Acceptability and Usability of Quick Response Code for On Line Document Tracking in a Higher Education Institution in the Philippines

Michael N. Farin
michael.farin@yahoo.com
President Ramon Magsaysay State University, Castillejos, Zambales Philippines

Abstract
The Online documents tracking using Quick Response Code is an online-based program that can be accessed anywhere provided with the presence of Internet connection. For the security, username and password will be provided to the user including the level of access. The study revealed that the school head and staff respondents assessment was Average on all dimensions of the existing Practices of Documents Tracking except in terms of functionality where the staff respondent gave an evaluation of Good. The school head respondents assessment on all dimensions of Quick Response Code for tracking of on line documents was Excellent except on Reliability where the rating was Good. The staff respondents had an gave a rating of Excellent on all dimensions. In terms of acceptability, the school head respondents evaluation was Highly Accepted while Accepted on performance. The staff respondents assessment was Highly Accepted on the dimensions towards Quick Response Code for tracking of on line documents. In terms of readiness, the school head respondents indicated that they are Ready to use the system while the staff were Very Ready as to information system faculty and user/technical personnel.

Keywords:
Acceptablity, Quick response code, document tracking

1. Introduction

Documents may be created quickly and in large quantities using modern computing methods [1]. Methods like this are available to facilitate several versions of storing documents in a database, numerous users to work on simultaneously to the stored document. However, circumstances occur wherein employees who are not authorized to copy particular sensitive documents nonetheless have access to the documents. As a result, it would be desired to create new technologies. methods of protecting sensitive documents from being copied and accessed by unauthorized persons. In today's educational institutions, vast amounts of paperwork are frequently produced [2].

QR codes are two-dimensional barcodes that may be scanned with web-enabled mobile devices [3]. QR codes are increasingly being employed for additional useful uses in document management and, more specifically, document control [4]. For administrative and academic employees at such schools, among many others, this can be a laborious and time-consuming process[2].

The necessity to keep track of files has grown increasingly vital in today's world, particularly in higher education institutions. However, there is little discussion of this in the literature. The majority of the time, files are physically moved from one desk to another inside a department or between departments. The File Tracking System provides a clear view of file movement throughout the file processing process (DMD, 2010). A file may need to pass through numerous people before it is deemed acceptable. However, there are disadvantages to moving these files from one desk to another, such as losing them or neglecting to document the transfer. As a result, a system that can provide solutions to such challenges while conserving administrative staff' time and energy is required. In this case, file tracking systems are a possible option. A file and document tracking software was released in 2013 [5].

One of the most pressing issues at today's universities is finding files. Time is squandered archiving or searching for files, energy is expended tracking down misplaced files, deadlines are missed, and files are occasionally lost. With these problems, the researcher came out in the decision to have an application to make a system for file tracking as the solution to solve these problems. With the objective to design and develop a file tracking system using Quick Response Code for Ramon Magsaysay State University and determine its Functional Suitability, Performance Efficiency, Compatibility, Usability, Reliability. Security, Maintainability and Portability.

This proposal investigated the feasibility of incorporating QR codes into an online document tracking system for use in schools, as well as the possibility of integrating QR codes into other settings. The codes serve as a link between the flat content and the internet.

Manuscript received November 5, 2024
Manuscript revised November 20, 2024
https://doi.org/10.22937/IJCSNS.2024.24.11.15

2. Experimental Consideration

Research Design

For the purpose of this study, descriptive research was used to obtain opinions of selected respondents on the evaluation of the Quick Response Code (QRC) for on line document tracking. System. Descriptive research is designed to provide a picture of a situation as it naturally happens. It was used to justify current practice and make judgement and also to develop theories [7,8,9].

Research Locale and Description of the Respondents

The study was conducted in the selected campuses of President Ramon Magsaysay State University in the province of Zambales emphasized in the illustration in Figure 6. Selected personnel from different offices of President Ramon Magsaysay State University will take part in this study. Through them the system will be evaluated and pretested. Purposive sampling was used in this study [10].

Distribution of the Respondents

There was a total respondent of 188 taken from the population of 355 school heads and staff personnel respondents.

