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# ELECTRONIC DOCUMENT MANAGEMENT SYSTEM IN ELECTRONIC GOVERNMENT ENVIRONMENT

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## Abstract

One of the seven strategic thrusts in Post Covid-19 Development Strategy (PCDS) 2030 focuses on digital execution. It initiates Digital Government based on five principles: open government, data-centric government, innovative government, excellent service delivery and digital governance in Sarawak. This study is designed to examine the effectiveness of the implementation of Electronic Document Management System (EDMS) adopting the IS Effectiveness Model from DeLone and McLean. Questionnaires were collected through web-survey and were analysed using structural equation modelling (SEM) using the partial least squares (PLS) path modelling method. Objective: to examine the effectiveness of the document management systems used in Sarawak Government; to assess the performance of electronic document management system functionalities; to assess the influence of the functionalities' performance on the effectiveness of the electronic document management systems. Results: Based on the analysis, eight hypotheses were supported. The study's main contribution is the creation of research instruments that can be tested in other research settings. Conclusion: This study provided valuable information for the government in implementing Electronic Document Management System, which will lead to the development of digital government in the near future. It is hoped that the EDMS will allow the Sarawak government to become more responsive to the needs of its citizens and realise its vision of efficiently and effectively delivering good services from the government to the people of Sarawak.



*Keywords:* Electronic document, electronic document management system, electronic records, records

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# 1. Introduction

The term "electronic document management system" (EDMS) describes computerised systems that aid in managing electronic documents throughout their lifecycles, from initial creation to final destruction. In the era of electronic government, nearly every government in the world requires an Electronic Document Management System (EDMS) to control the growing volume of documents. Effective EDMS should not only control documents but also provide access throughout the government civil service and even to clients or citizens in the environment of electronic government.

Thus, many countries have begun using e-government because it has been recognized as an effective tool for fostering economic growth. In general, the effectiveness of EDMS depends on the performance of electronic document management system functionalities: Automated Information Capture, Federated Search and Retrieval, Collaboration Tools, Hierarchical File Indexing and Classification, Storage and Archival Method, Automated Workflow, Security and Audit Trail, and Support Administer compliance. Nevertheless, the concept of electronic government and its implementation is mature nowadays. This would bring new insight into the framework for assessing EDMS effectiveness.

## 1.1. Objectives of the Study

i. In electronic government, administrative directives, transactions of daily incoming and outgoing documents, and information are distributed via an electronic document management system. Due to this fact, it is important to examine the effectiveness of the document management systems used in government.
ii. The functionalities of EDMS are closely related to the usage of the system by the government civil service. Thus, it is significant to assess the performance of electronic document management system functionalities.
iii. The electronic government capable of utilising and optimising EDMS can assess its usage level, determine whether or not users are pleased with it, and determine whether or not there is room for improvement in its functionalities. As the use of electronic government becomes mandatory in all governments worldwide, organisations must ensure that the adoption of EDMS within the civil service yields positive results. Hence, it is crucial to assess the influence of the functionalities' performance on the effectiveness of the electronic document management systems.

## 1.2. Information System Success

This study adopted the (Delone & McLean, 2003) due to its capability to evaluate the information system (EDMS) functionalities that may affect the system's effectiveness. (DeLone & McLean, 1992; Delone & McLean, 2003) comprehensively reviewed and organised past research on IS effectiveness. (Cho, 2008) defines the success of an information system as measured by the level of user satisfaction and the effect that the system has on both individuals and the organisation. However, the success of the system depends on the enthusiasm and proficiency with which its users adopt the EDMS; in the case of

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this study, it is crucial to assess the functionalities and the effectiveness of EDMS used in the environment of electronic government.

#### 1.2.1. Information Quality

Information quality indicates that the system can provide users with information that is useful, up-to-date, precise, and pertinent to their needs so that they can make sound decisions. In this research, information quality is the crucial factor that defines the success of an information system. In this context, information quality helps reduce the likelihood of mistakes being made during a transaction, generating reliable and valuable data for making decisions in an electronic government environment.

