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Electronic Document and Records Management System (EDRMS) Adoption in Public Sector – Instrument’s Content Validation Using Content Validation Ratio (CVR)

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Abstract. Although Electronic document and record management system (EDRMS) is perceived to benefit the management of records and document in organizations, the system is not fully utilized due to consumers resistance, particularly in public sectors. The adoption of this system is influenced by ten identified factors and thus becomes the basis for the development of the instruments (questionnaire). This study aims to validate the content of the instrument by complying rigorous protocol. Content Validity Ratio (CVR), which is a quantitative approach is adapted to validate the contents of the questionnaire. The content validation process involves eleven selected experts based on their related experience and expertise. 7 from 78 indicators were rejected after the content validation was performed. Only 71 indicators were accepted for the final questionnaire. These validated final instruments can be used to assess the EDRMS adoption in the public sector organization.

1. Introduction

The electronic document management and record management system (EDRMS) is able to bid on an effective solution in the form of document management and record management in the public sector [1]. As an application system, EDRMS supports the creation, use, and maintenance of documents and records manually and electronically to produce efficient and systematic workflows [2]. This system provides the organizational advantage by providing accurate, fast and accessible information, thereby reducing operating costs [3]. In addition, EDRMS provides good security functions in government records processing procedures [4] thus enhancing the transparency and accountability of the organization [5] in producing a dynamic information management system [6]. The use of EDRMS has proven to allow several countries such as Croatia, Germany, and Australia to enhance the efficiency of document management and records in their respective organizations [7]. There were a number of information and communication technology (ICT) projects implemented by public organizations experienced failure [8] due to low adoption rates among consumers. Factors affecting the adoption of EDRMS involve two levels which are organizational and individual. However, only a few studies have investigated the individual level. Majority of the research was focused on adopting EDRMS at the organizational level as revealed by the study conducted by [9] and [10]. [11] also suggested that factors affecting EDRMS adoption amongst users in the public sector should be identified to reduce the problem of low consumption levels. Therefore, this study focuses on the adoption of EDRMS at the individual level by involving two technology adoption theories: Unified Theory of Acceptance and Use of Technology (UTAUT) and Information System Success Model (ISSM).

1.1 Instrument Development

The questionnaire is an effective data collection instrument for researchers to know how the constructs are measured [12]. The data collected are up-to-date, uniform, flexible and involve large samples [13].



The questionnaire development process involves the implementation of a comprehensive literature review to understand the concept of the study and to identify: i) related adoption theories ii) factors that influence the EDRMS adoption in public sector and iii) indicators to measure each of identified factors. The results have contributed to the identification of ten (10) factors as illustrated in Table 1.

Table 1. Descriptions and sources for each factor

No.	Construct	Operational Definition	Source(s)		
			Theory	LR	
1	Performance Expectancy	Involves the situation in which system’s users believe that EDRMS is able to improve their job performance	/ UTAUT	/	[11], [14], [15]
2	Effort Expectancy	Involves the situation in which system’s users believe that EDRMS is easy to use	/ UTAUT	/	[11], [14]–[16]
3	Social Influence	Individuals can be influenced by the attitudes and behaviors of other individuals and vice versa	/ UTAUT	/	[11], [14], [15]
4	Facilitating Conditions	The role of organizational and technical infrastructure in support of the use of EDRMS (training)	/ UTAUT	/	[11], [14], [15]
5	System Quality	Quality features that should be available on EDRMS (easy to use, user-friendly and good response time)	/ ISSM	/	[17]
6	Information Quality	The capability of EDRMS to provide accurate, up-to-date, adequate, and relevant information	/ ISSM	/	[18], [19]
7	Service Quality	The assistance and support from the EDRMS implementation team and the organization's ICT support team	/ ISSM	/	[17], [18]
8	Perceived Value of Records	The system’s users believe that knowledge artifacts (e.g., written documents, letters, emails, etc.) are valuable and are worthy to be stored		/	[20]
9	Policy	The system’s users believe that policy can provide a way of action to guide and determine current and future decisions		/	[21], [22]
10	Security	The system’s users believe that the use of technology can ensure the safety of documents and records		/	[20], [21]

1.2 Content Validity

The instrument development needs to go through the content validity process to ensure that identified construct are legitimate, clear and reflect its contents [22], [23]. Content validity is a category of construct validity. It is the degree to which the elements of an assessment instrument are relevant to and representative of the targeted construct for a particular assessment purpose [24]. The content validity can be implemented qualitatively or quantitatively as mention in Table 2.

