

Analysis of Service Quality in m-Health

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Abstract

The rapid development of technology has impacted on several fields including digital revolution of health sector. In Indonesia, the journey to ease is becoming more open, now that distance treatment is increasingly possible, people are starting to use their electronic devices to consult with doctors, order and buy medicines, and even to collect patient health data. Although mobile health creates positive change, concerns about quality have an impact on users' satisfaction, continuing intentions, and quality of life. Thus, the impact of perceived quality of this service becomes an important dimension in determining the success or failure of the mobile health platform. The main purpose of this study is to determine attribute that affect customer satisfaction using Kano model and SERVQUAL which better defines customer expectations and measures the effects of these attributes in determining the success or failure of mobile health platform.

Keywords: Mobile health, Satisfaction, Quality, SERVQUAL

1. Introduction

The role of health applications will continue to increase along with technological developments and the evolution of health services. The successful use of smartphones supports health service operations in maintaining telemedicine and remote health in developing countries [1]. Referring to WHO report, m-Health applications are conceptualized as new horizons for health through mobile technology [2], the presence of m-Health applications offers great opportunities in delivering health services and hopes to be able to provide efficient and affordable health services to the population more broadly [3].

PricewaterhouseCoopers (PwC) report titled Global Consumer Insights Survey 2019 shows that the trend in the use of applications in the health sector among the community is quite popular nowadays [4]. Other research by DailySocial titled The Penetration of Active and Healthy Urban Lifestyle, The Understanding of Wellness Market in Jakarta 2019, shows that Halodoc is the most popular health application, whereas 45.3% of respondents have used it. The application provides health services with variety of features. In addition to presenting information about health, Halodoc also serves teleconsultation with doctors, and purchases of drugs online. Alodokter was ranked second after Halodoc with a total 32.3% of respondents. Klikdokter and Dokter.id also followed with 18.8% and 11.7% of respondents respectively [5].

Although m-Health creates positive change, concerns about quality due to lack of service platform reliability, competence of providers, privacy, and security have an overall impact on users' satisfaction, continuing intentions, and quality of life. Thus, the impact of perceived quality of this service becomes an important dimension in determining the success or failure of the m-Health platform.

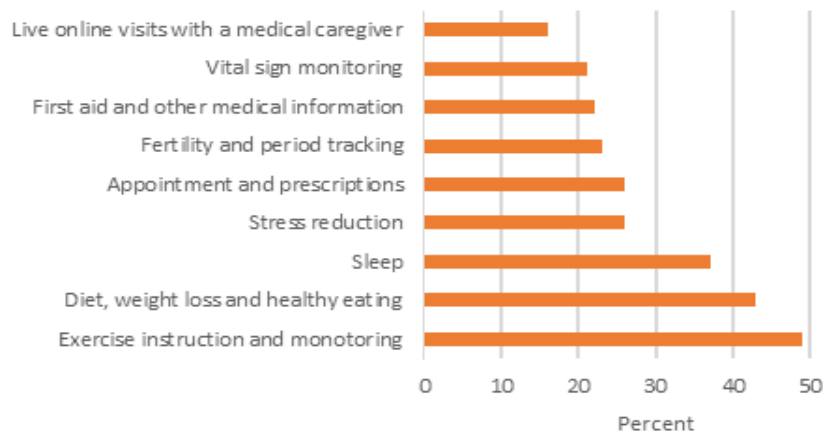


Figure 1. Wide Adoption of Healthcare, Wellness and Fitness Apps

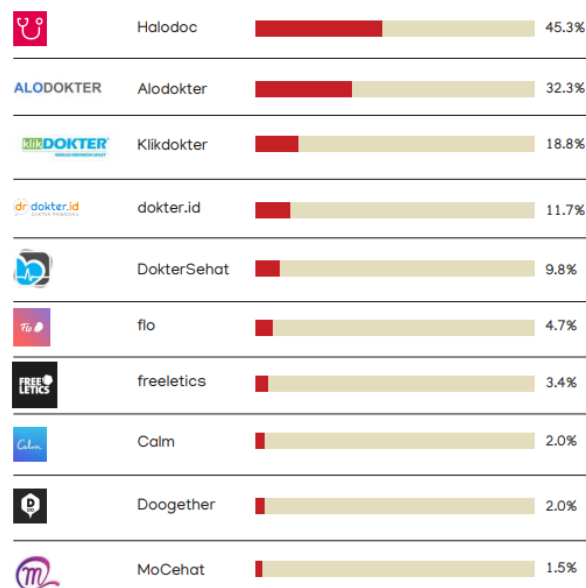


Figure 2. Health Application Data Used in Urban Areas

2. Literature Review

2.1. Mobile Health

In improving the quality of life, online-based health applications which are also commonly called mobile health (m-Health) have been present for Indonesian population, there are already several brands of m-Health applications available such as Halodoc, Alodokter, Klikdokter.com, Go-Dok, YesDok, dokter.id, SehatQ, PakDok, GrabHealth, and many more. m-Health applications support remote monitoring, remote consultation, and digital personal health care services that can help to reduce time and costs incurred for diagnosis. This service contributes to improving the quality of medical resources, which is a promising future trend in the health industry [6]. The distributed health monitoring system would enable simpler action to be taken by the caregivers, empowering them to manage patients' health conditions [7].

