

The Effectiveness of Using the Barcode System in Making Family Cards at the Department of Population and Civil Registration of Minahasa Regency

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Abstract. The problem in this study is the effectiveness of using the barcode system in making family cards at the Department of Population and Civil Registration of Minahasa Regency. This study aims to determine how effective the use of the barcode system in making family cards at the Department of Population and Civil Registration of Minahasa Regency is. Sources of data in this study were the people of Minahasa Regency as many as 32 people. To analyze the data, quantitative descriptive analysis technique with the percentage formula. Based on the result of SPSS the lowest calculated r value is 0.567 and the highest calculated r value is 0.911, it can be concluded that the statement is valid, because r arithmetic is greater than r table 0.349. then Cronbach's alpha values obtained are input 0.730, productivity 0.766, satisfaction 0.796, and output 0.766, because the value is greater than 0.7 so it can be concluded are reliable. Then the effectiveness of using the barcode system in making family cards at the Department of Population and Civil Registration of Minahasa Regency is very effective with a result of 86,4%.

Keywords: Effectiveness, Barcode System, Family Card

1 Introduction

The world of service is an inseparable part of human life because every human being is still in the mother's womb until he grows and develops to live his life, humans still get service. One form of service that must be owned by every human being is public service.

One example of the implementation of public services is population administration in a government. Law Number 24 of 2013 concerning amendments to Law Number 23 of 2006 concerning Population Administration, explains that Population Administration is a series of structuring and controlling activities in controlling Population documents and Data through Population Registration, Civil Registration, Population Administration information management, and utilization the results for public services and other sector development [1].

The Population Administration Information System is a web-based information system that is made based on procedures and uses certain standards, which aims to manage the administration system in the field of population and civil registration in providing population and civil registration services. In serving the community. The manual service system used by the Population and Civil Registration Service previously had problems. This is because the manual service system used takes a long time to complete. One of them is the problem with signing the residence document.

This often happens when the Head of Service is not in place [2].

Along with the development of technology in the digitalization era, the government began to implement Electronic Certification and Electronic Signatures (TTE) in increasing the efficiency and effectiveness of the Work System for Civil Servants and Administrative Officers. The use of Electronic Certification and Electronic Signatures (TTE) is by Law Number 11 of 2008 concerning Information and Electronic Transactions (ITE) and Government Regulation Number 82 of 2012 concerning the Implementation of Electronic Systems and Transactions.

The use of Electronic Certification and Electronic Signature (TTE) is generally in electronic systems. Since the enactment of Law Number 11 of 2008, electronic signatures or digital signatures have become known [3]. Based on Government Regulation Number 82 of 2012 as amended by Government Regulation Number 71 of 2019, it is regulated that electronic signatures consist of two types, namely certified signatures, and non-certified signatures. Uncertified signatures include scanned signatures, QR Codes and Barcodes, while certified signatures are signatures that use cryptographic/encoding mechanisms, in an electronic certificate. This certified signature is legal under the law, however, barcodes and QR codes may

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still be used as additional technology for physical protection during printouts [4].

In connection with the use of electronic signatures and the Barcode System, there are several issues found in the security aspect which often occurs in electronic documents, including electronic signatures that are very vulnerable to modification; difficult to distinguish original documents from fakes (visually); ownership of electronic documents can be changed and the time of document creation. This prompted the researcher to take up this research when the internship was placed at the Department of Population and Civil Registration of the Minahasa Regency.

Related to the problems above, the researchers chose the title "Effectiveness of the Use of Barcode Systems in Making Family Cards at the Department of Population and Civil Registration of Minahasa Regency".

2 Research Method

This study uses a quantitative research approach. Quantitative research is research that is used to answer problems through careful measurement techniques on certain variables to produce generalizable conclusions, regardless of the context of time and situation as well as the type of data collected, especially quantitative data [5]. Quantitative research methods are in the form of numbers that are measured using statistics as a calculation test tool, related to the problem we are researching to produce a conclusion [6].

