P-Care BPJS Acceptance Model in Primary Health Centers

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Abstract—Electronic Medical Record (EMR) is increasingly adopted in the healthcare facilities. The concept of EMR used in primary health centers is *p-care BPJS*. *P-Care BPJS* is a web-based patient software provided by BPJS intended for primary health care facilities to provide easy data access to the BPJS server including registration, laboratory, diagnosis, treatment and therapy. Recently, implementation failure of electronic information systems is known caused by not only the quality of technical aspects but also the user's behavior. It is known as applying the Technology Acceptance Model (TAM). Until now in Indonesia, studies examining the individual acceptance of the use of *p-care BPJS* have not been done yet. This research aimed to analyze the acceptance model of *p-care BPJS* in the primary health centers. This study was conducted in five regencies/cities of East Java province, namely Bangkalan, Bondowoso, Lamongan, Malang and Kediri in February-May 2016. The observational research with a quantitative approach with a cross- sectional study design was used to measure the model. A total sample of 30 *p-care BPJS* users was drawn by multistage random sampling in which of these 30 primary health centers participated. The data collection technique was through using questionnaires to measure the model. Data analysis used both descriptive and inferential statistics. Inferential statistics was performed with *Structural Equation Modeling* (SEM) by using a SmartPLS 3.0 program consisting of two phases, the measurement model and the structural model. The results of data analysis in the measurement phase indicated that the measurement model was declared fit (good) and met the *reliability*, *convergent validity* and *discriminant validity*. In the phase of structural model, it indicated that *p-care BPJS* acceptance model in the primary health centers was formed by Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) through Attitude towards use of *p-care BPJS* and Behavioral Intention to use *p-care BPJS*. Goodness of Fit (GoF) index of this model was 0.741. It is good or fits the model. The R^2 for the model was 0.790. This means that the diversity of behavioral data of *p-care BPJS* use in primary health centers that can be explained by the construct is 79%, the remaining 21% is explained by other constructs that are not included in the model. The determinant of *p-care BPJS* acceptance model in the primary health centers is Perceived Ease of Use (PEOU) and Perceived Usefulness (PU). Thus, users of *p-care BPJS* need to be trained on an ongoing basis to keep up to date in understanding the latest version.

Keywords—p-Care BPJS, Primary Health Centers, Technology Acceptance Model (TAM).

INTRODUCTION

Information and communication technologies (ICTs) have great potential to improve health in both developed and developing countries by enhancing access to health information and making health services more efficient; they can also contribute to improving the quality of services and reducing their cost. Today, most of electronic information system used in the primary health centers only store data or patient aggregate information because of the needs in management level. Based on the findings in the global eHealth survey by the WHO and the World Bank, it was known that the State of Africa and Southeast Asia were the highest (over 90%) individual patient data usage in paper- based format. Electronic Medical Records (EMR) mostly adopted in developed and developing countries, such as Brazil, China dan India [1], [2], [3], [4].

An electronic medical record (EMR) is a real-time patient health record with access to evidence-based decision support tools that can be used to aid clinicians in decision-making. The EMR can automate and streamline a clinician's workflow, ensuring that all clinical information is communicated. It can also prevent delays in response that result in gaps in care. The EMR can also support the collection of data for uses other than clinical care, such as billing, quality management, outcome reporting, and public health disease surveillance and reporting. Furthermore, an EMR may contain clinical applications that can act on the data contained within its repository, for example, a clinical decision support system (CDSS), a computerized provider order entry system (CPOE), a controlled medical vocabulary, or a results-reporting system. In general terms, EMRs are clinician-focused in that they enhance or augment the workflow of clinicians or administrators [1], [3], [5], [6]. The only one software in primary health centers Indonesia used EMR concept, it is *p-care BPJS*.