#### 1.2.2. Systems quality

De Lone and Mc Lean's model of IS success places a high value on system quality (SQ), which they define as "the degree to which the technical efficiencies of the system meet user needs in terms of usability, response time, reliability, security, and flexibility". The quality of the EDMS processing system is evaluated here in terms of its own performance measures, such as throughput and resource utilisation. In addition to user satisfaction, the quality of an EDMS can be evaluated based on response and turnaround times, system adaptability, and user-friendliness.

#### 1.2.3. Perceived usefulness

The perceived usefulness of a computer system is affected by the user's subjective evaluation of the system's ease of use, which in turn affects the user's acceptance of the technology. Perceived usefulness is defined by (Davis, 1989, p. 320) as "the degree to which a person believes that using a particular technology has enhanced his or her job performance or his or his organization's performance,. The perceived usefulness of EDMS in this research was defined as the degree to which respondents believed the software would enhance their ability to carry out a specific task.

#### 1.2.4. User satisfaction

The success of an information system can be assessed by how delighted its users are with it. User satisfaction is defined (W. H. DeLone & McLean, 2016, pp. 10-11) as "the degree to which end-users are pleased with the usefulness of the information provided by the organisation in the form of reports, websites, and support services." User satisfaction with various aspects of the reports and the EDMS has been used to evaluate the success of EDMS. Moreover, positive feelings about the system are linked to higher levels of user satisfaction.

In the context of this research, it is essential to point out that the research concentrated on the functionalities of the systems involved in the electronic document management system. The research on the usefulness of EDMS features is summarised as the following:

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**Table 1.** Previous Studies on Electronic Document Management Systems (EDMS)

| Authors | Aims of Study | Variables Examined | Research Method | Main Findings |
|---|---|---|---|---|
| (Mutimba, 2014) | Investigating the Ministry of Education Science and Technology's efforts to implement an electronic document and records management system (MoHEST) | Policy and legal framework; User needs; RM Infrastructure | qualitative and quantitative | Despite the installation of an EDRMS, MoHEST continues to use the manual records management system; MoHEST has a records management policy, but not everyone is aware of it; there is inadequate documentation, inadequate finances, and resistance to change by staff, all of which hinder the implementation of the EDRMS; and MoHEST has a records management policy that everyone does not know. |
| (Abacı & Medeni, 2022) | To determine the extent to which the electronic document management system is effective in ensuring administrative control, productivity, job satisfaction, effectiveness, and security. The goal is to identify the extent to which the electronic document management system is effective. | Managerial control; productivity; job satisfaction; efficiency; security. | quantitative | The perceptions of managerial control, efficiency, and productivity for EDMS applications all increase, which in turn leads to an increase in employees' job satisfaction and, as a result, an increase in the institution's overall productivity. |
| (Abdulkadhim et al., 2015) | The purpose of this paper is to propose a theoretical framework for the EDMS implementation process in government. | Individual Change, Organisational Change, and Common Factors. | quantitative | provide government practitioners (such as system developers, senior managers, and project managers) with a greater understanding of the process of EDMS implementation projects by identifying the activities involved in each stage for better comprehension of the process. This will provide the practitioners with a greater understanding of the process of EDMS implementation projects. |
| (Pho & Tambo, 2014) | To offer a recommendation for good practise regarding the connection between EDMS and IMS. | process-oriented organizations; workflow; document flow; IMS and EDMS | qualitative, interpretivistic, longitudinal empirical study | The enhancement and effectiveness of the IMS should be paying attention to EDMS as a critical factor in establishing appropriate technological support for the IMS processes. When used appropriately, EDMS can further contribute to an |