2.2. Customer Satisfaction

Increased customer satisfaction can provide benefits for companies such as customer loyalty, prolong customer life cycles, and improve positive customer communication by word of mouth. Customer satisfaction can make customers make repeat purchases and recommend products or services to potential customers.

Satisfaction is when one of the expectations corresponds to a product or service whose performance is felt [8].

2.3. SERVQUAL

There are five dimensions in service quality such as Tangible which is the physical appearance of a company that can be seen directly by outsiders and influences the interest in coming to the company, Reliability which is the company's ability to provide quality services related to the company's core business. Responsiveness is the desire of the company through its employees to help, respond and provide fast service to consumers, Assurance which is the company's guarantee provided by the company to consumers for growing consumer trust in the company. The form is a guarantee of knowledge, courtesy, honesty, and security, and Empathy which is the company through its employees shows empathy to consumers by giving sincere attention and understanding their consumers [9].

Customer satisfaction can be improved by managing the performance of service attributes. Because not all attributes have the same role in satisfying customer needs, it is important to know how their performance impacts customer satisfaction. It means that companies must evaluate the importance and performance of attributes to plan quality improvement.

3. Methods

Data collection techniques used in this study were questionnaires and literature studies. The sampling technique used is purposive sampling, which is deliberate sampling in accordance with the required sample requirements. Data was collected through surveys. The survey consists of two parts: the first is intended for profiling respondents as gender, age, educational background, job, and brand of health application used. The second part is the Kano questionnaire with SERVQUAL service quality dimensions.

By combining the two responses, both functional and dysfunctional question, for every service quality attribute were classified into six categories as must be (M), one-dimensional (O), attractive (A), indifferent (I), questionable (Q) or reverse (R) [10].

Table 1. Kano Evaluation Table

Customer requirements		Dysfunctional form of the question				
		1) I like it that way	2) It must be that way	3) I am neutral	4) I can live with it that way	5) I dislike it that way
Functional form of the question	1) I like it that way	Q	A	A	A	O
	2) It must be that way	R	I	I	I	M
	3) I am neutral	R	I	I	I	M
	4) I can live with it that way	R	I	I	I	M
	5) I dislike it that way	R	R	R	R	Q

The m-Health apps users' satisfaction coefficient ranges from 0 to 1. If one of the m-Health apps satisfaction coefficients is close to 1, it indicates that the characteristic has a great impact on m-Health users' satisfaction. The dissatisfaction coefficient of m-Health apps users ranges from -1 to 0. If one of the m-Health apps coefficient is close to -1, it indicates that the failure to fulfill the m-Health app's characteristics is strong and vice versa.

According to the functional and dysfunctional coefficient calculations, the quality attributes can be analyzed under four sections, and the impacts of each characteristic on m-Health apps satisfaction can be explained for each category (Table 2).

Table 2. Determination of Categories with Functional and Dysfunctional Coefficients

(Functional Coefficients)	(Dysfunctional Coefficients)	Category
(0,00 - 0,49)	(0,50 up - 1,00)	M (must-be)
(0,50 up - 1,00)	(0,50 up - 1,00)	O (one-dimensional)
(0,50 up - 1,00)	(0,00 - 0,49)	A (attractive)
(0,00 - 0,49)	(0,00 - 0,49)	I (indifferent)

4. Result and Discussion

In this study, service quality attributes of m-Health apps have been analyzed through Kano Model which can measure customer satisfaction that can be useful for app designers. Out of 50 questionnaires distributed, 41 respondents have used m-Health applications which the answers can be analyzed. 19 questions given to the respondents using SERVQUAL scale with a functional and dysfunctional question (Table 3).

Table 3. Mobile Health Application User Attributes

Reliability	<ol style="list-style-type: none"> 1. Doctors behave professionally and accurately in prescribing 2. m-Health applications operate without an error 3. m-Health applications do not take a long time to operate
Responsiveness	<ol style="list-style-type: none"> 4. Doctors provide clear and understandable information 5. Doctors provide good communication to patients 6. Doctors able to respond to questions quickly
Assurance	<ol style="list-style-type: none"> 7. The users feel safe when treated 8. Doctors are friendly and polite in delivering a diagnosis 9. Doctors have an accurate ability to diagnose diseases 10. Doctors provide information regarding the content of the prescription given 11. Doctors have a good track record, competent and experienced
Empathy	<ol style="list-style-type: none"> 12. Doctors are cautious when prescribing patients 13. No social status discrimination against patients
Tangibles	<ol style="list-style-type: none"> 14. The design of the m-Health application is visually attractive 15. m-Health application is easy to understand and use 16. The application layout of m-Health applications is clear and appropriate 17. Have the feature in health article section 18. Have the feature in conducting lab tests 19. Have the feature in making medicine purchases directly to the nearest pharmacy

Among 41 respondents, 44% of them were male and 56% were female, 49% of the respondents aged between 21 -30, and 66% of the respondents already hold their bachelor degree, 78% of the respondents are employees and 71% of them using Halodoc as their mobile health applications that installed in their smartphones.