P-Care BPJS commonly is known as p-care BPJS in Health. *P-Care BPJS* is a web-based patient software provided by BPJS intended for primary health care facilities to provide easy data access to the BPJS server including registration, laboratory, diagnosis, treatment and therapy [7]. Recently, implementation failure of electronic information systems is known caused by not only the quality of technical aspects but also the user's behavior. It is known as applying the TAM [8], [9]. Until now in Indonesia, studies examining the individual acceptance of the use of *p-care BPJS* have not been done yet. This study aimed to analyze the acceptance model of *p-care BPJS* in the primary health centers.

RESEARCH METHODS

This observational analytic research with cross-sectional study design, was conducted in February-May 2016.

The study population was user of p-care BPJS of primary health centers in the province of East Java. Sample size is 30 user of p-care BPJS from 30 primary health centers in five districts, namely: Bangkalan; Bondowoso; Lamongan; Malang; Kediri with multistage sampling method, each district was represented by 6 primary health centers.

The questionnaire has been prepared in accordancequestions in TAM [8], [9]. The response scale for all TAM items was a six-point scale, ranging from 1 (Extremely Unlikely) to 6 (Extremely likely). Before being used in research, the questionnaires was tested for the validity and reliability first. The result showed that the validity and reliability was good (the Cronbach's Alpha value was 0.896).

A total 30 questionnaires were distributed which 100% (30 responses) was answered completely and considered as valid ones. Data analysis used both descriptive and inferential statistics. Inferential statistics was performed with *Structural Equation Modeling* (SEM) by using a SmartPLS 3.0 program consisting of two phases, the measurement model and the structural model [10].

Table 1. Characteristics Of Respondent

Characteristic of Respondent		Frequency	Percentage (%)
Sex	Male	12	40
	Female	18	60
	Total	30	100
Age (years)	< 20	1	3.3

Characteristic of Respondent		Frequency	Percentage (%)
	20-30	13	43.3
	31-40	16	53.4
	Total	30	100
Education Level	SMA/SMK	6	20
	Diploma	17	57
	Baccalaureate	7	23
	Total	30	100
Type of Education	Health	24	80
	Non-health	6	20
	Total	30	100

Of the 30 respondents, more than one-second were female (60%), older than 30 years of age (53.4%), 43.3% were between the ages of 20-30 years of age and younger than 20 years of age (3.3%). Fifty-seven percent of respondents had obtained a 3-year diploma, with the remainder having completed a four-year bachelor's degree and senior high school. Eighty percent passed from health education and the remainder having non-health education.

Construct validity test results with the Smart PLS in measurement model can be seen in the value of Convergent Validity and reliability tests with value of Composite Reliability (CR) and Cronbach's Alpha. In Table 2 the value of the loading factor (Convergent Validity) all construct between

0.913-0.949, it can be explained that almost all indicators of loading factor>0.7 and Cronbach's Alpha > 0.6 (0.855-0.933). Thus all the constructs, Perceived Ease of Use, Perceived Usefulness, Attitute toward Use *p-care BPJS*, Behavioral Intention Use *p-care BPJS* Behavioral Intention Use *p-care BPJS*, Actual *p-care BPJS* Use has met the cut-off value of the required and acceptable. This shows the reliability of the measurement model is very good [10], [11].

Table 2. Factor Loadings, Composite Reliability And Cronbach's Alpha

Constructs	Items	Loadings	Composite Reliability	Cronbach's Alpha
Perceived Ease of Use (PEOU)	PEOU1	0.850		
	PEOU2	0.940		
	PEOU3	0.962	0.949	0.933
	PEOU4	0.781		
	PEOU5	0.691		
	PEOU6	0.970		
Perceived Usefulness (PU)	PU1	0.903		
	PU2	0.902		
	PU3	0.640	0.931	0.910
	PU4	0.900		
	PU5	0.831		
	PU6	0.794		
Attitute toward Use *p-care BPJS* (ATU)	ATU1	0.879		
	ATU2	0.939	0.944	0.910
	ATU3	0.943		
Behavioral Intention Use *p-care BPJS* (BIU)	BIU	0.948		
	*p-*BIU2	0.911	0.913	0.855
	BIU3	0.782		
Actual *p-care BPJS* Use (AU)	AU1	0.767		
	AU2	0.962	0.923	0.876
	AU3	0.945		

After the model being estimated to meet criteria of outer model, then continued to the inner model test. The test results inner model consisted of a coefficient parameter path (path coefficient parameter), the value of R Square (R^2) in Table 3 and Table 4.

