Reflections of Soft Systems Methodology on Participants' Thinking and Practice throughout Different Processes of Developing Omani Academic Library Collaboration System

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Abstract: Selecting soft systems methodology (SSM) to investigate Omani academic library collaboration (OALC) was described by the owners of the problematical situation as a reasonable and justifiable way to deal with such complex, ill-defined problems, and also to accommodate various people's perspectives. Results proved that SSM has the capacity to deal with abstract and concrete issues concerning people's attitudes and to identify the activities that need to be created in order to implement collaboration systems. However, participants in this project criticized the limitations of rich pictures in presenting a holistic view of the situation and the inability of conceptual models to cope with organizational change accrued between the stage of development and stage of implementation.

Key words: soft systems methodology, academic library collaboration, Omani academic libraries, reflections, conceptual models, Oman

1. Introduction

The problematical situation of Omani academic library collaboration (OALC) is considered complex and ill-defined since it's affected by many human activity systems (HAS). Soft thinking approach was suggested because of its capabilities to deal with such situations and investigation of both soft and technical issues. The reality of the problem of library collaboration is puzzling and the people who were invited to define the problem reflected various worldviews, experiences, descriptions of events and activities, and factors that affected the problem situation. Problems relating to collaboration among libraries are usually difficult to identify since a variety of issues are involved, such as financial, technical, human, sociological and managerial issues. Researching the issue of library collaboration, moreover, required various cultural perspectives and different viewpoints and conflicts among the people concerned to be addressed.

SSM as an interpretivist approach, moreover, allowed involvement of directors, staff and a number of interested actors from four university libraries in the intervention process throughout different stages of the research. These libraries are: Sultan Qaboos University library (SQUL); Nizwa University Library (NUL); Dhofar

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University Library (DUL); and Sohar University Library (SUL).

These libraries were selected as they were the only Omani university libraries in existence at the beginning of data collection in 2010. Directors and staff of academic libraries were invited to define the problematic situation based on their understanding and perspectives. In some cases, the intervention process involved administrators from top management stating their views regarding certain related issues such as administrative and financial support to collaboration system. Similarly, a number of IT staff were invited to share their experience and knowledge in technology, information systems and IT applications. The participants were the owners of the project for developing the collaboration system, interested parties who were concerned about making improvements to the situation and problem solvers who could apply or reject the proposed changes. Meanwhile the researcher was responsible for carrying out the research to learn about and understand the problematical situation.

This article describes the process and learning achieved through four-year SSM's research about OALC. It also presents participations reflections on involving in all process of the research and their perspectives regarding the results and changes achieved throughout the research.

2. Justification of Using SSM

Soft systems methodology is presented as a framework appropriate for application to complex problems similar to those relating to the situation of OALC. It is an interpretivist approach that seeks to identify the human activity systems within the situation and encourage the participants to identify the problem based on their perspectives of the situation being studied (Checkland & Poulter, 2006). Using SSM in this research facilitated investigation of the cultural perspectives, values, norms, power, and future vision of participants. These activities provided an opportunity for exploring the different perspectives of the stakeholders and key actors, which led to the building of a rich picture of the situation. The cultural stream analysis and rich picture allowed progression to the modelling stage and the development of root definitions and conceptual models appropriate for improving the situation.

SSM seeks to understand the world based on different viewpoints. It has the capacity to involve different perspectives of people. Different perceptions of people are identified through an interpretive approach that uses dialogue and communication to figure out the real world situation of the people in the situation. Reality, according to the interpretivist view, is based upon personal and collective sense making (Checkland & Holwell, 1998). Knowledge is generated through processes of viewing the organization and developing subjective meanings of social events or actions (McNabb, 2010). Therefore the main aim of doing interpretative research is to achieve better understanding of social relationships and learn about norms, value and attitude systems in organizations (McNabb, 2010).