3. Results

1. **Assessment of the School Head and Staff on the Effectiveness of the Online Documents Tracking System using Quick Response Code at President Ramon Magsaysay State University based on the ISO/IEC 20510 metrics**

Table 1 shows the assessment of the school head and staff respondents on the effectiveness of the Online Documents Tracking System using Quick Response Code in President Ramon Magsaysay State University based on the ISO/IEC 20510 metrics as to functional suitability.

Table 1: Assessment of the School Head and Staff Respondents on the Effectiveness Enhanced Electronic Document Tracking System Using QR Code

Indicators	School Heads N=56		Staff N=132	
	Weighted Mean	Descriptive Equivalent	Weighted Mean	Descriptive Equivalent
Functional Suitability	4.27	Excellent	4.43	Excellent
Performance Efficiency	4.15	Good	4.39	Excellent
Compatibility	4.13	Good	4.32	Excellent
Usability	4.29	Excellent	4.36	Excellent
Reliability	4.08	Good	4.35	Excellent
Security	4.32	Excellent	4.38	Excellent
Maintainability	4.21	Excellent	4.29	Excellent
Portability	4.16	Good	4.27	Excellent
Mean				

The evaluation of school head and staff respondents on the level of effectiveness the Online Documents Tracking System using Quick Response Code as to functional suitability was similar as manifested by the overall weighted mean of 4.27 and 4.43 with descriptive equivalent of "Excellent" respectively. The staff provided higher rating of 4.39 indicating that the system is excellent in effectiveness as measured in terms of efficiency. On the other hand the school heads gave a rating of 4.15 or good. The ratings given by heads was lower by 0.24 than the rating provided by the staff . In terms of individual indicator, the highest rating of excellent was provided by staff indicating that the system has a firm response, processing time and throughput rates. The results of Lee and Harapanahali (2015)[11] indicated that the activities for document tracking and specification check can be performed more efficiently using QR codes than without QR codes. As to compatibility, the school head officials and staff respondents assessed the level of effectiveness the Online Documents Tracking System using Quick Response Code in President Ramon Magsaysay State University based on the ISO/IEC 20510 metrics as to compatibility differently. With a weighted mean of 4.13 interpreted as Good, the heads had provided lower evaluation. On the hand, the staff respondents gave a rating of 4.32 with descriptive equivalent of Excellent. With a difference of 0.19 the staff had higher rating than the heads of the unit.

The school head and staff respondents assessed the level of effectiveness of the Online Documents Tracking System using Quick Response Code similarly as to usability. As manifested by the overall weighted mean of 4.29 and 4.36, the heads and staff rated the system as "Excellent".

The assessment of school head on the level of effectiveness the Online Documents Tracking System using Quick Response Code as to reliability was different. With the overall weighted mean of 4.08 the heads indicate that the system is "Good" but according to the staff respondents, a rating of 4.35 indicates that the system is "Excellent".

The school head and staff respondents' assessment on the level of effectiveness the Online Documents Tracking System using Quick Response as to security was similar. With high rating of 4.32 and 4.38, the heads and staff found that the system was excellent as to security. The result implies that the system can be easily hacked or opened by anybody who have no concern of the document. The evaluation of the school head and staff respondents on the level of effectiveness the Online Documents Tracking System using Quick Response Code in President Ramon Magsaysay State University based on the ISO/IEC 20510 metrics as to maintainability was similar as manifested by the overall weighted mean of 4.21 and 4.29. Although both the respondents with descriptive equivalent of "Excellent" respectively. The evaluation of the school heads on the level of effectiveness of the Online Documents Tracking System using Quick Response Code as to portability was lower with a mean of 4.08 with descriptive equivalent of "Good" while a higher rating 4.35 interpreted as "Excellent" was provided by the staff respondents. A higher rating provided by the staff respondents can be attributed to their familiarity with the system that it can be installed easily and can be adapted to any other system.

3. Assessment of the School Head and Staff Respondents on the Level of Readiness in the Implementation of the Enhanced Electronic Document Tracking System Using QR Code

The school head officials assessed the level of readiness in the implementation of the enhanced electronic document tracking system using QR Code as to Information System Facility differently. As manifested in the overall weighted mean of 4.13 with head respondents implies that they are ready for the implementation of the system. On the other hand, higher rating of 4.20 by the staff respondents implies that they "Very Ready" to use the system. .

School head respondents are more of cognitive, decision and human relation skills while staff respondents are more of the technical skills looking for suitable places and internet availability and connectivity.