TABLE. 3 PATH COEFFICIENT OF VARIABLES

Direct and indirect influence between endogenous and exogenous variable	β	Sample Mean (M)	Standard Error	P- values
Perceived Ease of Use (PEOU) Attitude toward Use *p-care BPJS* (ATU)	0.521	0.165	0.327	0.041*
Perceived Ease of Use (PEOU) Perceived Usefulness	0.892	0.894	0.036	0.000**
Perceived Usefulness (PU) Attitute toward Use *p- care BPJS* (ATU)	0.726	0.591	0.332	0.000**
Perceived Usefulness (PU) Actual *p-care BPJS* Use (AU)	0.108	0.130	0.163	0.507
Perceived Usefulness (PU) Behavioral Intention Use *p-care BPJS* (BIU)	0.260	0.281	0.172	0.130
Attitute toward Use *p-care BPJS* (ATU) Behavioral Intention Use p-care BPJS (BIU)	0.657	0.627	0.172	0.000**
Behavioral Intention Use *p-care BPJS* (BIU) Actual p-care BPJS Use (AU)	0.808	0.793	0.147	0.000**

Note:* sig=0.05, ** sig=0.01)

The result of path analysis in Table 3 shows that Actual *p- care BPJS* Use were significantly influenced by Perceived Ease of Use through Perceived Usefulness, Attitude toward Use *p-care BPJS*, Behavioral Intention Use *p-care BPJS*. Actual *p- care BPJS* Use was not significantly influenced directly by Perceived Usefulness and also on Behavioral Intention Use *p- care BPJS* was not significantly influenced directly by Perceived Usefulness. A coefficient parameter path of Perceived Ease of Use *p-care BPJS* to Attitude toward Use *p- care BPJS* is smaller than through Perceived Usefulness *p-care BPJS*.

Tabel 4. R-SQUARE (R^2)

Constructs	R-square (R2)
Perceived Usefulness (PU)	0.793
Attitude towards Use p-care BPJS (ATU)	0.528
Behavioral Intention to Use p-care BPJS (BIU)	0.716
Actual p-care BPJS Use (AU)	0.790

In table 4, R-square Actual *p-care BPJS* Use amounted 0.790, Behavioral Intention to Use *p-care BPJS is 0.716 and* Perceived Usefulness is 0.793. It meant that the effects of Behavioral Intention to Use *p-care BPJS* by 0.790 in the category strong [11]. This showed that the Perceived Usefulness, Attitute toward Use *p-care BPJS* and Behavioral Intention to Use *p-care BPJS* could explain the variance Actual *p-care BPJS* amounted to 79% and the remaining 21% was influenced by other variables.

a. Perceived Usefulness

Perceived Usefulness consists of six items: work more quickly, job performance, increase productivity, effectiveness, makes job easier, and useful. Participants responded likely and extremely likely on all of item work more quickly, job performance, increase productivity, effectiveness, makes job easier, and useful more than 75%.
Path coefficient of Perceived Usefulness affected Attitute toward Use *p-care BPJS* by 0.726 and significant p-value of 0.000 (<0.05). This can be explained that Perceived Usefulness user *p-care BPJS* positive effect and significantly influenced on Attitute toward Use *p-care BPJS*. Perceived Usefulness affected Attitute toward Use *p-care BPJS*, this is in line with previous studies of the acceptance on the Clinical Information Systems among medical staff [12], [13], [14].