The strength of SSM is its ability to involve people of diverse views and perceptions. All conflicting worldviews are appreciated and considered as a contribution to learning about the problematical situation. Every worldview expressed, which is considered relevant to the problematical situation, requires a separate root definition and conceptual model. The need for several root definitions and conceptual models means that the learning about the problematical situation derives from different perspectives and contributions of all participants rather than a unitary dimension based on a single point of view. This adds strength to SSM as a participatory and interpretive approach.

In this research, the four-stage model was selected as a framework to carry out a study about OALC. The main reason for choosing this model was to focus on understanding and learning about the problematical situation. Understanding and learning that was achieved throughout different stages of the research enabled establishment of an accommodation area wherein different worldviews could meet, and identification of the feasible and desirable action to improve the situation.
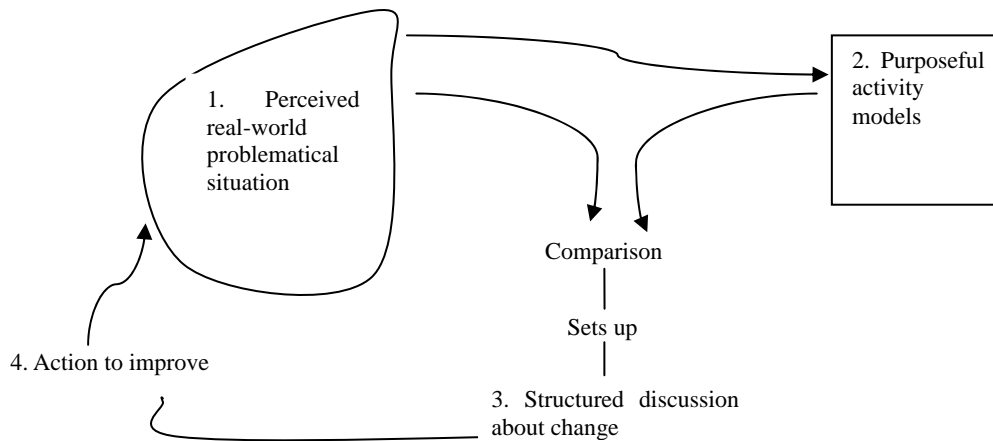

Figure 1   SSM a Four-Stage Model
Source: Checkland & Poulter (2006, p. 13)

3. The Process of the Research

Based on four-stage model of SSM (Figure 1), the analyst proposed an outline for addressing the problem of OALC. During the four years of this research process, various activities were employed to achieve understanding about the problematical situation of OALC and to formulate improvements to this situation. These activities included finding out about the problematical situation, the modelling process, finding out feasible and desirable action, and taking action in the situation. These activities described in the following four sections:

3.1 Stage One: Finding out about the Problematical Situation of OALC

One of the main features of the SSM approach used in this research is that it focuses on the problem situation rather than on the problems. It provides an inquiry process that facilitates understanding of the real world problem situation rather than formulating methods to solve the problem. Therefore, from the beginning of the research process the target was to understand the complexity of OALC and the different interrelated human activity systems (HAS) involved in the situation. This enabled mapping and modelling of the situation based on the understanding and perspectives of the people of the situation.

The activities of this stage included exploring the themes of the problem situation. The participants were given an opportunity to define the problem of collaboration among their libraries. They stated clearly that they lacked understanding and experience in the area of library collaboration. They were dissatisfied regarding communication and coordination activities between their libraries. Despite these challenges, participants believe that collaboration would bring facilities and services that they could not provide individually. Based on these results, which were achieved in the very early stage of the research, the focus was on how to find a way of enabling the library personnel to learn about collaboration. Answering this question required more in-depth analysis of the situation, such as examining the structure of each participating library, their resources, the key

actors in each participating library, and the power, norms, and values of their personnel. This information was gained by using rich pictures of every participating library and the three analyses of intervention, social and political aspects.