Table 2. Methods for content validation

	Method	Description
Qualitative	1. Intensive Literature Review [23], [24]	The construct is measured by adapting questions from previous researchers. This method only refers to existing instruments, without going through an evaluation process by a panel of experts.
	2. Content Validation by Panel of Experts [24], [25]	Constructs are measured on the basis of evaluation analysis through comments, ideas, and feedback from the experts.
Quantitative	1. Content Validation Ratio (CVR) [26], [27]	This method involves the assessment of constructs by a group of experts using a scale of three or five to assess each construct. Experts can also provide their additional views. The number of experts is not determined and usually depends on the suitability of the study. The CVR calculation is based on the acceptance criteria set by Lawshe (1975).

Method	Description
2. Content Validation Index (CVI) [28]	This method involves the assessment of constructs by a group of experts using a scale of four - "1=irrelevant", "2=somewhat relevant", "3=relevant", and "4=highly relevant". The number of expert panels is set between three to ten.

Content validity is also known as expert confirmation as it is performed by a group of professional panels or experts in the related field [12]. Recent studies on EDRMS adoption mostly use qualitative methods for content validity processes such as studies conducted by [17], [11] and [20]. According to [24], qualitative analysis is difficult to interpret and the results obtained are less accurate because the questionnaire usually involves a large number of items. Accordingly, [26] also believes the quantitative analysis is a better solution for content validity. Quantitative methods using Lawshe techniques are selected for this study because of its practicality. Based on a study conducted by [29], the CVR calculated using Lawshe techniques is more practical, easy and saves time, especially during the evaluation process. CVR uses binomial distribution and also prepares tables to determine the values to be followed in calculations based on the number of experts involved [26]. In addition, CVR calculations are also suitable for studies involving a small number of experts. Accordingly, this study uses the CVR method for content validity as well as being used in the study of [26]; and [24].

2. Research Method

The content validity processes in this study consist of two steps ie: i) content validation by the panel of experts and ii) feedback analysis using CVR.

2.1 Content Validation by Panel of Experts

As recommended by [24], the selected panel of experts should be involved and experienced in the related domain and have expertise in the instrument development. A total of eleven (11) experts were involved in the interview. The selected panel of experts consists of academicians, practitioner, and professionals. Selection criteria are based on their experiences and involvement in relevant areas for at least 10 years, knowledgeable and experienced in electronic document and records management; experienced in EDRMS implementation in the Public Sector; and knowledgeable in theory, statistical or constructive measurement. Each expert takes between 40 minutes to 1 hour to complete the content validity session. The experts were also asked to evaluate and validate the significance of the indicator based on a 5-point Likert scale which is "1-very disagree", "2-disagree", "3-agree" (but not important), "4-agree" and "5-strongly agree". Experts were also invited to offer their opinion or comments in the space provided.

2.2 Feedback Analysis using CVR

Experts feedback is statistically analyzed using Microsoft Excel software. The consensus among panel experts is measured by the calculation of CVR [27]. In calculations, the answers "4" and "5" are considered relevant while the answers "1", "2" and "3" are irrelevant. The formula used to calculate the CVR as proposed by [27] is $CVR\ Value = (2Ne / N) - 1$. In the formula, "Ne" represents the number of experts who gave the relevant answer "4-Agree" and "5-Strongly Agree" while "N" is the total number of experts. This equation is described in table 5.

Table 3. Explanation of equality

Equation	Description
If all the experts answered "4" and "5"	The CVR value is 1.00 (all agree)
If more than half (>50%), but less than all (<100%) experts answered "4" or "5"	The CVR value is positive (ranging from 0.00 to 0.99)
If less than half (<50%) of the experts answered "4" or "5"	The CVR value is negative

Acceptance criteria for each indicator (minimum CVR value) depend on the total number of the panel experts. The CVR minimum value is set at a probability of five percent (p=0.05) and compared to the number of experts participating in the study [27]. Given the number of experts involved is 11, the

minimum CVR received is 0.59 (refer to the minimum value of CVR table by [27]). This means that each indicator with a value of 0.59 and above (≥ 0.59) is accepted and included in the final questionnaire while indicators with values of 0.58 (≤ 0.58) and below are rejected and removed from the final questionnaire.

3. Results and Discussion

Table 4 shows the final results of CVR calculations. Based on the calculations, there are 7 indicators rejected for a value of 0.58 and below. Only 71 indicators were accepted for the final questionnaire. The constructs and accepted indicators are then arranged according to the format specified. This instrument is considered as a reliable tool to assess the EDRMS adoption by the system's user.