Path coefficient of Perceived Usefulness affected Behavioral Intention Use *p-care BPJS* by 0.260 and significant p-value of 0.130 (>0.05). This can be explained that Perceived Usefulness user *p-care BPJS* positive effect on Behavioral Intention Use *p-care BPJS* but was not significantly influenced. Perceived Usefulness was not affected Behavioral

Intention Use *p-care BPJS*, this is in line with previous studies [15].

Path coefficient of Perceived Usefulness affected Actual p-care BPJS Use by 0.726 and significant p-value of 0.108 (>0.05). This can be explained that Perceived Usefulness user p-care BPJS positive effect on Actual p-care BPJS Use but was not significantly influenced. Perceived Usefulness affected Actual p-care BPJS Use, this is in line with previous studies [15].

Path coefficient of Perceived Usefulness affected Actual *p-care BPJS* Use by 0.726 and significant p-value of 0.108 (>0.05). This can be explained that Perceived Usefulness user *p-care BPJS* positive effect on Actual *p-care BPJS* Use but was not significantly influenced. Perceived Usefulness affected Actual *p-care BPJS* Use, this is in line with previous studies [15].

b. Perceived Ease of Use

Perceived Ease of Use is composed of six items namely easy of learn, controllable, clear and understandable, flexible, easy to become skillful and easy to use. Participants responded likely and extremely likely on all of items easy of learn, controllable, clear and understandable, flexible, easy to become skillful and easy to use more than 79%. Effect of Perceived Ease of Use to the Perceived Usefulness with path coefficient of 0.892 and significant p-value of 0.000 (<0.05). This can be explained that the Perceived Ease of Use affected positively on Perceived Usefulness user *p-care BPJS.*

Perceived Ease of Use affect positively on Perceived Usefulness *p-care BPJS* user of the primary health centre, this is in line with the theory TAM proposed by Davis. As well as the previous studies [8], [16], [17].

Perceived Ease of Use to the Attitute toward Use *p-care BPJS* with path coefficient of 0.521 and significant p-value of 0.041 (<0.05). This can be explained that the Perceived Ease of Use affected positively on Attitute toward Use *p-care BPJS*. Perceived Ease of Use affect positively on Attitute toward Use *p-care BPJS* user of the primary health centre, this is in line with the previous studies physician's acceptance of hospital information systems [16], in the Acceptance of Telemedicine Systems [17].

c. Attitude toward Use p-care BPJS

Attitute toward Use p-care BPJS is composed of three items have fun, enjoyment and boring. Participants responded likely and extremely likely on all of items have fun, enjoyment and boring more than 82%.Attitute toward Use p-care BPJS positively affectedBehavioral Intention Use *p-care BPJS* with path coefficient of 0.657 and significant p-value of 0.000 (<0.05). This can be explained empirically that Attitute toward Use p-care BPJS of primary health center had positive effect on Behavioral Intention Use *p-care BPJS*. This research line is consistent with results of previous studies of in the Acceptance of Telemedicine Systems [17], user acceptance of a picture archiving and communication system (PACS) [18].

d. Behavioral Intention Use p-care BPJS

Behavioral Intention Use *p-care BPJS* consists of three items intend, predict and plan. Behavioral Intention Use *p- care BPJS* had positive effect on Actual *p-care BPJS* Use with the path coefficient of 0.808 and significant with a p- value of 0.000 (<0.05). It can be empirically explained that the Behavioral Intention Use *p-care BPJS* affected positively on Actual *p-care BPJS* effect on primary health center.

Behavioral Intention Use *p-care BPJS* affected Actual *p-care BPJS* Use, this is in line with previous studies of User Satisfaction and Technology Acceptance [22] and Students Acceptance of Mobile Learning for Higher Education [23].

e. Actual *p-care BPJS* Use

Actual *p-care BPJS* Use were significantly influenced by Perceived Ease of Use through Perceived Usefulness, Attitute toward Use *p-care BPJS,* Behavioral Intention Use p-care BPJS. Actual p-care BPJS Use was not significantly influenced directly by Perceived Usefulness and also on Behavioral Intention Use p-care BPJS was not significantly influenced directly by Perceived Usefulness.Perceived Usefulness affected Actual p-care BPJS Use, this is in line with previous studies of End-Users' Acceptance andUse of Hybrid Library Services [25], Electronic Medical Records: TAM, UTAUT and Culture [26].

