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Circulation Services at the Solok City Library and Archives Office: Application of Web-Based Matrix Code

Layanan Sirkulasi di Perpustakaan Kota Solok: Penerapan Kode Matriks Berbasis Web

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Abstract

Background of the study: QR codes have the main goal of making it easier for smartphone users to access and obtain information. By using QR codes in circulation services, it makes it easier for librarians to record and input registrations, as well as for information retrieval (OPAC), library users do not need to wait too long for the process of registering new members and the availability of library collections. Whereas before using QR codes it takes a long time in terms of recording and inputting registration, lack of accuracy regarding the availability and existence of library collections.

Purpose: The aim of this research is to determine the effect of implementing a web-based QR Code information system on circulation services in the Solok city library and archives service.

Method: This research uses a quantitative method with an associative approach, namely research that uses data analysis in numerical/number form using parametric statistical analysis techniques.

Findings: From the results of regression analysis and hypothesis testing, it shows that there is a positive and significant influence on the application of QR codes as shown by the regression equation $Y = 14,904 + 0.712$. What is significant is the application of QR codes to circulation services in the Solok city library and archives service, more precisely in the Solok city regional library.

Conclusion: The results of the analysis show that the better the implementation of the QR code, the higher the quality of circulation services and the worse the implementation of the QR code, the lower the quality of the circulation service.

Keywords: Library, QR Code, Circulation Services, Information System, Regional Library

Abstract in Indonesia

Background of the study: Kode QR mempunyai tujuan utama untuk memudahkan pengguna smartphone dalam mengakses dan memperoleh informasi. Dengan menggunakan QR code dalam layanan sirkulasi memudahkan pustakawan dalam mencatat dan menginput pendaftaran, serta untuk information retrieval (OPAC), pengguna perpustakaan tidak perlu menunggu terlalu lama untuk proses pendaftaran anggota baru dan ketersediaan koleksi perpustakaan. Sedangkan sebelum menggunakan kode QR membutuhkan waktu yang lama dalam hal pencatatan dan penginputan registrasi, kurangnya keakuratan mengenai ketersediaan dan keberadaan koleksi perpustakaan.

Purpose: Tujuan penelitian ini adalah untuk mengetahui pengaruh penerapan sistem informasi QR Code berbasis web terhadap pelayanan sirkulasi pada pelayanan perpustakaan dan kearsipan kota Solok.

Method: Penelitian ini menggunakan metode kuantitatif dengan pendekatan asosiatif yaitu penelitian yang

menggunakan analisis data dalam bentuk numerik/angka dengan menggunakan teknik analisis statistik parametrik.

Findings: *Dari hasil analisis regresi dan uji hipotesis menunjukkan bahwa terdapat pengaruh yang positif dan signifikan terhadap penerapan QR code yang ditunjukkan oleh persamaan regresi $Y = 14,904 + 0,712$ Yang signifikan adalah penerapan QR code pada pelayanan sirkulasi di dinas perpustakaan dan kearsipan kota Solok, lebih tepatnya di perpustakaan daerah kota Solok.*

Conclusion: *Hasil analisis menunjukkan bahwa semakin baik penerapan kode QR maka semakin tinggi pula kualitas layanan sirkulasi dan semakin buruk penerapan kode QR maka semakin rendah kualitas pelayanan sirkulasinya.*

Kata kunci: *Peran; Perpustakaan, QR Code, Layanan Sirkulasi, Sistem Informasi, Perpustakaan Daerah*

Introduction

Local libraries are lifelong learning facilities that are available to the entire community without distinguishing the status of a community in terms of age, gender and so on. The existence of a regional library plays an important role in a community or region, because the library is a place of education, storage, research, recreation and as a source of information for library users, the library is responsible for collecting, managing, organizing, preserving, and providing information services to community users. Likewise, the Solok City Regional Library has the task and purpose of managing, disseminating and preserving information with the aim of meeting the information needs of library users.

The important role of local libraries in the advancement of a society's civilization is widely recognized. Libraries are considered as information centers managed by the community, in accordance with the provisions stated in the Law of the Republic of Indonesia Number 43 of 2007 concerning libraries. The law stipulates that libraries have functions as facilities for education, research, entertainment, information storage, and as a means to advance the nation. Local libraries, which are held with the aim of serving various levels of society ranging from children to adults, provide a variety of services such as children's services, circulation services, reference services, ancient manuscript collection services, and BI Corner services.