Table 4. Analysis Results of CVR

Construct	Indicator	Ne	CVR	Results	
Performance Expectancy (PE)	PE1	EDRMS allows me to complete routine tasks more easily	11	1	Accepted
	PE2	EDRMS allows me to complete routine tasks faster	11	1	Accepted
	PE3	EDRMS can improve my work performance	11	1	Accepted
	PE4	EDRMS helps provide higher promotion opportunities	11	1	Accepted
	PE5	EDRMS manages record security well	6	0.09	Rejected
	PE6	EDRMS provides reliable information	10	0.82	Accepted
	PE7	EDRMS is able to support my job requirements	11	1	Accepted
	PE8	I find that the classification of records within EDRMS is intuitively	6	0.09	Rejected
	PE9	EDRMS is used to achieve organizational goals	11	1	Accepted
Effort Expectancy (EE)	EE1	EDRMS provides a user-friendly system interface	11	1	Accepted
	EE2	EDRMS is easy to learn	10	0.82	Accepted
	EE3	EDRMS is easy to use in daily work	11	1	Accepted
	EE4	EDRMS is easy to control	11	1	Accepted
	EE5	I frequently use EDRMS to sharpen my skills	11	1	Accepted
	EE6	I can learn to manage the task of using EDRMS without problems	11	1	Accepted
	EE7	I find that the records in the system are well organized	10	0.82	Accepted
	EE8	The process of adding records into EDRMS is simple	11	1	Accepted
	EE9	I have no problem achieving the record using EDRMS	11	1	Accepted
	EE10	Overall I found EDRMS easy to use	8	0.45	Rejected
Social Influence (SI)	SI1	My colleague thinks I should use EDRMS	11	1	Accepted
	SI2	My subordinates think I should use EDRMS	11	1	Accepted
	SI3	My top officials think I need to use EDRMS	11	1	Accepted
	SI4	The use of EDRMS is supported by the organization	11	1	Accepted
	SI5	I use EDRMS because my subordinates use it as well	11	1	Accepted
	SI6	Individuals that use EDRMS are more reliable than those who do not use it	11	1	Accepted
	SI7	Individuals who use EDRMS are more highly regarded	11	1	Accepted
	SI8	My chance of getting recognition is higher by using EDRMS	11	1	Accepted
	SI9	EDRMS affects my reputation	11	1	Accepted
Facilitating Condition (FC)	FC1	The organization provides adequate infrastructure	11	1	Accepted
	FC2	The organization provide training sessions	11	1	Accepted
	FC3	Support teams are available to assist if there is difficulty in managing EDRMS	11	1	Accepted
	FC4	EDRMS can be used with other technologies (eg: Microsoft word, email)	10	0.82	Accepted
	FC5	The top management gave good support to the EDRMS initiative	11	1	Accepted

Construct	Indicator	Ne	CVR	Results	
System Quality (SQ)	SQ1	Executed without interruption	10	0.82	Accepted
	SQ2	Operating smoothly	11	1	Accepted
	SQ3	Always ready to use at all times	11	1	Accepted
	SQ4	Always ready to be used by all agencies in the public sector.	8	0.45	Rejected
	SQ5	Always ready to provide information, reports, and services	11	1	Accepted
Information Quality (IQ)	IQ1	Right (free from mistakes)	11	1	Accepted
	IQ2	Valid (adhered to the purpose)	11	1	Accepted
	IQ3	Reliable (complete)	11	1	Accepted
	IQ4	Accountability (adequate and accurate)	11	1	Accepted
	IQ5	Whole (complete and unchanged)	11	1	Accepted
	IQ6	Usability (can be traced, retrieved, used and interpreted)	11	1	Accepted
	IQ7	Latest (always updated)	11	1	Accepted
Service Quality (SV)	SV1	Timely service	11	1	Accepted
	SV2	Reliable service	11	1	Accepted
	SV3	Correct service	7	0.27	Rejected
	SV4	The right service	9	0.64	Accepted
	SV5	Perfect service	11	1	Accepted
	SV6	Services that are constantly monitored for its effectiveness	11	1	Accepted
Perceive Value of Records (PVR)	NR1	Record management is the responsibility of all employees in the organization	11	1	Accepted
	NR2	Records management is a necessity in working efficiency	11	1	Accepted
	NR3	Record management is an important part of my daily tasks	11	1	Accepted
	NR4	I rely on the record to remind me of the details of the last job	11	1	Accepted
	NR5	I often refer to the record for the information required in my daily work	11	1	Accepted
	NR6	I keep records in EDRMS in the hope that the records can be referred to by other officers	11	1	Accepted
	NR7	I use the record as credible evidence	11	1	Accepted
	NR8	Organizations rely on records to achieve organizational goals	11	1	Accepted
	NR9	Well-managed records can increase accountability	11	1	Accepted
Policy (P)	P1	To make sure the system complies with legal and regulatory requirements	11	1	Accepted
	P2	Easy to understand	11	1	Accepted
	P3	Cover all system functions	11	1	Accepted
	P4	Easy to implement	11	1	Accepted
	P5	Save costs	6	0.33	Rejected
	P6	Enforced	11	1	Accepted
	P7	Coordinated (distributed) to all organizations involved	9	0.64	Accepted
Security (S)	S1	Organizations protect the information assets properly	11	1	Accepted
	S2	I believe my organization is able to survive from disaster involving the loss of electronic documents and records	11	1	Accepted
	S3	I believe the electronic documents and records that I use are guaranteed to be safe as EDRMS provides control at all levels (individuals, working groups, and organizations)	11	1	Accepted
	S4	I feel my work environment is safe	11	1	Accepted
Intention to Adopt EDRMS (IAE)	IAE1	I will use EDRMS regularly	11	1	Accepted
	IAE2	I will use EDRMS as part of my daily tasks	11	1	Accepted
	IAE3	I will often contribute (capture) records into EDRMS	11	1	Accepted
	IAE4	I will give a high commitment to adopt EDRMS	11	1	Accepted
	IAE5	I expect to use EDRMS regularly within the next 6 months	7	0.27	Rejected
	IAE6	My expectation of adopting EDRMS is high	11	1	Accepted