Goodness of Fit (GoF) index of *p-care BPJS* acceptance model in the primary health centers was 0.741. It is good or fits the model. There are three category in GoF index small=0.1, medium=0.25 and large=0.36. GoF index is crucial for assessing the global validity of a complex model [27].The $R2$ for the model was 0.790. This means that the diversity of behavioral data of p-care BPJS use in primary health centers that can be explained by the construct is 79%, the remaining 21% is explained by other constructs that are not included in the model. The determinant of p-care BPJS acceptance model in the primary health centers is Perceived Ease of Use (PEOU) and Perceived Usefulness (PU). There was a difference with the results of research on physician's acceptance of hospital information systems [8]and Technology Acceptance Model (TAM) in internet purchasing [15].

CONCLUSION

Five of seven hypothesis of this study are accepted, there was a difference with the original TAM theory but in line with some of previous studies. Actual *p-care BPJS* Use were significantly influenced by Perceived Ease of Use through Perceived Usefulness, Attitute toward Use *p-care BPJS,* Behavioral Intention Use *p-care BPJS.* Actual *p-care BPJS* Use was not significantly influenced directly by Perceived Usefulness and also on Behavioral Intention Use *p-care BPJS* was not significantly influenced directly by Perceived Usefulness. Effect of Perceived Ease of Use has become determinant for successful implementation of *p-care BPJS* in the primary health centers. Thus, users of *p-care BPJS* need to be trained on an ongoing basis to keep up to date in understanding the latest version.

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REFERENCES

[1] World Health Organization (WHO). Management of Patient Information: Trends and Challenges in Member States: based on the findings of the second global survey on eHealth. Global Observatory for eHealth Series-Volume 6 (2012)

[2] Lippeveld, T., Sauerborn, R., Bodart, C. Design and Implementation of Health Information Systems, WHO, (2000), Geneva

[3] Decree of Ministry of Health (MoH) Republic of Indonesia No.192/Menkes/SK/VI/2012 ROADMAP Action Plan of Strengthening on Health Information

Systems, available: http://depkes.go.id/downloads/RoadMapSIK.PDF

[4] United States Department for Health and Human Services. Electronic medical records. The Office of the National Coordinator for Health Information Technology, United States Department for Health and Human Services. (2012) (http://healthit.hhs.gov/portal/server.pt/community/electronic_medical_r ecords/1219/home/15591

[5] Cilliers L., Flowerday, S.V., Health information systems to improve health care: A telemedicine case study, SA Journal of Information Management 15(1), Art. #541, (2013), 5 pages. http://dx.doi.org/10.4102/ sajim.v15i1.541

[6] Johnson DL, Spielman CM. Data and Information Management. In: LaTour KM, Maki SE, Ed. Third. Health Information Management: Concepts, Principles and Practice. American Health Information Management Association (AHIMA) (2010): Chicago Illinois.

[7] http://www.bpjs-online.com/mengenal-pcare-bpjs-kesehatan

[8] Davis, F.D., Perceived Usefulness, Perceived Ease of Use, and Acceptance of Information System Technology, MIS Quarterly, Vol.13, No.3, 1989.

[9] Jogiyanto HM, Sistem Informasi Keperilakuan. Yogyakarta: Penerbit Andi, 2008

[10] Hair JF, Hult GTM, Ringle CM, Sarstedt M. (2014) A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). United Kingdom: SAGE Publication.

