

## Research Article

# An Implementation of Coding and Indexing Application for Outgoing Patients at Puskesmas Bringkoning Madura

Wincoko, Muhamad Mahmud, Iin Kurniasari

S1 Electrical Engineering Study Program, Sekolah Tinggi Teknik Malang

## Abstract.

Community health centers (*Pusat Kesehatan Masyarakat* - Puskesmas) must provide fast and appropriate health services. Regarding this role, Puskesmas Bringkoning Madura has developed a web-based outpatient coding and indexing system to provide the immediate service the patients need. The web-based application was created using the waterfall model method with the PHP and MySQL programming languages. This study aimed to describe the implementation of the coding and indexing application system for outpatients. The study employed a positivistic quantitative approach. The survey was conducted on medical record personnel, medical officers, and doctors as implementers of the outpatient coding and indexing application with 3 (three) indicators. Almost all respondents indicated that the outpatient coding and Indexing Application helped much in supporting the work of outpatient services.

Corresponding Author: Wincoko;  
email: wincoko@stt.ac.id

Published 26 May 2023

Publishing services provided by  
Knowledge E

© Wincoko et al. This article is distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use and redistribution provided that the original author and source are credited.

Selection and Peer-review under the responsibility of the ICASI Conference Committee.

**Keywords:** indexing, application, outgoing patients

## 1. Introduction

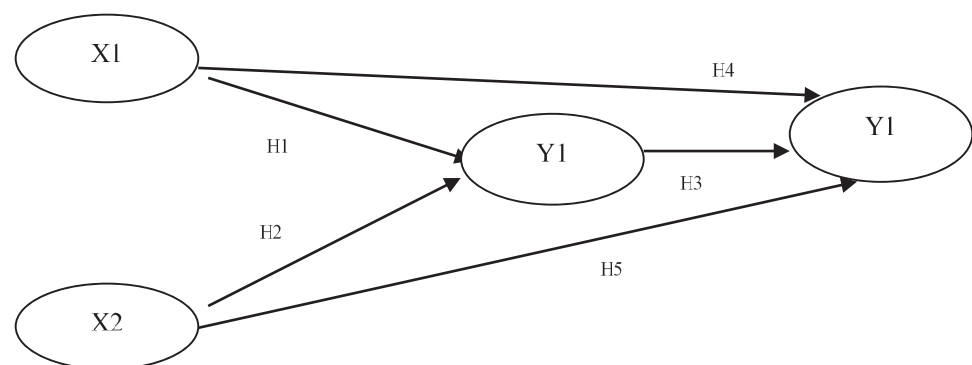
Puskesmas (*Pusat Kesehatan Masyarakat*) or community health centers continue to develop medical record information systems that meet the demands for fast and precise data. ICT provides benefits to reduce the risk of errors in recording medical documents [1][2]. Medical record officers set a diagnosis code before a disease code is assigned, then doctors evaluate patient medical record data [3]. It will be easier to retrieve the data if the data are user-friendly. Thus, an effective and efficient electronic data storage system must be built, one of which is done by using a program employing a PHP language to facilitate the process on the server before the data are sent to the browser in HTML format [2]. The Outpatient Registration website has been analyzed to determine user satisfaction. WHO has supported information technology-based health services [4]. In fact, manual filing causes frequent recording errors, making it ineffective.[5]

## OPEN ACCESS

Problems in filing medical record documents can be solved by creating a website-based indexing and coding system for outpatients. The research aimed to describe the implementation and benefits of the website in managing data into a list of indexes and codes that are used especially for medical record officers, doctors, and other health workers. [6]

## 2. Methods

The study employed a positive quantitative method [7] and described the implementation of the coding and indexing application system of outpatients at Puskesmas Bringkoning Madura. The instrument used was a questionnaire. Samples were chosen using purposive sampling. The samples consisted of medical record officers, doctors, and other health workers. The study involved 50 samples. Before the questionnaires were distributed to respondents, validity and reliability tests were conducted. The data were inputted in SPSS, followed by the description of the data analysis model using CB SEM AMOS.



**Figure 1:** Research Framework.

Each of the variables and indicators in Figure 1 is elaborated in Table 1.

The research scale uses a Likert scale of 1 to 4 [8].

## 3. Results and Discussion

The r-table is 0.278 with a 2-way test at the significance level of 0.05. If the value of r-count > 0.279, then the questionnaire was declared valid. Thus, all items in the instruments were valid, and all were included in the study [9].

TABLE 1: Parameters, Variables, and Indicators.

No	Parameter	Variable	Indicator
1	Attitudes and behavior (X1)	Interest	Interest
		Understanding of the program	Understanding level
		Commitment	Commitment
2	User engagement (X2)	- Program planning	Program planning
		- Program implementer	Program implementer
		Program supervision	Program supervision
3	Program Implementation Performance Level (Y1)	Good/no	Compliance level
			Benefits
			Program acceptance rate
4	Benefit (Y2)	Perception of Benefit	Shared medical records
			For doctors
			For patients

Source: Wibowo et al., 2015

TABLE 2: Research Hypotheses.

Hypothesis	Description
H1	User attitudes and behavior positively affect the performance level of program implementation.
H2	User involvement positively affects the performance level of program implementation.
H3	The performance level of program implementation positively affects benefits.
H4 H5	Attitudes and behavior positively affect benefits. User involvement positively affects usability.

