and easy to understand.” Is how easy the application is to use and understand.
- Items most significant to contribute to EU 1 is related to GUI “The buttons on the Halodoc application screen are very easy to use”, RU1 “I believe that Halodoc provides accurate drug information”, and GU4 “The screen color in the Halodoc application corresponds to its functions.”
- Predictors of lower nodes of the regression tree are associated with RU4 “I’m sure that the doctors on the Halodoc app give the right advice.” And PU3 “The use of the Halodoc application can make personal health care better.”

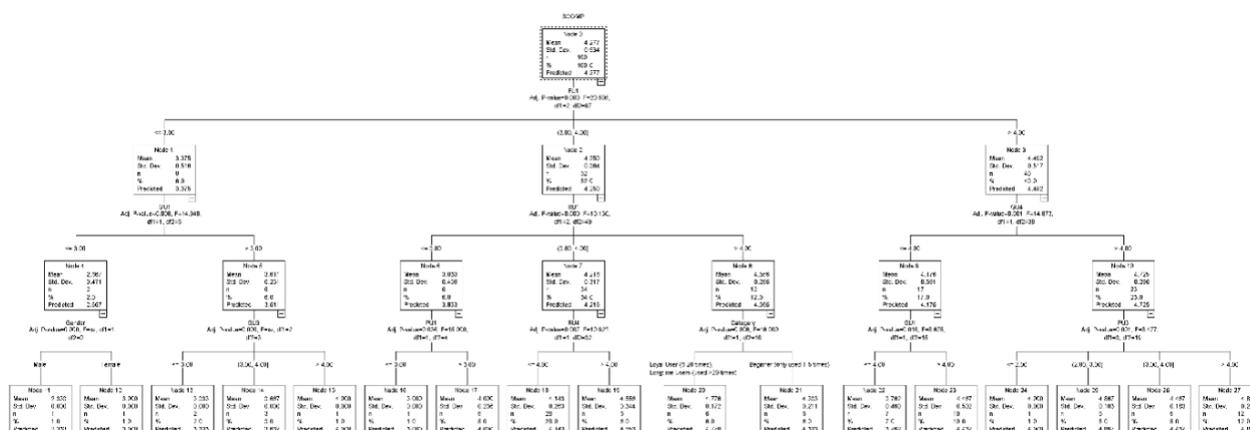


Figure 1 Regression Tree

From these results can be taken several items that would be improved that could influence directly to user satisfaction of Halodoc regarding how easy to use and understand specifically related to the buttons user in the interface, giving accurate drug information, and the screen color is suitably with the functions that it represents. Other aspects that influence the satisfaction are doctor’s advice and how Halodoc would directly contribute to user personal health care. This indicates more information could be provided to user on how Halodoc directly helps their health and how reliable and credible are information provided.

The results of this study is also corroborated with the aspect of reliance in technical assistance that facilitate the perception of perceived usefulness (Chen, 2020a). Further support to such results are also found in B2C e-commerce sector, where both perceived ease of use and or perceived security had a positive impact on customer satisfaction (Wilson *et al.*, 2021).

Furthermore, the study is supported by previous findings there is a significant moderating effect of perceived usefulness on the relationship between perceived ease of use and psychological dependence (Pitafi, 2020).

#### 4. CONCLUSION AND SUGGESTION

Despite the rising interest in mHealth in recent times, the literature suggests that access to mHealth applications remains a challenge and requires urgent attention. The study reveals some important predictors tied directly to Halodoc's user satisfaction. The study reemphasizes ease of use for users that is significantly associated with the design of buttons, colors, and drug information the most. In addition, reliability on doctor information, and enabling personal health care to be significantly associated with user satisfaction. In addition, the study emphasize that socio-demographic structures of users are important factors that suggest, the level of education, age, gender, and location could affect the level of acceptance to mhealth use and user satisfaction.

The study has some limitation, that it only involves a limited number of Halodoc user, that might also be influenced by the Covid-19 situation. Furthermore, the spread of the sample used for this study is not equal between regions. So, the result of this study might only be applicable for Halodoc users in certain cities. Future research suggestion is to involve larger sample of mobile health users and over time, to better measure the long-term predictor of mHealth user satisfaction.

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