Using the holistic view of SSM enabled the situation to be dealt with as human activity systems that were dynamic and affected by human interaction and perceptions. The holistic perspective of SSM also enabled the relationships, procedures, attitudes, and structure of each participating library to be captured and analyzed. Moreover, the rich picture of the problem situation highlighted the key actors of the collaboration systems, the effects and influence of the environment, and different viewpoints of people involved. The thematic analysis and rich pictures facilitated understanding of the individual and organizational views of the collaboration systems. They also clarified the role of people in the situation.

The finding out stage contributed to the learning process since the problem situation was expressed and factors that made the situation problematic were identified. The main findings of this stage were in terms of the factors that supported and constrained collaborative work. Based on the different perspectives of participants, it was learned that factors related to communication, coordination, human resources, attitudes, funding, and technology required consideration if a collaboration system was to be established among Omani academic libraries. People's attitudes and development were frequently mentioned by participants as central factors in ensuring effective planning and management of the collaboration system. Another issue that was widely discussed by participants was a need for communication channels that would enable the owners of system to discuss issues relevant to collaboration. Enhancing communication, according to them, would enable identification of common areas regarding the collaborative activities that Omani academic libraries required, sharing of experience, and consensus decision making.

3.2 Stage Two: Modeling the Problematical Situation

The data and findings of the first stage were accepted as a source for building the conceptual models. This particular feature of SSM can be used as a systemic approach to define the problem situation, make models based on findings, use the models to declare different worldviews, and use the results of discussion to define purposeful action. Therefore, the different worldviews of participants contributed in selecting relevant systems. The worldviews of participants were used to select relevant models that could be used to explore the situation and define the feasible and desirable change.

The process started by declaring Ws in the CATWOE elements. The model was defined on the basis of particular Ws. For example, participants indicated that there was a lack of understanding of the significance of library collaboration in Oman. According to this particular worldview, a system to raise awareness of library directors and staff about the significance of library collaboration was selected. Eight relevant systems were selected in this research to capture different issues raised during the stage of finding out about the problematical situation. They reflected three dimensions of academic libraries: structure, procedures and attitudes of their people.

Then the other CATWOE elements were identified in order to develop the root definitions (RDs) for each conceptual model. RDs enhanced the understanding of participants regarding the objectives, resources, constraints and operators of the relevant systems. RD elements were used in this research as guidelines for developing conceptual models (CMs), which was the third activity achieved during the stage of modelling. Several activities were developed to describe the operating and monitoring processes of each conceptual model. The activities were

then linked and connected with each other in logical order with arrows going from an "obtain" activity to the "use" activity to implement the desired transformation process.

SSM helped the researcher to distinguish between the abstract and concrete issues that arose during the stage of finding out about the problematical situation. The two kinds of systems: issue-based and primary-task, were employed to deal effectively with these two kinds of issue. Issue-based systems were used in this research to reflect issues related to attitudes of people or identify the activities that needed to be created in order to implement the collaboration systems. The issue-based models used in this research were systems of staff development, raise awareness, identify collaboration activities, funding, communication, and partnership. These systems were not only effective in dealing with the abstract worldviews of participants but also contributed to the enhancement of participant thinking and learning regarding the development of the collaboration system. In the situation of Omani academic libraries, successful building of issue-based systems increased the motivation and commitment of participating library personnel and enabled strategy to be developed for the future of the collaboration systems. In addition, the primary-task systems were considered important in this research in ensuring that the collaboration systems were implemented and took place in the real world situation. Two primary-task systems were developed: interlibrary lending and collaborative information storage and retrieval. The activities of conceptual models of both kinds of systems were then used to structure discussion against the real world situation.

3.3 Stage Three: Discussing the Problematical Situation

In this stage, the activities of eight conceptual models were used to structure discussion about the real world situation of OALC. A meeting involving representatives from every participating library was conducted to determine the extent to which the conceptual models could be utilized in OALC. The focus was on whether the activities of conceptual models existed, needed improvement, could be developed, and the timescales for achievement of different collaborative activities. This stage, moreover, addressed the availability of resources to support the implementation of activities and make them systemically desirable and whether they would fit with the organizational climate and could thereby be characterized as culturally feasible.