Table 2 Assessment of the School Head and Staff Respondents on the Level of Readiness in the Implementation of the Enhanced Electronic Document Tracking System Using QR Code

Indicators	School Head N=56		Staff N=132	
	Weighted Mean	Descriptive Equivalent	Weighted Mean	Descriptive Equivalent
Information System Facility	**4.13**	**Ready**	**4.20**	**Very Ready**
User/Technical Personnel	**4.11**	**Ready**	**4.29**	**Very Ready**
Mean	4.12			

The evaluation made by the school head and the staff on the level of readiness in the implementation of the enhanced electronic document tracking system using QR Code as to User/Technical Personnel was different as manifested by the overall weighted mean of 4.11 with descriptive equivalent of "Ready". On the other hand, a slightly higher rating of 4.29 from the staff respondents with descriptive equivalent of "Very Ready" was recorded.

4. Assessment of the School Head and Staff Respondents on the Level of Acceptability of the Quick Response Code for Tracking of On-line Documents

Table 3 Assessment of the School Head and Staff Respondents on the Acceptability of the Quick Response Code for Tracking of On-line Documents

Indicators	School Heads N=56		Staff N=132	
	Weighted Mean	Descriptive Equivalent	Weighted Mean	Descriptive Equivalent
Functionality	4.30	Highly Accepted	4.30	Highly Accepted
Performance	4.13	Accepted	4.26	Highly Accepted
Usability	4.30	Highly Accepted	4.30	Highly Accepted
Mean				

The assessment of school heads and staff respondents on the level of acceptability of the quick response code for tracking of on-line documents as to functionality was not different. The school heads had a slightly lower rating of 4.30 and the staff had a slightly higher rating of 4.35 both with a descriptive rating of "Highly Accepted". Both the respondents agree that the system is highly acceptable in the academe.

According to both groups of respondents, they had seen, observed and experienced the functionality of the proposed quick response code for tracking of on-line documents. At a lesser time of searching, they can immediately trace and track the documents. It provides detail of the documents when it was issued, date received, and the nature of the documents.

The school head and staff respondents assessed the level of acceptability of the quick response code for tracking of on-line documents as to functionality differently. With a weighted mean of 4.13 interpreted the heads indicate that the system is Acceptable. A higher rating of 4.26 with descriptive equivalent of "Highly Accepted", the staff found that the system is highly acceptable.

The evaluation of school head officials and staff respondents on the level of acceptability of the quick response code for tracking of on-line documents as to usability was the same. The overall equal weighted mean of 4.30 and 4.30 both the respondents indicate that the system is "Highly Accepted".

Both groups agree on the high acceptability of the quick response code for tracking of on-line documents as to usability. It is very useful in improving the management of documents and provide efficient transaction for clientele requesting for document like transcript of records, office and university memoranda, CMO's, letters from the Commission on Higher Education and other government agencies.

5. Test of significant difference on the evaluation of head officials and staff respondents towards existing and proposed online Quick Response Code for tracking of on line documents for President Ramon Magsaysay State University

Table 4 shows the significant differences on the evaluation of head and staff respondents towards existing and proposed online quick response code for tracking of on line documents for President Ramon Magsaysay State University.

On the existing system, the computed Significant or P value (2-tailed test) equivalent to 0.000 on (functional suitability); 0.000 on (performance efficiency); 0.000 (compatibility); 0.000 on (usability; 0.000 on (reliability); 0.000 on (security); 0.000 on sustainability) ; and 0.000 on (portability) which all are lower than 0.05 Alpha Level of Significance, hence there is significant difference on the assessment towards the existing document tracking between the school heads and staff respondents. The staff respondents had provided a higher rating in almost all the indicators provided.