Construct	Indicator	Ne	CVR	Results
IAE7	I choose to use EDRMS although it can manage the records manually	11	1	Accepted

4. Conclusion

Content validity is a crucial process in instrument development to ensure the quality and effectiveness of the resulting instrument. The CVR method used in this study shows the clear steps and accurate calculation formula making it's easy to implement. After performing the content validation process, this instrument can be used as a valid (reliable) tool to measure the level of EDRMS adoption among users in the public sector. Final CVR results indicate that 71 out of 78 indicators were accepted while 7 were rejected. The research results also provide new opportunities for practitioners, who can use the measurement instrument to assess the EDRMS adoption in their organization.

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6. References

- [1] L. T. Nguyen, P. M. C. Swatman, and B. Fraunholz, "Australian Public Sector Adoption of EDRMS: A Preliminary Survey," *ACIS 2008 Proc. - 19th Australas. Conf. Inf. Syst.*, pp. 700–709, 2008.
- [2] B. Yin, "An Analysis of the Issues and Benefits in EDRMS Implementation- A case study in an NZ Public Sector Organisation," Victoria University of Wellington In, 2014.
- [3] T. Leikums, "Managing Human Factors in Implementing Electronic Document," *Rom. Rev. Soc. Sci.*, vol. 2, pp. 21–30, 2012.
- [4] Mahadi, "Citizen Relationship Management Implementation in Malaysian Local Governments A thesis submitted for the degree of Doctor of Philosophy," Brunel University London, 2013.
- [5] al-dabbagh, "Electronic Government in Iraq : Challenges of Development and Implementation," Swedish Business School, Orebro University, 2011.
- [6] N. Kwatsha, "Factors Affecting the Implementation of an Electronic Document and Records Management System," University of Stellenbosch, 2010.
- [7] H. Abdulkadhim, Mahadi, A. Bakri, and H. Hashim, "Exploring The Common Factors Influencing Electronic Document Management Systems (EDMS) Implementation In Government," *ARPN J. Eng. Appl. Sci.*, vol. 10, no. 23, pp. 17945–17952, 2015.
- [8] S. Suhaiza and M. Y. Zawiyah, "Public Sector ICT Strategic Planning: Framework of Monitoring and Evaluating Process," *Asia-Pacific J. Inf. Technol. Multimedia.*, vol. 6, no. 1, pp. 85–99, 2017.
- [9] J. Decker, "Do Universities Get the Hang of Working Efficiently ? – A Survey of the Influencing Factors on the Adoption of Electronic Document and Workflow Management in German-speaking Countries," *Adopt. Electron. Doc. Work. Manag.*, no. Sprague 1995, pp. 1–15, 2014.
- [10] C. Nguyen, J. Sargent, R. Stockdale, and H. Scheepers, "Towards a Unified Framework for Governance and Management of Information," *25th Australas. Conf. Inf. Syst. 8th -10th Dec 2014, Auckland, New Zeal.*, p. 13, 2014.
- [11] O. Mosweu, K. J. Bwalya, and A. Mutshewa, "A Probe Into the Factors for Adoption and Usage of Electronic Document and Records Management Systems in the Botswana Context," *Inf. Dev.*, vol. 33, no. 1, pp. 97–110, 2016.
- [12] W. Muslihah, "Model Penerimaan Perlombongan Data Pendidikan Dalam Kalangan Pelajar Universiti Awam Di Malaysia," Universiti Kebangsaan Malaysia (UKM), 2017.
- [13] U. Sekaran and R. Bougie, *Research Methods for Business - A Skill Building Approach*, Edisi ke-7. John Wiley & Sons Ltd., 2016.
- [14] V. Venkatesh, Tobergte, D. R. Curtis, and Shirley, "User Acceptance of Information Technology: Toward a Unified View," *J. Chem. Inf. Model.*, vol. 53, no. 9, pp. 1689–1699, 2013.
- [15] F. Kaaki and C. Rayner, "Female Users ' Acceptance of the Electronic Document Management System (EDMS)," in *Proceedings - UKSim-AMSS 7th European Modelling Symposium on Computer Modelling and Simulation, EMS 2013*, 2013.
- [16] F. D. Davis, "Perceived Ease of Use, and User Acceptance of Information Technology," *MIS Q.*, vol. 13, no. 3, pp. 319–340, 1989.