The subjects and objects in this research are the people of Minahasa Regency who receive services for making population documents in particular (making Family Cards). In this case, the researcher will collect data in a reasonable situation and as it is, without being influenced by other elements from outside the service. In this study, researchers use numbers and descriptions to find meaning so that it will produce information.

The population in this study is the overall characteristics associated with the research variables. Due to the sampling technique used by the researcher being an accidental technique, from the whole community who come to receive services at the Office of Population and Civil Registration of Minahasa Regency, it is considered that very many researchers are not able to collect data as a whole community given the limited funds, manpower and time. , the researcher then determines the sample that is considered appropriate (Family Card Making Service Using the Barcode System). So it was found that the number of samples in this study amounted to 32 people to find out how effective the use of the Barcode System in Making Family Cards was.

The data source is an important factor in the data collection method to find out where the data subject is obtained from [7]. The data sources in this study consisted of: (1) primary data, namely data/information obtained directly in the field in the form of raw data, namely from the Minahasa district community who received services for making Family Cards, including a). Questionnaire/questionnaire technique, as the main

technique. This questionnaire measures the variables in this study, namely by giving questions to the people of Minahasa Regency where the questions have been formulated in such a way based on research indicators, respondents just choose one of the desired answers which aim to avoid deviations in answering questions. b). Interviews, namely by giving questions that have been made by researchers directly to one of the (informants)/employees who work in the Department of Population and Civil Registration of the Minahasa Regency. c). Observation is a way of collecting data by conducting direct observations on the service process for making Family Cards at the Department of Population and Civil Registration of Minahasa Regency. d). Documentation is a way to collect data by taking pictures related to research. In this study, the researcher positioned himself as an observer. (2) Secondary data, namely data obtained from other sources relevant to the research problem, namely studying documents, books, and literature related to the problems that the researcher discusses.

In this study, researchers used a questionnaire in the form of an attitude scale. A scale is several written statements in the form of psychological constructs or concepts, which describe aspects of the individual's personality, and questions on a scale as a stimulus aimed at behavioral indicators to provoke answers which are a reflection of the subject's self-state which is usually not realized by the respondent concerned [8].

Data analysis is intended to understand what is behind all the data, group it, summarize it into something compact and easy to understand, and find general patterns that arise from the data. The data analysis technique used in this research is using the SPSS For Windows 24 program and quantitative descriptive methods. This technique explains the problem under study in the form of numbers with the following percentage formula:

$$P = \frac{F}{N} \times 100\% \tag{1}$$

Information:

F = The frequency you are looking for is the percentage

N = Number of Frequency

P = Percentage figures [9]

Based on the above formula when you already know the final percentage of all existing data, the researchers make the following benchmarks:

| Tiers | Percentage (%) |
|----------------|----------------|
| Very effective | 76-100 |
| Effective | 51-75 |
| Less effective | 26-50 |
| Not effective | 1-25 |

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Based on the table above, if the use of a very effective barcode system is given a score (76-100%), the use of an effective barcode system is given a score (51-75%), the use of a barcode system is less effective is given a score (26-50%) and if the use of barcode is not effective then it is given a score (1-25%).

3 Result and Discussion

In this study, the researcher wanted to find out how effective the use of the barcode system was in making Family Cards at the Department of Population and Civil Registration of Minahasa Regency. In using the barcode system, there are several benefits, including the barcode system can overcome asset data collection with a database system, can overcome the problem of duplicate data, the barcode system accelerates the service process, the decision-making process is faster and more accurate, and work productivity is more effective and efficient. In this study, researchers used the SPSS application to analyze data from 20 existing question items. Among them, there are validity tests and reliability tests. Validity is the accuracy or accuracy of an instrument in measuring what is being measured. This validity test is often used to measure the accuracy of an item in the questionnaire or scale, and whether the items on the questionnaire are appropriate in measuring what is being measured.