The main outcome of the intervention process of this stage was the development of the abilities of participants to find accommodation areas regarding some conceptual models. Seeking accommodation among the library personnel was a difficult task due to the different expectations, perceptions, and norms that affected the situation of OALC. Although a number of activities were under discussion, such as developing a committee for planning and managing the collaboration system, facilitating collaborative training courses for staff, and processing activities related to resource sharing, the discussion was of poor quality and affected by the tendency of staff to speak from different perspectives and express different interests, especially when discussing constraints to collaboration activities (Checkland & Poulter, 2006). For example, there were clashes of worldviews during the discussion of the system for funding; at the time some participants saw this system as a prerequisite for building successful collaboration, whilst others believed that collaboration could actually begin with activities that did not require financial support.

The increase in understanding of the participants about the issue of collaboration contributed to identification of the conceptual activities that could support the building of the collaboration system. They concentrated on developing strategies for change based on the conceptual activities that were systemically desirable and culturally feasible. The discussion and outcomes of this stage enabled them to change priorities, clarify the roles and responsibilities, develop assessments of communication and involvement, and understand the requirements and

constraints to collaboration. These factors were given more attention during the stage of action.

3.4 Stage Four: Taking Action to Improve the Situation

Working collaboratively means that people of the situation will stick together for long periods of time. Therefore, starting a successful collaboration programme requires finding areas of accommodation between people. This practice was achieved in the third and fourth stages of SSM. It contributed to selection of the best strategy for building the proposed collaboration programme and yielded decisions on changes to the situation. The activities that were agreed and accepted by the participants were categorized in relation to structure, procedures, and attitudes.

In order to enable change to take place, an action workshop was conducted with people of the situation. In designing the workshop, three stages were followed to ensure effective planning and implementation of the workshop. The first stage was *preparation* for the workshop training. Preparation includes activities such as searching for relevant information to be presented for participants, using the research findings to describe the current situation of academic libraries, asking for participation of consultants who have long experience in library collaboration, identifying the required resources, choosing the place of the workshop, setting the framework and timings for the workshop, and inviting the appropriate participants through OLA, which played a coordinating role in the workshop training. The second stage was implementing the workshop training. This stage focused on teaching and learning for academic library staff. The necessary theoretical and practical information were provided to achieve a new understanding about collaboration; emphasized the agreed changes that can make improvement in problematical situation; reflection in learning and professional development. The third stage of the workshop was the evaluation of the process and outcomes of the workshop. An appropriate method was developed to evaluate the achievement and the level of the participants' satisfaction with the workshop.

The workshop allowed participants to implement some activities that had previously been identified as priorities for improving the situation. During the workshop a decision was made to change the structure of the collaboration system by establishing a strategic planning committee to plan and manage the collaboration activities. This committee took on the role of organizing meetings and coordinating the participating libraries, managing the collaboration activities, and discussing ongoing complaints issues.

The workshop attendees discussed other issues that were relevant to the systems such as financial and managerial issues. The system of interlibrary lending was also discussed and the strategic planning committee was given the authority to set the rules and regulations that would enable libraries to facilitate this service. Another issue related to resource sharing was that participating libraries agreed to enable their users to use or borrow books from any academic library. At that time requesting books or articles required attending the host library, providing valid ID and signing a visitor form. Communication and learning that was achieved during the different stages of SSM led to changes in the attitudes of the organizations' personnel regarding working collaboratively. They showed willingness to engage in, operate, and provide collaboration services for their users. The new way of thinking about collaboration facilitated discussion of the different issues involved, organization of group discussions, selection of collaboration activities, and development of future strategic plans for the collaboration programme.

4. The Reflection of SSM on Participants' Practice

Participations were involved in group discussion after the implementation of the last stage of SSM to

examine the reflection of SSM on their thinking and practice. Before evaluating the different processes of SSM of this research, participants were asked about their previous experience in using or being involving in any SSM-based studies. Then, discussion took place of the learning that had been achieved while using SSM techniques.