Source: Wibowo et al., 2015

The Cronbach Alpha value is > 0.7, so it is reliable. The normality test shows that the value is between 3 and above, so it can be said that the model is sufficient. All variables have a p-value > 0.05, so it can be said that there is a linear relationship between variables. The model can be used because it has a good Goodness of Fit.

$$RMSEA \leq 0.09 \quad 0.210$$

$$CMIN/DF \leq 2.01 \quad 1.894$$

$$TLI \geq 0.90 \quad 0.949$$

$$CFI \geq 0.90 \quad 0.936$$

TABLE 3: Validity Test.

Variable	Item	Validity	
		Correlation (r)	Sign (p)
X1	X1.1	0.930	0.000
	X1.2	0.927	0.000
	X1.3	0.870	0.000
X2	X2.1	0.968	0.000
	X2.2	0.953	0.000
	X2.3	0.968	0.000
Y1	Y1.1	0.898	0.000
	Y1.2	0.893	0.000
	Y1.3	0.904	0.000
Y2	Y2.1	0.913	0.000
	Y2.2	0.895	0.000
	Y2.3	0.894	0.000

TABLE 4: Research Instrument Reliability Test.

Variable	Alpha Cronbach (based on standardized items)	Description
X1	0.923	Very high/reliable
X2	0.971	Very high/reliable
Y1	0.954	Very high/reliable
Y2	0.948	Very high/reliable

TABLE 5: Testing the Goodness of Fit.

Criteria	Cut-Off	The calculation results
Chi-Square	155.405	146.807
Significant probability	≥ 0.05	0.07

Table 5 shows the Chi-Square value is smaller than 155.405. The probability value is > 0.05, RMSEA > 0.08, CMIN/DF < 2, and TLI and CFI > 0.90. Thus, it can be said that the model is quite good.

## 4. Conclusions

Based on the findings and discussion above, it can be concluded that attitudes and behavior and user involvement positively affect program performance, and good program performance will provide benefits for medical record officers, doctors, and patients. Implementation of coding and indexing of outpatients through the website helps ease

TABLE 6: Regression Weight Test.

Hypothesis	Est.	CR	P	Conclusion
H1 - User attitudes and behavior positively affect the performance level of program implementation.	1.205	1.031	0.085	Accepted
H2 - User involvement positively affects the performance level of program implementation.	2.123	2.786	0.007	Accepted
H3 - The performance level of program implementation positively affect benefits.	1.267	3.941	0.035	Accepted
H4 - Attitudes and behavior positively affect benefits.	2.438	2.396	0.097	Accepted
H5 - User involvement positively affects usability.	2.209	1.043	0.008	Accepted

TABLE 7: confirms that all hypotheses are accepted.

H1 - User attitudes and behavior positively affect the performance level of program implementation.
H2 - User involvement positively affects the performance level of program implementation.
H3 - The performance level of program implementation positively affect benefits.
H4 - Attitudes and behavior positively affect benefits.
H5 - User involvement positively affects usability.

the work for medical record officers, doctors, and other medical personnel in managing outpatient services [10].

## Acknowledgments

## References

- [1] Octaria H. Peningkatkan Kualitas Pengkodean Pada Ketepatan Dan Kecepatan Pengkodean Penyakit Untuk Penagihan Klaim Bpjs Di Rsud Petala Bumi Pekanbaru. *J Manaj Inf Kesehat Indones*. 2016;4(4). <https://doi.org/10.33560/jmiki.v4i1.92>
- [2] AS R, Shalahuddin M. Rekayasa Perangkat Lunak Terstruktur dan Berorientasi Objek. *J Pilar Nusa Mandiri*. 2015.
- [3] K. Kemenkes RI. Buku Pegangan Sosialisasi JKN dalam SJSN. Jakarta; 2013.
- [4] Karimah RN, Setiawan D, Nurmalia PS. Analisis Ketepatan Kode Diagnosis Penyakit Gastroenteritis Acute Berdasarkan Dokumen Rekam Medis di Rumah Sakit Balung Jember. *J Agromedicine Med Sci*. 2016;2(2):2016.

- [5] Maryati W, Murti B, Indarto D. Factors affecting the quality of diagnosis coding and medical record at dr. Moewardi Hospital, Surakarta. *J Heal Policy Manag.* 2016;1(2):61–70.
- [6] W, Kristijono A. Analisis Ketepatan Koding Yang Dihasilkan Koder Di Rsud Ungaran. *J Ris Kesehatan.* 2016;5.
- [7] Sugiyono. Penelitian Kuantitatif. Bandung: Alfabeta; 2016.
- [8] Ghozali I. Structural equation modeling: Metode alternatif dengan partial least square (pls). Badan Penerbit Universitas Diponegoro; 2008.
- [9] Al Faruq U. Rancang Bangun Aplikasi Rekam Medis Poliklinik Universitas Trilogi. *J Inf.* 2015;9(1). <https://doi.org/10.26555/jifo.v9i1.a2043>
- [10] Pepo AA, Yulia N. Kelengkapan Penulisan Diagnosa Pada Resume Medis Terhadap Ketepatan Pengkodean Klinis Kasus Kebidanan. *J Manaj Inf Kesehat Indones.* 2015;3(2). <https://doi.org/10.33560/v3i2.88>