[11] [11] Mustafa, Wijaya. (2012) Panduan Teknik Statistik SEM & PLS dengan SPSS AMOS. Yogyakarta: Cahaya Atm Pustaka

[12] Christors D., Modeling the Acceptance of the Clinical InformationSystems among medical staff: An extended TAM model. Journal Biomedical Informatics, volume 44, issue 4, Agustus (2011) 553-564

[13] Dhesi BR, Cheah WL, Perception of End Users on I-Kelahiran in Sabah, Malaysia, electronic Journal of Health Informatic; Vol 8(2) (2014) e19

[14] Zhu Ge, Sangwan S., Lu T., A new theoretical framework of technology acceptance and empirical investigation on self-efficacy-based value adoption model, Nankai Business Review International Vol. 1 No. 4, (2010)

[15] Sentosa I, NikMat NK, Examining A Theory of Planned Behavior (TPB) and Technology Acceptance Model (TAM) In internet purchasing Using Structural Equation Modeling.Journal of Arts, Science & Commerce-E-ISSN 2229-4686-ISSN 2231-4172, International Referred Research Journal, Vol.– III, Issue 2(2), April (2012) [62]

[16] ChenRai-Fu, HsiaoJu-Ling, An investigation on physician's acceptance of hospital information systems: A case study. International Journal of Medical Informatics, volume 81-issue 12 (2012) 810-820

[17] Djamasbi S, Fruhling AL, Loiacono ET, The Influence of Affect, Attitude and Usefulness in the Acceptance of Telemedicine Systems. Journal of Information Technology Theory and Application (JITTA): A Publication of the Association for Information System Volume 10, Issue 1, April (2009) 41-58

[18] Bakheet Aldosari, User acceptance of a picture archiving and communication system (PACS) in a Saudi Arabian hospital radiology department. Aldosari BMC Medical Informatics and Decision Making (2012) 12:44

[19] Chihung L, I-Chun L, Jinsheng R, Barriers to Physicians' Adoption of Healthcare Information Technology: An Empirical Study on Multiple Hospitals, Journal Medical System (2012) 36:1965–1977

[20] C.Lin, I-C. Lin, Roan J., Barriers to Physicians' Adoption of Healthcare Information Technology: An Empirical Study on Multiple Hospitals, Journal Medical System, (2012) 36:1965–1977

[21] Jian WS, Shabbir SA, Sanjay PS, Peisan L, Hsu MinH, Ho CH, Li YC, Wen HC. Factors influencing consumer adoption of USB-based Personal Health Records in Taiwan, BMC Health Services Research, (2012) 12:277

[22] Miyamoto M, Kudo S., Lizuka K, Measuring ERP Success: Integrated Model of User Satisfaction and Technology Acceptance; An Empirical Study in Japan.DOI: 10.7763/IPEDR. V57. 16 (2012) 86-91

[23] Nassuora A.B., Students Acceptance of Mobile Learning for Higher Education In Saudi Arabia, American Academic & Scholarly Research Journal Vol. 4, No. 2, March, 2012.

[24] SivanarulselvanSachidanandam, Why Physicians Do or Do Not Use Computerized Physician Order Entry Systems: Applying The Technology Acceptance, ProQuest Information and Learning Company,2007

[25] Tibenderana P, Patrick O, Ikoja-Odongo J, Wokadala J. Measuring Levels of End-Users' Acceptance and Use of Hybrid Library Services, International Journal of Education and Development using Information and Communication Technology (IJEDICT), Vol. 6, Issue 2(2010) 33-54

[26] Trimmer K, Cellucci, Wiggins C, Woodhouse W. Electronic Medical Records: TAM, UTAUT and Culture, International Journal of Healthcare Information Systems and Informatics, Juli-September, volume 4, Issue 3 (2009) 55-68

[27] Akter S, D'Ambra J, Ray P. An evaluation of PLS based complex models: the roles of power analysis, predictive relevance and GoF index, (2011). Proceedings of the 17th Americas Conference on Information Systems (AMCIS2011) (pp. 1-7). Detroit, USA: Association for Information Systems.