4.1 Learning about SSM

Regarding SSM, no participants had ever been involved in any SSM research before conducting the present study. Only two participants stated that they had little background information about this methodology. This could be the reason that SSM is rarely used for tackling real world problems in the Arab world in general and Oman specifically. According to participants, three factors explain the lack of use of soft systems approach in Oman: "had not encountered SSM in university courses", "lack of SSM literature in Arabic language", and "unawareness of the wide domain of applicability of the methodology". This result was expected since no individual and institutional efforts had been made to translate or write about SSM in Arabic language.

4.2 Using SSM to Identify the Problematical Situation

Participants in the research were asked to evaluate the process and outcomes of the first SSM stage. A summary of thematic analysis and rich pictures of the research were provided as stimuli for discussion. Participants were speaking generally about this stage when a participant from SQUL argued that "the qualitative analysis of results of this research are similar to those of traditional research[…] however, the rich pictures were new to us and helped us to understand the key players in every participating library and their perceptions regarding collaboration". However, participants from the same library thought that the need to include all issues relevant to the problematical situation in the first stage proved that collaboration a complex task. This complexity, according to him, requires additional investigation and analysis and that is what SSM provided in the next three stages. One of the features of SSM is the holistic view adopted when investigating the problematic situation (Checkland, 1999; Wilson, 1990; Patel, 2002); the subsequent focus on development of sub-systems leads to improvement in the whole system. Patel (2002, p. 2) argued that "such a system is more than an arithmetic sum of the components in the sense that it possesses emergent properties which are not possessed by any of its components".

In terms of building rich pictures, participants agreed that this method helps structure their thinking and reduce the complexity of the problematic situation. Participant from NUL, for example, commented that "through the rich picture of participating libraries we know the process of work in other libraries, their perceptions regarding collaboration, the environment of their library, and roles and power of key actors of the library". Therefore, the significance of building a rich picture for every participating library was that it allowed capture of a rich understanding of the problem situation and enhanced awareness of different issues that related to collaboration among libraries. Building a rich picture for every participating library, moreover, contributed to the learning process about the problematical situation and allowed development of a rich picture of the wider system of OALC.

Although they contributed to learning and understanding about the problematical situation, participants indicated three limitations of using rich pictures: (1) inability to show all details of the situation, especially the process of providing the services; (2) understanding rich pictures requires further explanation from analyst; and (3) any changes in procedures, attitude, or structure of the library require development of new pictures that reflect the new situation. In order to minimize the effect of the first and second disadvantages, summaries were provided to

describe every rich picture and the issues that required a high level of consideration. Regarding the third disadvantage, changes in procedures, attitudes and structures are in the nature of all open systems rather than limitations of SSM; interactions with their environment and the constant need for improvement make systems dynamic and changeable.

4.3 Using SSM for System Modelling

Before discussing the development of root definition and conceptual models, it was important to define the SSM terminologies to participants and the method for building the conceptual model. Participants shared their experience of the way the systems work within the situation of Omani academic libraries. According to a participant from DUL: "although the models must be built according to a particular method, SSM models concerning the behavioural and technical aspects of our libraries fit with the organizational culture of all libraries".

The main contribution of this stage, according to participants, was that it led to modelling of human activity systems and more investigation of worldviews of the problematical situation. A participant from library SUL commented that "in traditional research, researchers only define the problem and then move directly to discussion and conclusion…here we need to do more analysis in order to identify the appropriate changes". SSM research basically employs inquiry method to learn about and improve ill-structured problematical situations and was considered by participants as advantageous for furthering the investigation, reducing the complexity of the situation, and finding appropriate solutions. Although the RDs and CMs were developed by the researcher, participants were invited to provide their opinions and suggestions regarding appropriate models and the requirements and relationship between activities of every conceptual model. Their participation in this stage was appreciated: "our involvement in this stage reflects our learning about the problem…makes us part of modelling and practice towards making appropriate improvements" (participants from NUL).