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| | | | | organization's learning, the accuracy of its documentation, and the collaboration between different organisations. |
| (Ismael & Okumus, 2017) | To conduct a study into the critical success factors that influence the implementation of electronic document management systems in government organisations. | Technological readiness; Top management support; Training and involvement; Resource availability; System-related factors; Work environment and culture. | systematic literature review, eight face-to-face interviews, and a questionnaire survey | Support from top management is essential to the success of EDMS; The availability of resources has been identified as another important factor that contributes to the success of EDMS implementation; the success of an EDMS is contingent on the number of technological resources that are at a user's disposal. Training and participation are crucial factors in determining whether or not an EDMS implementation will be successful; Preparedness in terms of technology |
| (Alshibly, 2007) | The process of identifying the most critical aspects that contribute to the success of EDMS. | Technological readiness; top management support; cost savings perceived benefits; citizens service enhancing perceived benefits; time savings perceived benefits; productivity increasing perceived benefits. | quantitative | When it comes to EDMS successes being realised, the most important critical success factors are top management support and technological readiness; |
| (Alshibly et al., 2016) | To conduct research into and increase knowledge of important factors that users consider important when deciding whether or not to accept electronic document management systems (EDMS), as well as to design a model that can be applied to conduct research into user acceptance within the context of a developing economy such as Jordan. | Perceived System Quality; Perceived Information Quality; EDMS Perceived Ease of Use; EDMS Perceived Usefulness; EDMS Acceptance. | quantitative | The system's characteristics are the most important factor determining the acceptance of EDMS. |
| (Kassab et al., 2019) | To determine the significance of the policies and procedures for the | age; nature of the job; specialization. | quantitative | there were no statistically significant differences in the responses of the study population regarding the role |

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| | electronic document management system to the overall success of the electronic document management system | | | of policies and procedures for the electronic document management system in the success of the electronic document management system in the Palestinian Pension Agency due to the variable (age, nature of job, specialization). |
| (Alshibly et al., 2016) | To conduct research into the critical success factors that influence the implementation of electronic document management systems (EDMS) in government organisations. | Technological readiness; Top management support; Training and involvement; Resource availability; System-related factors; Work environment and culture | quantitative | Six categories of factors are essential for the success of EDMS and are widely regarded as being very important to the successful implementation of EDMS. |
| (Al-Dalaeen & Allahawiah, 2020) | To conduct a study of the quality characteristics of Electronic Documents Management Systems (EDMS) and to determine the direct impact that these quality characteristics have on the level of satisfaction that can be achieved by employees working for Jordanian construction companies. | Quality of EDMS (Quality of Content; Quality of Design; Quality of Organisation; and Ease of Use); User Satisfaction and System Performance. | a descriptive analytical approach to collect data via a designed survey to be analysed using the SPSS package | There is a significant relationship between the quality attributes of EDMS and the levels of satisfaction and performance appreciated by companies operating in the construction industry. |
| (Aziz et al., 2018) | The purpose of this research is to identify the factors that play a role in determining whether or not EDRMS should be implemented. | Performance expectancy; effort expectancy; social influence; facilitating conditions; system quality; information quality; service quality; perceived value of records; top management support; training; financial support; policy; security | qualitative | As a result of the research conducted, a brand new conceptual model for the implementation of EDRMS in the public sector of Malaysia was developed. |
| (Su et al., 2017) | Examines the usability of document management systems employed by government organisations from the point of view of | system interface; System function; System usability. | quantitative | Improvements to the help function increase user satisfaction; improvements to the interface of the document management system were investigated and validated using human factor |

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| | human factor engineering. | | | engineering, and a system that complies with the HMI standard was established. |
| (Al Shobaki et al., 2017) | To determine the status of implementing electronic document management systems in governmental institutions. | Age, nature of the job, specialization, qualification, and the number of years of experience. | Census method | There were no statistically significant differences in the population's reactions to the study's findings regarding the actual implementation of an electronic document management system in governmental institutions, whether the variables of interest were related to age, occupation, level of education, or years of experience. |
| (Estrera, 2017) | To create and implement an electronic document management system to support Capitol University's quality management system. | Functionality (organization, security, management); Time and money savings. | quantitative | According to the findings, the Automated System is more effective than the system that is currently in place. As a result, the implementation of EDMS across all three colleges that make up Capitol University has shown to be fruitful in terms of the functionality, cost, and time savings it provides. |
| (Cho, 2008) | The purpose of this study is to assess the impact that Organization Learning (OL) has on the efficiency of an EDMS. | firm size, communication effectiveness, Learning orientation, management support, user satisfaction, individual impact, and organisational impact | Questionnaire | Management support has a positive impact not only on user satisfaction but also on individual enrichment in using an EDMS (individual impact), as well as on an organization's impact. |
| (Sezgin et al., 2013) | In order to provide insight into the factors that influence EDMS use and contribute to the existing body of knowledge on how users accept new technology. | intention; Attitude; Perceived Usefulness; Perceived Ease of Use; Social Norms; Facilitating Conditions; Self-efficacy; Trust; Job relevance; Output quality. | survey method | According to the study's findings, the newly implemented system not only offered the necessary functionalities but also obtained generally favourable feedback from users. |