In this study, the validity of the instrument was tested using the Pearson method. The criteria used are if the calculated r value is greater than r table, it is concluded that the indicator is valid, while if the calculated r value is lower than r table, it is concluded that the indicator is not valid. In the number of samples 32, the value of r table is 0.349 ($\alpha=5\%$).

Based on the results of data analysis using SPSS, the lowest calculated r value is 0.567 (that is, the third statement in the Output variable) and the highest calculated r value is 0.911 (i.e., the first statement in the Output variable), because each statement item has a different r value. is greater than r table (0.349) then it is concluded that all the statements are valid.

Tabel 1. Uji Reliabilitas

| Variable | Reliability Value | Critical Point | Remarks |
|----------------|-------------------|----------------|----------|
| Input | 0.730 | 0.349 | Reliable |
| Productivities | 0.766 | 0.349 | Reliable |
| Satisfaction | 0.796 | 0.349 | Reliable |
| Output | 0.766 | 0.349 | Reliable |

Based on the table above, the Cronbach's alpha values obtained for the Input, Productivity, Satisfaction, and Output variables are 0.730, respectively; 0.766; 0.796; and 0.766, because the value is greater than 0.7 so it can be concluded that all these variables are reliable.

This study uses one variable (Single Variable), namely the Effectiveness of the Use of Barcodes in Making Family Cards with 4 (four) indicators determined by the researcher based on the research problem. These indicators include: According to Sedarmayanti, there are two indicators namely, (1) Input, defined as everything that enters the system. (2) Productivity, is a measure of the use of resources in an

organization which is generally expressed as a ratio of the output achieved with the resources used [10]. Then, according to Sudarwan, there are also 2 indicators, namely: (1) the level of satisfaction obtained, meaning that this measure of effectiveness can be quantitative (based on quantity) and qualitative (based on quality). (2) Output/number of results that can be issued, meaning that the results are in the form of a quantity or physical form of the organization, program or activity [11].

The concept of input discusses everything that goes into the system in an organization. These concepts include: The use of a Barcode System makes it easier to manage Family Cards, saves time, is more flexible because it is easy to print anywhere and anytime, saves costs and is very safe because it is difficult to forge.

From the results of the distribution of respondents' answers that the use of the barcode system makes it easier to manage Family Cards, it was found that there were no respondents who answered strongly disagree, no respondents answered disagreed, while 31.3% or 10 respondents answered agreed, and 68.8% or 22 respondents answered strongly agree that the use of a barcode system makes it easier to manage Family Cards. While the use of the barcode system can save time, it was found that there were no respondents who answered strongly disagree, no respondents answered disagree, 56.3% or 18 respondents answered agree and 43.8% or 14 respondents answered strongly agree. Then the use of the barcode system is more flexible because it is easy to print where and whenever it is found that there are no respondents who answer strongly disagree, no respondents answer disagrees, 50% or 16 respondents who answered agree and 50% or 16 respondents who answered strongly agree.

Furthermore, the use of the barcode system saves costs, it is found that there are no respondents who strongly disagree, no respondents who answer disagree, 43.8% or 14 respondents who answered agree and 56.3% or 18 respondents who answered strongly agree. The use of the coded system is very safe because it is difficult to fake, it was found that no one answered strongly disagreed, 6.3% or 2 respondents answered disagreed, 46.9% or 15 respondents answered agreed and 46.9% or 15 respondents answered strongly agree. The concept of productivity discusses the use of resources in an organization. These concepts include: the paper used is easy to obtain, shortens the time for the document validation process, family card printing can be done independently, barcodes follow the modern era and network instability hinders management.