- [17] S. M. M. Muaadh, "Framework For Electronic Records Management System Adoption In The Higher Professional Education In Yemen," Universiti Kebangsaan Malaysia (UKM), 2017.
- [18] S. M. M. Muaadh and Z. M. Yusof, "The DeLone–McLean Information System Success Model for Electronic Records Management System Adoption in Higher Professional Education Institutions of Yemen," *2nd Information. Conf. Reliab. Inf. Commun. Technol. (IRICT 2017)*, vol. 5, no. Lecture Notes on Data Engineering and Communications Technologies Series, pp. 812–823, 2018.
- [19] M. C. Lo, Y. C. Wang, C. R. J. Wah, and T. Ramayah, "The Critical Success Factors for Organizational Performance of SMEs in Malaysia: A Partial Least Squares Approach," *Rev. Bras. Gest. Negocios*, vol. 18, no. 61, pp. 370–391, 2016.
- [20] M. J. Lewellen, "The Impact of the Perceived Value of Records on the Use of Electronic Recordkeeping Systems," Victoria University of Wellington, 2015.
- [21] S. M. M. Muaadh, Z. M. Yusof, U. A. Mokhtar, and N. A. Manap, "Electronic Records Management System Adoption Readiness Framework for Higher Professional Education Institutions in Yemen," *Int. J. Adv. Sci. Eng. Inf. Technol.*, vol. 6, no. 6, pp. 804–811, 2016.
- [22] A. Dikopoulou and A. Mihiotis, "The Contribution of Records Management to Good Governance," *TQM J.*, vol. 24, pp. 123–141, 2012.
- [23] Y. S. Wang, "Assessment of learner satisfaction with asynchronous electronic learning systems," *Inf. Manag.*, vol. 41, no. 1, pp. 75–86, 2003.
- [24] N. Ali, A. Tretiakov, and D. Whiddett, "A Content Validity Study for a Knowledge Management Systems Success Model in Healthcare A Content Validity Study for a Knowledge Management Systems Success Model in Healthcare," *Jitta*, vol. 15, no. 2, pp. 21–36, 2014.
- [25] S. N. Haynes, D. C. S. Richard, and E. S. Kubany, "Content Validity in Psychological Assessment: A Functional Approach to Concepts and Methods Introduction to Content Validity," *Psychol. Assoc. Sept.*, vol. 7, no. 3, pp. 238–247, 1995.
- [26] T. Allahyari, N. H. Rangi, Y. Khosravi, and F. Zayeri, "Development and Evaluation of a New Questionnaire for Rating of Cognitive Failures at Work," *Int. J. Occup. Hyg.*, vol. 3, no. 1, pp. 6–11, 2011.
- [27] C. H. Lawshe, "A quantitative approach to content validity," *Pers Psychol*, vol. 28, no. 4, pp. 563–75, 1975.
- [28] M. R. Lynn, "Determination and Quantification of Content Validity," *Nurs. Res.*, vol. 35, no. 6, pp. 382–385, 1986.
- [29] D. R. Tojib and L. Sugianto, "Content Validity of Instruments in Is Research," *J. Inf. Technol. Theory Appl.*, no. 8(3), pp. 31–56, 2006.