## 2. Research Methods

### 2.1. Measurement Development

For the purpose of this research and to answer the research questions, the quantitative method is an efficient research methodology. There are several distinct research methodologies that can be utilised in the context of the quantitative research approach. These methodologies include: (1) experimental; (2)

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observation; (3) case studies; (4) action research; (5) grounded theory; (6) survey; and (7) mixed methods (Sekaran & Bougie, 2016). The formulated hypotheses were tested using a questionnaire developed in English and translated in Malay. The developed questionnaire was forwarded to four experts from the Faculty of Information Management, University of Technology MARA, for perusal, after which an initial empirical pre-test was conducted. In this regard, (Memon et al., 2017) stated that the questionnaire needs to be tested. Following this, pre-test of the questionnaire was also carried out by four prospective respondents from the field of study that involves experts from the agencies of the Sarawak Government, particularly those experienced with EDMS usage. The pre-test is designed to ensure that the design of the questionnaire and the clarity and relevancy of the items are established (Sekaran & Bougie, 2016). After the initial round of testing, certain questionnaire questions were altered to improve its readability. On a scale developed by Likert, the items were scored according to the following extremes: (1) Strongly Disagree; (2) Moderately Disagree; (3) Slightly Disagree; (4) Neither agree nor disagree; (5) Slightly Agree; (6) Moderately Agree; (7) Strongly Agree.

### 2.2. Data Collection

Data collection has taken considerable time beyond what was anticipated because of the COVID-19 pandemic. The questionnaire was distributed online to the Head of Department for each government agency to distribute questionnaires, with a link provided. The Head of Department then selects personnel from selected Sarawak government ministries, departments, and agencies to complete the questionnaire. The process of data coding was accomplished by entering the responses into the SPSS software. A unique code was assigned to each questionnaire during the data coding process. The data was converted to two platforms for statistical analysis: Statistical Package for the Social Sciences (SPSS) and Partial Least Squares Equation Modelling (SmartPLS) for data analysis. The minimum sample size for this study is 200, the minimum sample size for the model structure is 100, and the minimum sample size is 200. Both of these numbers compare to the defect effect, which has a recommended minimum sample size of 200. Out of the 500 questionnaires were distributed to State Ministries, Chief Minister's Department, State Departments, Resident Offices, District Offices, State Statutory Bodies in the state government of Sarawak, 293 were returned online. Hair et al. (2019) suggested that the number of people who participated in the study should be at least eight times greater than the number that the study constructs. Thus, the minimum sample size required based on this recommendation was n = 48. Accuracy was established by conducting statistical power analyses to estimate sample size based on (Cohen, 2013), which was calculated using A-priori sample size calculator for structural equation models by Soper (2021). A sample size of 96 respondents was needed to obtain an alpha of 0.05, a moderate effect size of 0.15, and a power of 0.80. Because the sample size was comprised of 293 responses, it was deemed appropriate for SEM-PLS analysis.

