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Research paper

Employing Qualitative Methods in Developing Functional Requirements for Electronic Records Management Research

***Nurussobah Hussin, Saidatul Akmar Ismail, Saiful Farik Mat Yatin, Mohd Nazir Ahmad and Mohd Shamsul Mohd Shoid**

[1]Faculty of Information Management, Universiti Teknologi MARA, Malaysia
**Corresponding author: * Nurussobah Hussin: Faculty of Information Management, Universiti Teknologi MARA, Malaysia*
E-mail:drnurussobah@gmail.com

Abstract

This paper explores the justification of using a qualitative research method under the participatory paradigm. In order to develop the functional requirements of electronic court records management system in Malaysian Judiciary, the case study approach was chosen. The discussion begins by presenting the descriptions of methodology and methods employed, followed by the authors' philosophical stance and the rationale for choosing a qualitative approach. Besides analysing the philosophical stance, the analysis of methods used in previous studies also provided insightful findings that helped ascertained the appropriate research method of the study. The development of twelve stages in developing the functional requirements specification based on the analysis of seven previous studies could be a reference material for other researchers. It is hoped that the knowledge that emerged when the functional requirements were developed could benefit readers and enhance their ability to apply as closely as possible to other studies or to make modifications for further research.

Keywords: *Qualitative, participatory paradigm, functional requirements, electronic court records management system*

1. Introduction

Various framework and models such as Business-Driven Recordkeeping Model [1], Model of High Level Functional Requirements for ERM [2], Trusted Electronic Records Management Framework [3] and Records Management Framework [4] suggests that the systematic recordkeeping functional requirements are necessary to be complied by all organizations in order to manage the electronic records effectively. This view is supported by several studies which revealed that one of the significant approaches for guaranteeing the trustworthiness of electronic records in the organization is by embedding recordkeeping requirements [5-7]. Thus, it is necessary to identify the relevant methods and theoretical stages underpinning the research design.

Cohen, Manion and Morrison [8] describe methods as being those sets of techniques and procedures, which can be harnessed in the data-gathering process and be used as a touchstone for references and interpretations, for explanations and predictions. Yin [9] on the other hand suggest that methods are the tools whereby data and information pertaining to the problem under investigation are gathered and analyzed, whereas, [10] illustrates the examples of methods used in qualitative research are observations, personal interviews, readings, personal documents and participants' observations.

Guercini [11] portrayed that research methodology is particularly remarkable in that it has significant effects on the possibilities for communication between researchers and business policy makers, in both collecting data and disseminating results.

He stated that the contribution of qualitative methodologies is fundamental to fixing the knowledge of organization decision makers. Based on his study, he depicted that example of research methodology in qualitative such as in-depth interviewing, case-based research, focus group interviewing, observation studies, ethnography and grounded theory and action learning.

The work on developing electronic records management system requirements, such as by NCSC [12], IRMT [13], Walker [14], NARA [15], Goh [16], National Archieve of Australia [17], Duranti [18] have guided the authors in carrying out this study. However, what strategy and methodology were appropriate for this study? The following discussion helps provide the answers

2. Philosophical Paradigm

Kreger and Neuman [19], Pickard [20], Smith and Mileer [21], Creswell [22] highlight various approaches of research paradigm such as positivism, postpositivism, interpretivism, critical theory, feminism, hermeneutics, advocacy/participatory, postmodernisms and pragmatism. However, the philosophical paradigms underlying this research originate from the participatory approach.

The participatory approach, according to Creswell [22] occurred during the1980s and 1990s from individuals who felt that the postpositivist assumptions imposed structural laws and theories that did not fit marginalized individuals in their society. This paradigm is typically seen with qualitative research, but it could be a basis for quantitative research as well.

Participatory approach evolved as an alternative system of knowledge production by challenging the principle of conventional social science research methodology.

The philosophical principles of the participatory paradigm necessitate the authors to engage in research *with* people rather than in doing research *on* people. Besides, the participatory paradigm determines a completely different awareness of the authors' role and impacts of the research process and outcomes. In describing

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the main idea of participatory, Jenning [23] defines the meaning of 'participation' as involvement by a local population and, at times, additional stakeholders in the creation, content and conduct of a program or policy designed to change their lives.