From the results of the distribution of respondents' answers that the paper used to print family, cards is very easy to obtain that no respondents answered strongly disagree, 6.3% or 2 respondents answered disagree, 40.6% or 13 respondents answered agree and 51.3% or 17 respondents who answered strongly agree. Furthermore, the barcode system as a substitute for manual signatures shortens the time of making family cards, it was found that there were no respondents who answered strongly disagree, 6.3% or 2 respondents who answered disagreed, 43.8 or 14 people who answered agree and 50% or 16 respondents who answered strongly agree.

Then the family card that uses the barcode system can be printed on its own if it is lost or damaged, it was found that there were no respondents who answered strongly disagree, 9.4% or 3 respondents who answered disagreed, 46.9% or 15 people who answered agreed and 43.8 % or 14 respondents who answered strongly agree. The barcode system on the family card follows the modern era, it was found that there were no respondents who answered strongly disagree, 3.1% or 1 respondent who answered disagree, 46.9% or 15 respondents who answered agree and 50% or 16 people who answered strongly agree.

Furthermore, an unstable network can hinder the manufacture of family cards using the barcode system, it was found that there were no respondents who answered strongly disagree, 6.3% or 2 respondents who answered disagreed, 65.6% or 21 respondents who answered agree and 28.1 % or 9 respondents who answered strongly agree.

The concept of the level of satisfaction obtained discusses the size of the effectiveness, which can be in the form of quantity/quantity and can also in the form of quality/quality. These concepts include satisfaction in receiving services and comparing manual systems with barcode systems.

From the results of the distribution of respondents' responses, the question "I am satisfied with the service at the Department of Population and Civil Registration of Minahasa Regency" found no respondents who answered strongly disagree, 3.1% or 1 respondent who answered disagree, 53.1% or 17 respondents who answered agree and 43.8% or 14 respondents who answered strongly agree. The question "I am satisfied with the service of making family cards using the barcode system" found that there were no respondents who answered strongly disagree, 6.3% or 2 respondents who answered disagreed, 56.3% or 18 respondents who answered agree, and 37 ,5% or 12 respondents who answered strongly agree.

The question "I prefer family cards that use barcodes than manuals" found no respondents who answered strongly disagree, no respondents answered disagree, 31.3% or 10 respondents who answered agree and 68.8% or 22 respondents who answered strongly agree. The question "I am satisfied because there is no need to queue in managing family cards" found no respondents who answered strongly disagree, no respondents answered disagreed, 71.9% or 23 respondents who answered agreed, and 28, 1% or 9 people who answered strongly agree. The question "I prefer a family card that uses a barcode system because there is no need to legalize it for certain or urgent needs" found that no respondents answered strongly disagree, no respondents answered disagree, 34.3% or 11 respondents answered agree, and 65.6% or 21 respondents who answered strongly agree.

The concept of output/results that can be issued discusses the physical results of the organization, programs and activities. These concepts include the period of time for processing a family card, different barcode codes for each resident document, the paper used, and the provision of a family card document (pdf) on registered email.

From the results of the distribution of respondents' answers, the management of family cards with a barcode system was carried out within a day, it was found 3.1% or 1 respondent who answered strongly disagreed, 12.5% or 4 respondents who answered disagreed, 43.8% or 14 respondents who answered agree, and 40.6% or 13 respondents who answered strongly agree. Family cards that use a barcode system have a code that can distinguish each family card. There were no respondents who answered strongly disagree, no respondents answered disagreed, 43.8% or 14 respondents answered agree, and 56.3% or 18 respondents who answered strongly agree.

Family cards with a barcode system using HVS are usually found 3.1% or 1 respondent who answers strongly disagree, 3.1% or 1 respondent who answers disagree, 50% or 16 respondents who answered agree, and 43.8% or 14 respondents who answered strongly agree. Family card documents can be downloaded easily in pdf form via registered email when processing a family card, it was found that there were no respondents who answered strongly disagree, no respondents answered disagreed, 50% or 16 respondents answered agree, and 50% or 16 respondents who answered strongly agree.