Providing services in the library is the core of all activities in it, and the success of the library depends largely on the quality of services provided, including the provision of appropriate, accurate, and fast reading materials to meet the information needs of visitors (Moruk, 2019). Library information systems must be considered in terms of their effectiveness on the circulation process, which includes the speed of circulation services, such as the process of borrowing, returning, registering new members, information search systems, and collection proposals (Rahayu, et al., 2014).

The development of information technology is always followed by people's increasing need for information because it creates information searching behavior and information is a commodity that is generally needed by everyone (Ardoni, 2017). As a result, this also affects the library system, where one example is the evolution from the use of barcodes to Quick Response Code or known as QR Code (Mohamed, 2014). QR codes have the potential to improve the quality of library services in various ways, such as providing guidance, promoting services, and connecting customers or financial donors to disseminate information about library collections (Amarta, 2021). Since libraries act as learning facilities, tools, and resources, the use of QR codes in the management of their systems can provide easy access to information such as library collections, library websites, and library guides (Ajagekar, 2022).

The utilization of QR Code technology applied to library systems also makes it easier for librarians to complete tasks related to identification and input of new data. The stored data will be neatly organized, the process becomes more efficient, and ensures data accuracy (Deineko, et al., 2022). Based on the results of interview interactions with Fachra Gunawan (2023), one of the library officers at the Solok City Regional Library, after the application of the QR Code in the information service system, especially during the registration of new members, librarians

feel very helpful. Because librarians no longer need to enter member data and members can borrow available collections after being registered as library members. Therefore, the Solok City Regional Public Library provides new library member registration services, information retrieval and collection proposals that can be carried out by library visitors with the aim of having the capability to obtain information independently.

Based on an interview with Mrs. Liza Elfafinda (2023), a librarian at the Solok City Regional Library, she stated that the library information service system has utilized QR-Code as a means of accessing information needed by users, especially in the information retrieval system, registration of new library members and collection proposals. However, because there has not been adequate promotion to the community, there are still many who do not know the benefits and uses of QR-Code, as stated by Mrs. Annisa Fadilla Tisnal, a library visitor:

"When I visited this library, I did not know that the library had implemented an information system using QR-Code especially in the information retrieval system (Tisnal, 2023)".

From the results of these interviews, it was revealed that promotion related to services available in the library and understanding of the features that can be utilized by users when visiting the library is still lacking. Library promotion acts as a medium of communication between library institutions and users with the main purpose of conveying information about services or products offered by the library (Hartono, 2017). This also applies to circulation services at the Solok City Regional Library, where to facilitate access to information such as information searches, new member registration, and collection proposals, the library has provided a QR code that can be accessed by visitors using an android device.

Based on the results of an interview with Mrs. Meagika Surya Putri (2023), who said that she had difficulty finding the books she needed, so she had to search every shelf of the library to find the books she needed. In library administration, especially regional libraries, effective management skills and efficient and accurate information systems are needed to ensure the course of activities in accordance with the objectives set, to support optimal data processing efforts, produce and implement website-based library information system updates by utilizing QR Code technology, users can search for library materials and register as library members. Based on information obtained from Fachra Gunawan (2023), a librarian, the number of visitors from the last 1 year amounted to $\pm 5,322$ people. In an effort to improve the circulation service system at the Solok City Regional Library which previously still used manual methods while now using QR codes such as in the new library member registration service, information retrieval where users can access the OPAC wherever they are, as well as for collection proposals where users do not need to write collection proposals on paper anymore.

Quoted from the results of similar research by Adhiwibowo & Mahmud (2021) related to the use of information systems with QR Code technology in managing library data which previously still used manual methods by writing in ledgers, where this method was deemed less effective in data collection and data search later. By using QR codes, it is able to improve library service results by increasing efficiency, effectiveness, and reducing errors in processing library materials.

Likewise, research conducted by Adarsh Singh (2019) at a Department of Computer Science Earlham College Richmond, India with the aim of research is to create smart and simple solutions in managing libraries with QR codes. Due to the success in implementing QR codes, users can manage, borrow and return books and can simplify library processes, track all records and make the library more accessible directly to users.

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codes, users can manage, borrow and return books and can simplify library processes, track all records and make the library more accessible directly to users.

Meanwhile, based on research conducted by Shehaamah Mohamed (2014) with a similar discussion, namely the need to use QR codes at the Brandvan Zyl Law Library, University of Cape Town (UCT), to access academic library services. QR codes have been successfully used by several local educational institutions. Statistical data shows that visitors to the law library prefer using QR codes as an avenue for research as many believe that QR codes will provide a quick and efficient means of instructional technology when accessing library services. Taking into account the context of the problem, this research will further discuss "The Effect of Web-Based QR Code Implementation on Circulation Services at the Solok City Library and Archives Office".