Kemmis and Wilkinson [24] emphasize that the participatory approach should contain an action agenda for improvement that may change the lives of the society, organizations, and institutions. This view is supported by Adams, Wheeler and Woolston [25] who report that the participatory approach was employed to sustainable energy strategy development in a carbon-intensive jurisdiction in Nova Scotia. The intention was to develop recommendations for changes in institutional arrangements, financial incentives and technological options that arose directly out of the input of all relevant stakeholders. Therefore, the government could respond directly to the concerns and input of stakeholders and embed this impact into the policy development process.

Since there is a major issue in the Malaysian Judiciary on the unavailability of comprehensive electronic court records management policies and procedures, thus at the end of this study, the authors have proposed an action for the improvement of the electronic court records management in Malaysian Judiciary i.e. by developing the functional requirements for the management of electronic court records.

This specification is not available in any courts thus becoming the first specification to be developed in Malaysia. The specification may change the way electronic court records are managed and subsequently speed up the trial process. Breu and Peppard [26] agree that the idea of the social world in the participatory paradigm is particularly compliant with the nature of information systems in organizations. It reflects the nature of information systems both as an applied science and a socio-technical phenomenon. It resolves the requirement for the continuous innovation of knowledge that results from the frantic rate of technological changes thus contributes to the advancement of information system theories and generates knowledge that is directly pertinent to practice.

One of the most significant discussions by Breu and Peppard is that, participatory research proceeds through the four phases of the inquiry repeatedly; cycling between action and reflection (propositional knowledge), exploring experiences from diverse perspectives (practical knowledge), developing diverse ideas and interpretations (experiential knowledge), and testing different forms of action (presentational knowledge).

In the context of this study, the authors first describe a study based on the participatory paradigm and then illustrate how this study applied the principles of participatory research. The participants or respondents contributed in providing the knowledge and validating the outcomes of the research. Indeed, the cyclical research model provides the strongest validity check of knowledge claims in this study. Validity is further enhanced by creating and enacting the findings through those participating in the interviews and focus group discussions. The quality of participatory research is further improved through the commitment to review and comment the functional requirements developed which means that respondents have a responsibility to actively participate and examine their beliefs, assumptions, and knowledge gathered during the inquiry processes.

3. Method Used in Previous Studies

In line with the purpose of the study i.e to develop the functional requirement for the management of electronic court records at the Malaysian Judiciary, the literature of previous studies on the methods used, have been organized into two main areas: legal records management, and functional requirements development. This is necessary in order to identify the relevant methods and theoretical stages underpinning the research design.

Legal Records Management: Previous studies on legal records management proved that the case study method is the most reliable method in studying the records management practices in courts. The International Records Management Trust team adopted the case study method in conducting research on legal and judicial records and information system in Argentina (April, 2002), Ecuador (April, 2002), Gambia (December, 2001), Singapore (April, 2002) and South Africa (July, 2002).

The research methodology involved was a qualitative approach with data gathered from observations, document reviews and face to face interviews [13]. In a case study on Electronic Filing System (EFS) of the Supreme Court of Singapore (InterPARES2 project), Goh [27] elaborates the methods used: (i) a focused walkthrough of the system with the records creators to understand the business processes relating to the filing and documentary forms of the records, (ii) interview questions via e-mail and/or scheduled meetings with registry staff, IT Personnel and Assistant Registrars and (iii) research on various legislations that has an impact on the recordkeeping system. This indicates that Goh has also adopted the qualitative approach in her academic study.

On the contrary, the research method of the case study entitled *The Implementation of Electronic Records Management System: A case study in the Malaysian Judiciary* [36] departs from [5, 7, 36] in that they adopt a triangulation strategy for data collection. The qualitative data were collected through interviews, observations and document reviews while the quantitative data were gathered through surveys.

[27] employed documented approach to the initiation, development, procurement, implementation, integration, migration and retirement of new technology solutions and developed the policy framework in courts that provides gateway reviews by a steering group to ensure progress is in line with project objectives and plans and remains aligned with broader architectural and policy mandates.

Electronic Records Management Functional Requirement Analysis and Development: To date, various data collection methods have been employed and introduced to analyze and develop functional requirements such as document analysis, interviews, questionnaires, and observations.

In the academic research entitled *Investigating the Application of Intelligent Agents to Electronic Records Management,* [27] has adopted the case study method and one of the data collection technique was content analysis.