Thus, before knowing whether or not the use of a barcode system is effective in making family cards, the researcher makes a recapitulation of the responses of the respondents described above, as follows:

Table 2. Recapitulation of Respondents' Responses

| No | (SS) = 1 | | (S) = 2 | | (TS) = 3 | | (STS) = 4 | |
|-------|----------|-------|---------|-------|----------|-------|-----------|-------|
| | F | P (%) | F | P (%) | F | P (%) | F | P (%) |
| 1 | - | - | - | - | 10 | 31,3 | 22 | 68,8 |
| 2 | - | - | - | - | 18 | 56,3 | 14 | 43,8 |
| 3 | - | - | - | - | 16 | 50 | 16 | 50 |
| 4 | - | - | - | - | 14 | 43,8 | 18 | 56,3 |
| 5 | - | - | 2 | 6,3 | 15 | 46,9 | 15 | 46,9 |
| 6 | - | - | 2 | 6,3 | 13 | 40,6 | 17 | 53,1 |
| 7 | - | - | 2 | 6,3 | 14 | 43,8 | 16 | 50 |
| 8 | - | - | 3 | 9,4 | 15 | 46,9 | 14 | 43,8 |
| 9 | - | - | 1 | 3,1 | 15 | 46,9 | 16 | 50 |
| 10 | - | - | 2 | 6,3 | 21 | 65,6 | 9 | 28,1 |
| 11 | - | - | 1 | 3,1 | 17 | 53,1 | 14 | 43,8 |
| 12 | - | - | 2 | 6,3 | 18 | 56,3 | 12 | 37,5 |
| 13 | - | - | - | - | 10 | 31,3 | 22 | 68,8 |
| 14 | - | - | - | - | 23 | 71,9 | 9 | 28,1 |
| 15 | - | - | - | - | 11 | 34,4 | 21 | 65,6 |
| 16 | 1 | 3,1 | 4 | 12,6 | 14 | 43,8 | 13 | 40,6 |
| 17 | - | - | - | - | 12 | 37,5 | 20 | 62,5 |
| 18 | - | - | - | - | 14 | 43,8 | 18 | 56,3 |
| 19 | 1 | 3,1 | 1 | 3,1 | 16 | 50 | 14 | 43,8 |
| 20 | - | - | - | - | 16 | 50 | 16 | 50 |
| Total | 2 | | 20 | | 302 | | 316 | |

Information:
 SS = Strongly agree
 S = Agree
 TS = Disagree

STS = Strongly Disagree
 F = Frequency
 P = Percentage

After the researcher made a recapitulation of the respondents' responses above, then the first step the researcher took was to find the value of N. The value of N can be known by using the formula, as follows:

$$N = F1 + F2 + F3 + F4$$

$$N = 2 + 20 + 302 + 316$$

$$N = 640 \tag{2}$$

After knowing that the value of N is 640, then the F value is then searched, to find the F value, each is given a weight, namely:

Option 1 is weighted one
 Option 2 is given a weight of two
 Option 3 is weighted three
 Option 4 is weighted four

So, the value of F can be known as follows:

$$\begin{aligned} \text{Answer 1 (2 x 1)} &= 2 \\ \text{Answer 2 (20 x 2)} &= 40 \\ \text{Answer 3 (302 x 3)} &= 906 \\ \text{Answer 4 (316 x 4)} &= 1.264 \\ \text{Then the value of F} &= 2 + 40 + 906 + 1.264 \\ &= 2.212 \end{aligned}$$

Then look for the average value which can be described as follows:

$$P = \left(\frac{F}{N} \times 100\% \right) : 4$$

$$P = \left(\frac{2.212}{640} \times 100\% \right) : 4$$

$$P = \left(\frac{221.200}{640} \times 100\% \right) : 4$$

$$P = 345,6 : 4$$

$$P = 86,4\% \tag{3}$$

Answering research problems

After the researchers conducted direct research by distributing questionnaires submitted to the public who came to make the latest barcode system family cards at the Department of Population and Civil Registration of Minahasa Regency and filled in by the community, the objectives stated in this study were to answer the following problem formulation:

- Based on the results of the data analysis above which has been described by the researcher through the distribution of respondents' responses to 20 question items, which were made by the researcher from the four variables/indicators adapted from 2 different theories including the measure of effectiveness according to Sedarmayanti [10] and measures of effectiveness according to Sudarwan Danim [11] among others : Input, Productivity, Level of Satisfaction and Output.
- So, it can be concluded that the Effectiveness of Using the Barcode System in Making Family Cards at the Department of Population and Civil Registration of Minahasa Regency can be said to

be very effective with the results obtained from the data that have been added up to 86.4% or (in the percentage range 76-100%). It is said to be very effective because the use of the Barcode System has benefits in the modern era which can make it easier for the government to provide more effective and efficient services to the community.

4 Conclusion

Based on the results of data analysis and discussion of the research results that have been described, it can be concluded that:

1. Based on the results of SPSS the calculated r value, it can be concluded that the data is valid, because the calculated r is greater than the r table. Then the value of Cronbach's alpha obtained for the input, productivity, satisfaction, and output variables, respectively, is 0.730; 0.766; 0.796; and 0.766, because the value is greater than 0.7 so it can be concluded that all of these variables are Reliable
2. The Effectiveness of Using the Barcode System in Making Family Cards at the Department of Population and Civil Registration of Minahasa Regency is Very Effective with 86.4% results.

Acknowledgments

Research and membership at the International Conference on Social Science (ICSS) of 2022 can be held with financial assistance from the Faculty of Social Science, Universitas Negeri Manado, Indonesia.

References

- [1] Law, Law Number 24 of 2013 concerning amendments to Law Number 23 of 2006 concerning Population Administration. (2013).
- [2] A. Dilapanga, J. Mantiri, and C. Mongi, "Evaluation of the Management of Population Administration Information System at the Department of Population and Civil Registration of Tomohon City," *Atl. Press*, vol. **383**, no. Icss, pp. 728–730, (2019), doi :10.2991/icss-19.2019.105.
- [3] Law, Law Number 11 of 2008 concerning Information and Electronic Transactions (ITE). (2008).
- [4] Government Regulation, Government Regulation Number 82 of 2012 concerning the Implementation of Electronic Systems and Transactions as updated by Government Regulation Number 71 of 2019. (2019).
- [5] E. H. Polii, "Evaluation of Governance Implementation Minahasa Regency Drinking Water Company," *Int. J. Soc. Sci. Hum. Res.*, vol. **04**, no. 06, pp. 1405–1413, (2021), doi: 10.47191/ijsshr/v4-i6-25.
- [6] Sugiyono, *Quantitative Research Methods*.

- Bandung : Alfabeta, (2018).
- [7] A. Megalia Riane Kaseger, Itje Pangkey and R. Dilapanga, "The Effect of Work Culture and Work Motivation on Employee Performance at Manado State University," *Tech. Soc. Science. J.*, vol. **21**, pp. 167–175, (2021).
- [8] J. M. Thiar Y. T Sitorus, Marthinus Mandagi, "The Influence of Organizational Climate on the Job Satisfaction of Civil Servants at the Minahasa Regent's Office," *J. Adm.*, vol. **3**, no. 1, pp. 53–63, (2021).
- [9] A. Sudijono, *Introduction to Education Statistics*. Jakarta : Grafindo Persada Raju, (2007).
- [10] Sedarmayanti, *Human Resources and Work Productivity*. Bandung : CV. Mandar Forward, (2009).
- [11] D. Sudarwan, *Leadership Motivation and Group Effectiveness*, Ed. 2. Jakarta : PT Rineka Cipta Utama, (2012).