## 3. Findings

The demographic characteristics of the respondents indicate that 104(35.5%) of the sample size was male while 189(64.5%) were female, which implies that the population of the female respondent is

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higher than male. The age range of 26 to 33 years old makes up the most significant proportion of participants in this study (32.4%), followed by the age range of 42 to 49 years old (29.7%), and then 34 to 41 years old (27%). According to the findings, the majority of those who participated in this research have a bachelor's degree (n=131, 45.8%), followed by SPM and diploma graduates (n=58, 20.3% and n=57, 19.9%) respectively, and then Master's degrees (n=21, 7.3%) and STPM (n=58, 20.3%). Figure reveals that the categories with the highest number of respondents are those with a duration of less than 5 years (n= 93, 31.7%), then those with 16 to 20 years (n= 57, 19.5%), then those with 11 to 15 years (n= 50, 17.1%), and finally those with 5 to 10 years (n= 49, 16.7%). The total number of respondents who had served between 21 and 25 years was 29 (9.9%), and the total number of respondents who had served between 26 and 30 years was 10 (3.4%). Only (n=5, 1.7%) of the respondents who took part in this study had more than 30 years of service experience.

### 3.1. Descriptive analysis of construct

Apart from eight variables for document management services which consisting of main constructs including Automated Information Capture, Federated Search & Retrieval, Collaborative Tools, Hierarchical File Indexing & Classification, Storage & Archival Method, Automated Workflow, Security & Audit Trail, and Super Administer Compliance, this study also measured four variables of Information System effectiveness which is Information Quality, Systems Quality, User Satisfaction and Perceived Usefulness.

### 3.2. Information Quality

It was determined that the overall mean for the variable task innovation was 5.738, which indicates that the Information Quality of the respondents is higher than the average. The standard deviation of the mean falls between the range of 5.683 to 5.823. The overall standard deviation is equal to 1.045, and the range is from 1.022 all the way up to 1.095. The "ISE IQ1" item has the lowest mean score overall. And the one with the highest score is item "ISE IQ5" as shown in the Table 2.

**Table 2.** Descriptive Statistics on Information Quality

| Items | Mean | Median | Min | Max | Standard Deviation |
|---|---|---|---|---|---|
| EDMS is relevant to my work | 5.683 | 6 | 2 | 7 | 1.054 |
| EDMS is accurate | 5.727 | 6 | 2 | 7 | 1.026 |
| EDMS is easy to understand | 5.741 | 6 | 2 | 7 | 1.022 |
| EDMS format is presented in a useful format | 5.717 | 6 | 1 | 7 | 1.095 |
| EDMS is available on time for use | 5.823 | 6 | 2 | 7 | 1.027 |
| Overall Score | 5.738 | | | | 1.045 |

#### 3.2.1. Service Quality

The overall mean for the variable System Quality is 5.815, which indicates that the system quality of the information system's effectiveness is above average. The standard deviation of the mean lies in the range of 5.693 to 6.020. The range of values falls within the vicinity of 0.974 and 1.098, with the overall

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standard deviation coming in at 1.057. The point with the highest mean is "The EDMS is useful," while the point with the lowest is "The EDMS requires little effort to use," as indicated in Table 3.

**Table 3.** Descriptive Analysis on Service Quality

| Items | Mean | Median | Min | Max | Standard Deviation |
|---|---|---|---|---|---|
| EDMS is easy to use and learn | 5.771 | 6 | 1 | 7 | 1.07 |
| EDMS is useful | 6.02 | 6 | 3 | 7 | 0.974 |
| EDMS requires little effort to use | 5.693 | 6 | 3 | 7 | 1.062 |
| EDMS easy to retrieve | 5.782 | 6 | 2 | 7 | 1.08 |
| EDMS response to an instruction is fast | 5.809 | 6 | 1 | 7 | 1.098 |
| Overall Score | 5.815 | | | | 1.057 |

### 3.2.2. User Satisfaction

The overall mean of the variable satisfaction is 5.771, which indicates that the level of satisfaction regarding the effectiveness of the information system is greater than the average. The range of the mean is from 5.747 all the way up to 5.799. The overall standard deviation comes in at 1.032, with a range that goes from 1.023 to 1.057. The item that received the lowest mean score was "I am satisfied with EDMS," while the item that received the highest mean score was "I am satisfied completion of tasks in EDMS" as displayed in Table 4.