[27] has analyzed four best practices of Electronic Records Management functional requirements in order to identify the functions of Electronic Record Management.

In support, [23] agrees, gathering requirements is one of the essential steps in implementing an ERM or any information technology system. Prior steps include program creation, business case analysis, enterprise architecture analysis and business process analysis. Further steps include product evaluations, cost-benefit analysis, pilots, and implementation. [23] has identified several steps to gather and analyze requirements: (i) determining ERM scope, (ii) reviewing infrastructure/IT architecture, (iii) reviewing agency records and information resources management (IRM) guidance and directives, and (iv) reviewing and analyzing each available standard to determine whether it will be included in the final list of ERM system requirements.

[23] also suggests that it is necessary to give the stakeholders an opportunity to review the requirements after they have been drafted. Several methods that have been identified before initiating the analysis are: (i) a walk through with stakeholders on how requirements map directly to identify goals (ii) to request stakeholders to rank the impact and risk of each organizational process, and the use of mapping between requirements and business processes to rank critical requirements, (iii) to request stakeholders to identify their "Most Wanted" and/or "Least Wanted" requirements in the context of organizational value and risk, (iv) to request stakeholders to rank requirements in terms of importance on a sliding scale, (v) to present the stakeholders with a picture of the system as it

could be built from the requirements and request their comments, (vi) to arrange a stakeholder meeting to assess the requirements either in detail or as a whole and (vii) to publish the draft requirements and request written comments.

On the other hand, the DIRKS manual (2007) provide similar requirements for good recordkeeping, which can be applied in electronic government. It is the cornerstone document in the comprehensive suite of best practice recordkeeping standards and guidelines published by the National Archives of Australia. The eight stages of DIRKS methods are (i) Preliminary Investigation, (ii) Analysis of 'Business Activity', (iii) Identification of Recordkeeping Requirements, (iv) Assessment of Existing Systems, (v) Identification of Strategies for Recordkeeping, (vi)
Design of a Recordkeeping System, (vi) Implementation of a Recordkeeping System and (vii) Post-implementation Review

However, in considering the uniqueness of the court system, [16] emphasizes that the functional requirements will work if they are conceptually sound, consistent with the legal and administrative context in which the court operates, having the organizational culture of the place, as well as being logical. Thus, the proper strategy will consist largely of interviews with the appropriate staff.

Upon investigations, it was noticeable that most of the academic research on functional requirements of electronic recordkeeping (e.g. University of Pittsburgh, 1994; Indiana University, 1995; InterPARES, 1996 – 2012, Hussin (2014), Narattharaksa et.al. (2016) and Kaur & Walia (2016)) have employed case study method for their projects. In those cases, interviews, focus group discussions, document analysis and observations were adopted as data collection techniques.

In addition, based on previous study analyses, the authors have finalized the necessary stages that need to be taken when developing the functional requirements. The final results of the analysis are shown in Table 1. Though, the concern of this current study is in stages 1 to 9 while stages 10 to 12 will be taken into consideration in future research when designing a recordkeeping system.

Table 1 shows the twelve stages of the case study method that is appropriate for developing the functional requirements specification based on the analysis of seven previous studies. Following are the key stages:

Table 1: Stages of developing functional requirements

STAGE	PREVIOUS STUDIES
1. Preliminary investigation	National Archives and Records Management (NARA), Designing and Implementing Recordkeeping System (DIRKS), InterPARES, University of Pittsburgh, Indiana University
2. Identification of recordkeeping legislation and requirements	NARA, DIRKS, InterPARES, University of Pittsburgh, Indiana University, National Centre for State Courts (NCSC), Walker
3. Reviewing and analyzing each requirement	NARA, DIRKS, InterPARES, University of Pittsburgh, Indiana University, NCSC, Walker
4. Analysis of business activity	NARA, DIRKS, InterPARES, University of Pittsburgh, Indiana University, NCSC, Walker
5. Assessment of existing system	NARA, DIRKS, InterPARES, University of Pittsburgh, Indiana University, NCSC,
6. Relating the analyzed legislation and requirements to the court's situation	University of Pittsburgh, Indiana University, DIRKS, NARA, NCSC, InterPARES
7. Identification of preservation strategies for recordkeeping functional requirements	InterPARES
8. Publishing the draft requirements and requesting written comments from stakeholders	University of Pittsburgh, Indiana University, NARA, InterPARES
9. Establishing the final recordkeeping functional requirements	University of Pittsburgh, Indiana University, NARA, InterPARES
10. Design of a recordkeeping system	DIRKS
11. Implementation of a recordkeeping system	DIRKS
12. Post-implementation review.	DIRKS

In sum, the result of the appropriate methods of previous studies on legal records management and functional requirements development reveals that most of the studies employed the qualitative approach which focuses on case study method. Multiple data collection techniques such as document analysis, observations, interviews, and focus group discussions were applied.