Method

In this study, a quantitative method was used, which refers to the analysis of data in numerical form. The main advantage of quantitative research is the higher reliability of the data, as well as its tendency to be generalizable to a wider population. This method also allows researchers to test hypotheses or theories systematically. The hypothesis in this study is that an associative hypothesis is used, which refers to a statement that assumes a relationship between several variables (Sugiyono, 2014). Meanwhile, an explanatory study was conducted to test the proposed relationship. This study highlights the importance of proving the truth of the proposed hypothesis, the hypothesis itself describes the relationship between two or more variables and tests whether a variable is related to or caused / influenced by another variable.

The population studied in each study has been identified in its title, which can cover a certain geographic area (Syahrur, 2014). The study population consisted of students, researchers and the general public who visited the Solok city regional library during these 10 months, totaling 5,322 visitors.

The sampling method applied in this study is purposive sampling of a sample of visitors visiting the Solok city regional library, namely users who use QR code services regardless of strata and status such as civil servants, honorary, lecturers, students, students and the general public (Suryani, 2016). Calculations and table references developed by experts are used to determine the sample from the population. This makes the sample size highly dependent on the level of error or precision, using the Slovin formula with an error rate or accuracy of 10% (0.1). Then the sample in this study was 98.15 and rounded up to 99 people.

The data collection methods applied in this study are: a. Observation which includes conducting direct research on a designated research object by observing and recording data. b. Interviews used in this study were conducted with the librarian of the circulation section and users who came to visit the Solok City Regional Library. Researchers applied the interview method without structure (unstructured interview) and the information needed regarding the impact of the application of the web-based QR Code on the circulation services of the Solok City Regional Library (Hardani, 2020). c. Questionnaire, in this study, a closed questionnaire was used, where the response was asked to provide one answer that was considered the most appropriate. There are 20 questions in this questionnaire, using a Likert scale. The Likert scale is used to evaluate the attitudes, opinions, and perceptions of individuals or groups towards social phenomena (Suryani, 2015).

Result and Discussion

The results showed that the data collected were valid and reliable. After conducting the validity test with a significance level of 5%, it was found that the r table value is 0.195, while the calculated r value obtained is greater than r table. This implies that all question items are considered valid. In addition, in the reliability test using the Cronbach Alpha method with the

help of SPSS statistic 23, a positive alpha value was obtained. The reliability analysis results show an alpha value of 0.909, which exceeds the expected r table value. Thus, it can be concluded that all statements are considered reliable.

After processing and analyzing the data, it can be seen that the significance value of the effect of the application of the QR code on circulation services is 0.000 less than the significance level of 0.05 so that variable X has an effect on variable Y.

Correlations

		Religiusitas	Agresivitas
Religiusitas	Pearson Correlation	1	.581**
	Sig. (2-tailed)		.000
	N	99	99
Agresivitas	Pearson Correlation	.581**	1
	Sig. (2-tailed)	.000	
	N	99	99

** . Correlation is significant at the 0.01 level (2-tailed).

Based on this output, it can be concluded that the application of QR codes can have a positive effect on circulation services. QR Code is a bar code capable of accessing data and can be read with most smartphones and camera phones. According to Shehaamah Mohamed, accessing information using the Quick Response (QR) Code is very easy to read by camera phones, but very effective for library visitors to access library resources (Mohamed, 2014).

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	14.904	3.196		4.663	.000
	Religiusitas	.712	.101	.581	7.032	.000

a. Dependent Variable: Agresivitas

Thus the application of QR codes can affect circulation services, because using QR codes can access information very easily and quickly using only cell phones with cameras, but it is very effective for library visitors to access library information resources, because effective services are services that can satisfy the desires of users by providing information according to the needs of users, effective services do not require a long time to provide the information needed by users.

The regression test results reveal an α value of 14.904 and a calculated T value of 0.732, while the T table value for the 5% significance level is 1.984723. This shows that the calculated T is greater than the T table. As a result, the null hypothesis (Ho) is rejected while the alternative hypothesis (Ha) is accepted, indicating an influence between variables X and Y. Thus, it is evident that the application of QR codes has a positive impact on circulation services at the Solok City Regional Library. This impact leads to increased service effectiveness and efficiency, as well as providing accurate information about library availability and collections.