**Table 4.** Descriptive Analysis on User Satisfaction

| Items | Mean | Median | Min | Max | Standard Deviation |
|---|---|---|---|---|---|
| I am satisfied with EDMS | 5.747 | 6 | 2 | 7 | 1.057 |
| EDMS meet needs of my task | 5.765 | 6 | 3 | 7 | 1.023 |
| I am satisfied completion of tasks in EDMS | 5.799 | 6 | 2 | 7 | 1.024 |
| EDMS is not a frustrating experience | 5.771 | 6 | 3 | 7 | 1.025 |
| Overall Score | 5.771 | | | | 1.032 |

### 3.2.3. Perceived Usefulness

It was found that the overall mean for the variable perceived usefulness was 5.852, which indicates that the perceived usefulness of the information system effectiveness is higher than the average. The range of the means is from 5.802 to 5.969 in terms of values. The ranged values fall between 1.039 and 1.081, with the overall standard deviation at 1.041. The item "EDMS improves my job performance" has the lowest mean, and the item "EDMS is useful to my job" has the highest mean as presented in Table 5.

**Table 5.** Descriptive Analysis on Perceive Usefulness

| Items | Mean | Median | Min | Max | Standard Deviation |
|---|---|---|---|---|---|
| EDMS enables to accomplish tasks more quickly. | 5.819 | 6 | 1 | 7 | 1.07 |
| EDMS improves my job performance. | 5.802 | 6 | 1 | 7 | 1.081 |
| EDMS increases my productivity. | 5.857 | 6 | 2 | 7 | 1.055 |
| EDMS enhances my effectiveness in the job. | 5.846 | 6 | 2 | 7 | 1.045 |

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| EDMS makes it easier to do my job. | 5.816 | 6 | 1 | 7 | 1.039 |
| EDMS is useful to my job. | 5.969 | 6 | 3 | 7 | 0.954 |
| Overall Score | 5.852 | | | | 1.041 |

## 4. Conclusion

The result from the descriptive analysis shows the mean value of information system effectiveness and proves that the importance of document management services in influencing the effectiveness of electronic document management systems used in the government agencies. This proved that EDMS is a reliable device for providing a document management service. According to the findings of this research endeavour, a significant positive relationship exists between information quality and user satisfaction. The output of an electronic document management system, also known as EDMS, is generally regarded as the information quality that measures the level of satisfaction experienced by users. The current study validated that the information quality obtained from the electronic document management system (EDMS) is relevant to the users' work (Sezgin et al., 2013). EDMS also meets the needs of the user (Björk, 2006). Users can complete their tasks more with the help of EDMS because it streamlines their processes (Forcada et al., 2005). The current study also found a significant positive relationship between information quality and perceived usefulness. Gable et al. (2008) found that EDMS enables the user to accomplish their tasks more quickly. Seddon et al. (2002) also emphasized that perceived usefulness is desirable for job assessment in spontaneous. EDMS was used to impact users on an individual level with efficiency and effectiveness at work with better, easier, and quicker processes, which enabled the user to concentrate on core work. This was accomplished by reducing time wasted on administrative tasks (Afonso et al., 2015). The research results show that system quality significantly correlates with perceived usefulness (Chung & Koo, 2015). EDMS offers timely responses to the request for information or action that leads to a degree of perceived usefulness by the system user. Users would desire EDMS to be able to respond to individual users at the level of effect, with information being available when it is required. The findings showed that end users would also believe that the system is reliable, which will undoubtedly lead to the belief that the system, such as EDMS, provides accurate and trustworthy information without any room for uncertainty (Abbasova, 2020). Thus, results demonstrate that systems quality positively correlates with perceived usefulness. According to the overall result, eight of the twelve tested proposed hypotheses were accepted, while the remaining four were not. Due to this, it is strongly suggested that the functionality of automated information capture in EDMS should be improved in the system in order to enhance the effectiveness of the information system. The government or authority of decision-making should endeavour to improve the functionality of collaborative tools in EDMS for information systems effectiveness. Management should also consider the hierarchical file indexing and classification in EDMS as it will contribute to the significant positive relationship with information systems effectiveness. This also pertains to the system's functionality in terms of security and audit trail, which are highly vital to the effectiveness of information systems.

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