[29] highlight, the qualitative research approach requires researchers to go directly to the particular setting to observe and collect data either by observing or interviewing individuals on what they do in their daily routines. Besides, the data are collected right at the scene and supplemented by the researcher's observations and insights about what has happened. They further illustrate that data is normally collected in the form of words or pictures rather than in numbers such as interview transcripts, field notes, memos, official documents, etc. Finally, they highlight that the data collected tends to be analyzed inductively.

Qualitative data are chosen in a condition where the understanding of comprehensive experience or process is required. Additional information is desired to establish the accurate scenery of the issues being examined. Such investigations typically required gathering broad and comprehensive information from a purposefully derived sample and they involve interpretation of unstructured or semi-structured data [25]

Development of Research Methodology of the Study

In a qualitative approach, several qualitative research methods exist, such as phenomenology, ethnography, grounded theory, and case study. Another common research method is the survey. Surveys can be either qualitative or quantitative in their approach to data collection. As for this study, a case study was recognized as the most suitable approach based on the analysis of the methods used in previous studies.

An extensive literature review was conducted to identify potential research gaps. Based on the information obtained from the literature, a research problem was identified coupled with the research questions and research objectives. Having completed defining the research problem and objectives, the interview questions were developed. The findings obtained from the preliminary study helped the authors to refine the definitions of research problems, research objectives, and pre-tested the interview questions.

The next stage of the study involved a single case study conducted with the purpose of collecting research data to be used for achieving the research objectives. For the first objective, i.e. to identify and analyze various international and national best practices of functional requirements for electronic records management and court management, the content analysis instrument was employed. The analyses were based on analyzing the international and national functional requirements for Electronic Records Management and Court Management. Previous studies, such as 23 and 10

reveal that identifying and analyzing various legislation and requirements are essential in order to develop a comprehensive list of functional requirements as well as to ensure the completeness of functional requirements developed.

Moving to the second objective i.e. to investigate current practices of records management system in the Malaysian Judiciary, the semi-structured interviews were conducted in order to gather information that will influence the requirements developed and to ensure that the functional requirements developed will work successfully and effectively. The information gathered were in the aspect of contextual information which consisted of provenance context and procedural context. The second aspect was on the activities resulting from the management of court records. These criteria defined were in accordance with the concept and guideline of InterPARES project as this study was recognized as a part of the InterPARES3 project. The investigation of records management practices in the Malaysian Judiciary is essential since every organization, including Malaysian Judiciary, has its own culture or way of operating which influence the decision making and the administration of justice.

Having completed developing the draft of the functional requirements, the researcher, distributed it to the Electronic Records Management experts and IT Personnel of Malaysian Judiciary to achieve the final objective, i.e. to evaluate the applicability of the functional requirements developed on the practices of records management system in the Malaysian Court of Appeal. The instruments employed for data collection were the (i) asynchronous online focus group discussion with the international experts in ERM, (ii) face to face interview with IT Personnel, and (iii) face to face group discussion with InterPARES 3 team members to validate the final functional requirements. One of the reasons for employing these three instruments was to ensure the trustworthiness of the study.

4. Conclusion

From an epistemological perspective, the researchers who drive with participatory approach tend to employ a qualitative method. The researchers who choose qualitative methods tend to go with a small sample such as purposive sampling. Qualitative method is better than quantitative method when inquiring into developing policies and requirements. This paper attempted to justify the use of a qualitative research methodology under the participatory paradigm to investigate the functions of the electronic court records management system in the Malaysian Judiciary.

It commenced with an overview of the research paradigm including justification for the research paradigm chosen and was followed by methods in previous studies, including justification for the research approach adopted as well as justification for the specific techniques adopted for the study. Therefore, it is intended that the study of the emerging stages in developing functional requirements will be performed under the guidance of the proposed stages to develop policies and requirements.

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