Gender	N	%	Education Level	N	%
Male	18	44%	Diploma 3-4	8	20%
Female	23	56%	Bachelor Degree	27	66%
			> Bachelor Degree	6	15%

Age	N	%	Jobs	N	%
<20	1	2%	Unemployed	2	5%
21-30	20	49%	Student	2	5%
31-40	10	24%	Employee	32	78%
>40	10	24%	Self-employed	5	12%

Mobile Health App	N	%
Klikdokter.com	3	7%
Halodoc	29	71%
Alodokter	9	22%

Figure 3. Demographic Data of Respondent

Table 4. Kano Analysis Result

mHealth Apps Characteristics	A*	O*	M*	I*	R*	Q*	Total	C*
1	12	15	9	5	0	0	41	O
2	18	6	9	8	0	0	41	A
3	14	16	5	6	0	0	41	O
4	11	21	3	6	0	0	41	O
5	5	20	10	6	0	0	41	O
6	9	5	11	16	0	0	41	I
7	19	4	12	6	0	0	41	A
8	13	7	11	10	0	0	41	A
9	13	16	6	6	0	0	41	O
10	12	6	10	13	0	0	41	I
11	16	6	9	10	0	0	41	A
12	15	9	9	8	0	0	41	A
13	8	12	11	10	0	0	41	O
14	14	22	0	5	0	0	41	O
15	10	20	4	7	0	0	41	O
16	20	7	9	5	0	0	41	A
17	18	7	8	8	0	0	41	A
18	21	5	10	5	0	0	41	A
19	3	18	12	8	0	0	41	O

As can be seen in Table 5, three service quality attributes have been categorized as “indifferent” which means it brings limited impact both on satisfaction and dissatisfaction, seven of them categorized as “attractive” attributes that create an important role in achieving higher user satisfaction, in another hand, they do not lead to dissatisfaction, one attribute categorized as “must be”, and eight of the total 19 service quality attributes have been categorized as “one-dimensional” which participated in ensuring higher user satisfaction, therefore careful attention is needed during the designing process. However, no service quality attribute be categorized as “reverse” and “questionable”.

Table 5. User Satisfaction Coefficients for m-Health Apps

mHealth Apps Characteristics	$(A+O)/(A+O+M+I)$ Better (Enhanced Satisfaction Coefficients)	$(O+M)/(A+O+M+I)*-1$ Worse (Reduced Satisfaction Coefficients)	Category
1	0.658536585	-0.585365854	O
2	0.585365854	-0.365853659	A
3	0.731707317	-0.512195122	O
4	0.780487805	-0.585365854	O
5	0.609756098	-0.731707317	O
6	0.341463415	-0.390243902	I
7	0.56097561	-0.390243902	A
8	0.487804878	-0.43902439	I
9	0.707317073	-0.536585366	O
10	0.43902439	-0.390243902	I
11	0.536585366	-0.365853659	A
12	0.585365854	-0.43902439	A
13	0.487804878	-0.56097561	M
14	0.87804878	-0.536585366	O
15	0.731707317	-0.585365854	O
16	0.658536585	-0.390243902	A
17	0.609756098	-0.365853659	A
18	0.634146341	-0.365853659	A
19	0.512195122	-0.731707317	O

5. Conclusion

m-Health apps designers need to pay attention to the quality improvements that are categorized into “must be” attribute because it is the key to the service management strategy to achieve higher customer satisfaction and to improve the level of quality in the area which impacts on patient perceptions. In this survey, “No social status discrimination against patients” is defined as must be. Moreover, “one-dimensional attributes” require more careful attention because they’re enable to increase user satisfaction. In this survey there are eight one-dimensional attributes (1,3,4,5,9,14,15, and 19). These attributes play an important role in increasing user satisfaction, so are the attractive attributes.

However, if m-Health apps has only few attractive attributes, it does not lead to customer dissatisfaction and remain acceptable for m-Health app user. There are seven attractive attributes obtained from this survey as in the question number 2,7,11,12,16,17, and 18. Lastly, three quality attributes are mentioned as “indifferent attributes” as in question number 6,8, and 10. Since these attributes don’t influence user satisfaction, m-Health app designers don't need to pay attention to these quality attributes.

Acknowledgments

The author wishes to acknowledge PUTI Proceeding UI 2020 for supporting this research activity. Special thanks are dedicated to our thesis supervisor and our colleagues in the Department of Industrial Engineering Universitas Indonesia.

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