Table 4: Test of significant difference on the evaluation of officials and staff respondents towards existing and proposed online Quick Response Code

	Existing				Proposed Online			
Indicators	**df**	**t Stat**	**Sig. (2-tailed)**	**Decision**	**df**	**t Stat**	**Sig. (2-tailed)**	**Decision**
Functional Suitability	187	64.352	0.000	Reject Ho	187	150.224	0.000	Reject Ho
Performance Efficiency	187	59.258	0.000	Reject Ho	187	59.258	0.000	Reject Ho
Compatibility	187	59.442	0.000	Reject Ho	187	111.601	0.000	Reject Ho
Usabili1y	187	59.169	0.000	Reject Ho	187	117.019	0.000	Reject Ho
Reliability	187	58.922	0.000	Reject Ho	187	123.172	0.000	Reject Ho
Security	187	61.236	0.000	Reject Ho	187	124.371	0.000	Reject Ho
Maintainability	187	64.281	0.000	Reject Ho	187	116.347	0.000	Reject Ho
Portability	187	60.584	0.000	Reject Ho	187	116.799	0.000	Reject Ho

On the proposed online Quick Response Code for tracking of on line documents, the computed Significant or P value (2-tailed test) equivalent to 0.000 on (functional suitability); 0.000 on (performance efficiency); 0.000 (compatibility); 0.000 on (usability; 0.000 on (reliability); 0.000 on (security); 0.000 on sustainability) ; and 0.000 on (portability) which all are lower than (<) 0.05 Alpha Level of Significance, hence there is significant difference on the assessment towards the proposed online document tracking between the school heads and staff respondents.

The data indicates differences of the existing and proposed online quick response code for tracking of on line documents for President Ramon Magsaysay State University. The online tracking with the application of QR codes can

search and trace documents without having to ask their peers or teachers. Hernández-Julián & Peters [12], in their study conducted to compare doing homework online with doing homework on paper, found that an electronic environment could make it easier to access an instructional material and that it did not significantly influence learning. Al-Khalifa [13]) developed a Mobile Snapshot Response system with QR Codes.

According to Knowles and David [14] it is a primary object of the present invention to provide an improved method and apparatus for Surfing among information resources on the Internet while avoiding the Shortcomings and drawbacks of prior art Systems and methodologies. A further object of the present invention is to provide an Internet Scanning System which includes an bar code Symbol reader for reading URL-encoded bar code symbols printed on various types of print media which, when read thereby, automatically connects the Internet Scanning System to the Internet Server that contains the information resource Specified by the Scanned URL-encoded bar code symbol.

6. Test of significant difference between the officials and staff respondents on the acceptability in the Quick Response Code for tracking of on line documents

Table 5: Test of significant difference between the head officials and staff respondents on the level of acceptability in the Quick Response Code for tracking of on line documents

Indicators	df	t Stat	Sig. (2-tailed)	Decision
Functionality	187	111.292	0.000	**Reject Ho**
Performance	187	110.974	0.000	**Reject Ho**
Usability	187	111.292	0.000	**Reject Ho**

The null hypothesis is rejected based on the computed Significant or P-values of 0.000 on (functionality); 0.000 on performance; 0.000 on usability which is lower than (<) 0.05 Alpha Level of Significance, hence there is significant difference on the assessment towards the level of acceptability on the Quick Responses Code for tracking of on online documents for the President Ramon Magsaysay State University between the school heads and staff respondents.

The Online Quick response Code for tracking documents with application of mobile devices and QR code technology which can provide efficient and effective searching and tracking for documents. The QR codes can take m-learning to a new level, referred to as ubiquitous or u-learning, by providing exactly the right information, at the right time and place, challenging each u-learner through a unique, individualized, wireless learning environment [15].

Mobile devices and QR code symbols can offer an ideal method to provide students instant learning assistance using devices they already possess. Integrating digital and text information will bring opportunities for learners to comprehend print material by providing relevant, real-time background knowledge, while allowing students to learn at their own pace [16].

Multimedia digital content via audio/video clips provide students the ability to gather information from a variety of methods which explain concepts in greater detail. Supplementary materials in the form of QR codes give instantaneous availability to digital help via scaffolding questions to support students in the learning process [16].

7. Test of significant difference between the head officials and staff respondents' evaluation on the level of readiness in the implementation of Quick Response Code.

In table 6 the null hypothesis is rejected based on the computed Significant or P-values of 0.000 on (Information System Facility); and 0.000 on (User/Technical Personnel) which are lower than (<) 0.05 Alpha Level of Significance, hence there is significant difference on the assessment towards the level of readiness in the implementation of the Quick Responses Code for tracking of on online documents for the President Ramon Magsaysay State University between the school heads and staff respondents.