According to Santoso (2022) in the digital era as it is today, the use of information and communication technology is needed in various sectors of life, with demands after the use of these systems can provide productive and effective services. There are four important aspects that can support a program, namely people, organization, technology and benefits. The quality of the current system can be said to be quite good, because it is easy to use and learn with a fairly simple process so that it can be proven by users being able to register new library members without having to queue too long and in accessing or searching for collections available in the library. Overall, the application of QR codes to circulation services at the Solok

City Regional Library has met the requirements even though there are still shortcomings in certain parts that have not been assisted by the use of QR codes such as borrowing, returning and renewing library collections, but overall the application of QR codes can help circulation services to be more effective, efficient and accurate.

From the observations that have been made, it is found that the magnitude of the relationship between the independent variable and the dependent variable, obtained the result of R (correlation) of 0.581 which shows a sufficient or moderate relationship between the application of the QR code and circulation services. In other words, the application of the QR code has a sufficient influence on circulation services at the Solok city library and archives office. So that it can provide effective and efficient services for users in obtaining the information they need.

Based on the data that has been obtained, that the use of QR codes can affect library circulation services because using QR codes can facilitate registration because it is possible to store user biodata information. Therefore, the use of QR codes at the Solok Regional Library can increase the effectiveness of library circulation services. According to HOT-FIT theory, the quality of a good QR code system can help simplify and speed up the registration of new library members.

Based on technological indicators, namely information quality which refers to the accuracy of relevance, timeliness, completeness and ease of access to information. With a high level of information quality, it means that the information contained in the QR code is accurate and relevant to the needs of the users. So it can be known that the QR code can make it easier for users to find book collections owned by the library. Circulation service is a service that connects users with collections owned by the library, according to Karmidi Mertoatmojo said that circulation is an important element in the library so that library materials can be used and utilized by people from various circles. To create quality circulation services, the Solok City Regional Library implements an information system using QR codes, after conducting research and data processing, it was found that QR codes can affect library circulation services to be of higher quality by providing effective services which do not require a long time to obtain the information needed by users.

Based on the QR Code concept, smartphone users can easily access information by only taking two simple steps: scanning the QR code and taking action as needed (such as opening a browser, saving contact information, or calling the number listed in the QR code). While effective service is a service that can satisfy the desires of the library users by providing information according to the needs of the library and does not require a long time to provide the information needed by the library users. After conducting this research, the results obtained state that the application of QR codes has a significant influence on circulation services, and the hypothesis in this study states that there is a positive influence on the application of QR codes on circulation services at the Solok City Library and Archives Office.

The application of QR codes in circulation services can simplify and speed up the transfer of information to get a quick response, so that it can affect the responsibility of librarians to users. Using assurance theory in the context of library circulation services using QR codes can refer to the assurance and trust given by users. With the use of QR codes, there is an interaction between users and librarians. Habituation of smiles, greetings, greetings, smiles, greetings, and expressions of gratitude are important elements in maintaining and improving service standards in the library. This soft skill becomes a special quality that is important for users in getting optimal service.

Libraries need to provide adequate support and training to librarians to improve assurance and provide quality services to users, and librarians can demonstrate assurance such as knowledge, skills, and positive attitudes in serving users. With good communication between users and librarians so that it can affect the experience of users in accessing services and collections owned by the library, librarians must be able to speak to each user and be able to

quickly understand the wishes of the user. Good communication between library patrons and librarians is the essence of responsiveness, which shows that they care about the patrons' needs and want to provide a positive experience for the patrons.

Conclusion

According to the results of research conducted at the Solok City Library and Archives Office, the conclusions obtained to answer the research problems that have been formulated, namely: This study involved 99 library users. The results showed that QR codes significantly improved circulation services, because they provided quick and easy access to information through users' cell phones equipped with cameras.

The research findings show that there is a correlation between the application of QR codes in circulation services, as reflected by the Pearson correlation coefficient value of 0.581, indicating a moderate correlation with a positive relationship. The determination test results show that the application of QR codes contributes 33.8% to circulation services, meaning that the QR code application variables jointly affect circulation services by 33.4%. Meanwhile, about 66.2% of the other variation is not affected by the QR code variables studied, but by other factors that are not included in this regression equation.

The results of regression testing and hypothesis analysis show that the application of QR codes has a positive and significant influence on circulation services. This is reflected in the regression equation $Y = 14.904 + 0.712 X$. Hypothesis testing shows that the calculated t value is 0.732, which exceeds the t table value of 1.984723, indicating a significant effect of the QR code on circulation services at the Solok City Library and Archives Office, especially at the Solok City Regional Library. Therefore, the results of the analysis conclude that the more effective the application of the QR code, the better the circulation services provided. Conversely, if the application of the QR code is less than optimal, the quality of circulation services will decrease.

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