Table 6: Test of significant difference between the head officials and staff respondents' evaluation on the level of readiness in the implementation of Quick Response Code for tracking of on line documents for President Ramon Magsaysay State University

Indicators	df	t Stat	Sig. (2-tailed)	Decision
Information System Facility	187	99.448	0.000	**Reject Ho**
User/Technical Personnel	187	107.067	0.000	**Reject Ho**

This finding contradicts the study of Bachillar [17] where he found out that there was no significant difference toward level of readiness on electronic document management and processing system as perceived by school heads and staff respondents.

4. Conclusion

The enhanced on line tracking of documents using Quick Response Code is Good except on reliability which is excellent. The enhanced on line tracking of documents using QR code is highly accepted.The school head respondents are ready while the staff are very ready to implement the enhanced on line tracking of documents using QR code. There are significant differences on the assessment between school heads and staff respondents towards dimensions on the proposed online Quick Response Code for tracking of on line documents as to functionality, performance,efficiency, capability, usability, reliability, security, maintainability and portability. There is significant difference on the assessment towards the level of acceptability on the Quick Responses Code for tracking of on online documents between the school heads and staff respondents.There is significant difference on the assessment towards the level of readiness in the implementation of the Quick Responses Code for tracking of on online documents between the school heads and staff respondents.

Acknowledgment

The author would like to express his thanks to Dr. Nemia Galang for her valuable assitance.

References

[1] Hewlett-Packard, Exploring today's technology for tomorrow's possibilities HP.com; Timeline of our history, 2019

[2] P. Kumar, S. Rao, and P. Aithal, Strategic Planning in Higher Education Institutions: A Case Study of Sims - Vision 2025.International Journal of Educational Science and Research (IJESR) ISSN(P): 2249-6947; ISSN(E): 2249-8052, Vol. 5, Issue 2, 29-42,2015

[3] S. O'Connor and T. Andrews, Mobile technology and its use in clinical nursing education: a literature review, *J Nurs Educ*. Vol. 54(3),pp137-144,2015

[4] B.Bowyer, Using QR codes in your document control work. Document, Control news and events,2016

[5] S. Telepen, File and Document Tracking System, http://telepen.co.uk/file,2013

[6]I.Karela , Know the status of your files and petitions online through IDEAS, http://archives.keralaitnews.com/,2013

[7] N.Burns, N.and S. Grove, The practice of nursing research : appraisal, synthesis, and generation of evidence. St. Louis, Mo: Saunders Elsevier,2009

[8]Bhat R. Descriptive Research: Definitio, characteristics, methods, examples and advantages. Retrieved from https://questionpro.com.blog/descriptive research/. Data accessed September, 2019

[9]M. Gall, J. Gall, and W. Borg, , , Educational research: An introduction (8th ed.). Boston: Pearson, 2007

[10] K. Parahoo, Nursing research: Principles, process and issues. Houndmills, England: Macmillan,1997

[11]Lee and Harapanahali, Response Codes & Smartphones in a Biology Field Study. The American Biology Teacher, Vol. 73, No. 8, 485-492. doi: 10.1525/abt.2011.73.8.11,2015

[12] R. Hernández-Julián, and C. Peters, Does the Medium Matter? Online versus Paper Coursework. Southern Economic Journal, 78(4), 1333–1345,2012

[13]) Al-Khalifa, H.S. (2011). An M-Learning System Based on Mobile Phones and Quick Response Codes. Journal of Computer Science 7 (3): 427-430,2011

[14]M. Knowles and W. David, Internet-Based System And Method For Tracking Objects Bearing Url Encoded Bar Code Symbols 75 United States Patent Patent Number: 5,869,819 (45) Date of Patent: Feb. 9, 1999 54,2009

[15] S, Leone and T. Leo, The Synergy of Paper-Based and Digital Material for Ubiquitous Foreign Language Learners Knowledge Management & E-Learning: An International Journal, Vol.3, No.3,2011

[16] N. Chen, D. Teng, and C. Lee, Augmenting paper-based reading activity with direct access to digital materials and scaffolded questioning. Computers & Education, 57(2),pp 1705–1715,2011

[17] D. Bachillar and M. Dela Cruz Electronic Document Management and Processing System of Ramon Magsaysay State University, Unpublished Graduate Thesis, Ramon Magsaysay Technological University, Iba, Zambales, Philippines, 2017