The task of linking the first and second stages of SSM was tricky due to the large number of issues and perceptions involved in finding out about the problematical situation. The wide range of issues was due to the large number of participants and involvement of four participating libraries. However, the capacity of some conceptual models to perform two or more functions avoided the need to build a model for every viewpoint. For example, the interaction between activities of collaborative information storage and retrieval can produce a union catalogue system for accessing and retrieving information.

The learning from and contribution of issue-based and primary-task systems were given high consideration in evaluation of this stage. According to participants both kinds of system were important and led to improvement in academic library collaboration. Participant from SQUL commented that "although the two terms were new to me, both systems were formulated in a way that can lead to improvement of the whole system of Omani academic libraries". He added that "such as communication and awareness raising systems address the issue of learning and planning for collaboration systems and this is a pre-requisite for preparing for task systems such as interlibrary loans".

The planning stage of a collaboration project must be constructed carefully due to the difficulties of consensus decision making, conflicts, lack of awareness, and resistance to change. Thus, development of issue-based systems in the early stage of development of a collaboration system can address attitudinal issues. Participants described how they could make use of learning from this stage. According to a participant from NUL, the modelling stage dealt with what a situation requires to be improved. And what activities must be achieved to

ensure the desired outcomes. Another participant focused on the logical way of structuring the conceptual models. The way of structuring and building the relationship between different activities ensured good operation and monitoring of the model activities. Designing, monitoring and controlling the system for every conceptual model "enhanced the awareness regarding the importance of evaluating systems…and the idea of monitoring became part of our everyday practice".

Weakness in the modelling systems stage has been identified. Participants mentioned that in a situation of resistance to change, a model needs to be developed and implemented before going on to the action stage to ensure the problem is overcome and allow action and task-based systems to take place. Another issue that concerned participants was the power within the organization. If the organization is affected by remote decision making, staff are less involved in the procedures of decision making, and conceptual models cannot be effective unless changes are made to the roles and the structure of such organizations. Finally, although the conceptual models are built to respond to a real world problem, at the time of implementation, modification and changes in transformation procedures may be required to reflect availability of resources and organizational climate. In some cases, in the time between designing conceptual models and implementation, the organization may change in structure and procedures and this may cause uncertainty for developers of systems.

4.4 Using SSM for Identify Feasible and Desirable Action

This stage was considered by participants as the backbone of the project. Participants were asked to identify the reflections of this stage on their thinking and practice. According to participant from SUL, "this stage helped in exploring ambiguous problems and addressing them through an intervention process until the desirable and feasible change revealed itself". Another participant from DUL confirmed that "in this stage we distinguish between what we need and what can be achieved…". In this stage the process of change was made clear and participants identified the collaborative activities that could be achieved at the current time and the future plan for collaboration activities. In this stage, moreover, participants set up the priorities and identified where improvements were necessary.

Participants criticized the comparison stage of SSM on two counts. First, discussing all the activities of the eight conceptual models was time consuming and might have led to panic and bad feeling, especially as most questions were repeated. Second, some questions, such as 'whether the activity exists in the real world', were not applicable to physically invisible abstract activities. There was a lack of standard forms of measurement of the feasibility and desirability of an activity in the situation of Omani academic libraries, although using 3Es criteria helped to overcome this problem. Nevertheless, in this interorganizational SSM-based research, it was difficult sometimes to make decisions as to whether the system was feasible and desirable for all participating organizations.

4.5 Using SSM to Implement Action

Participants were asked to evaluate the achievements of the action stage and contribution of the workshop to the improvement of Omani academic libraries. This evaluation took place immediately after completion of the activities of the action stage. According to participants, the workshop was useful in achieving three major objectives:

(1) Meeting to discuss different issues related to collaboration and continue the learning process of SSM.

(2) Implementing activities to support effective collaboration among Omani academic libraries.

(3) Building a framework or strategy for the future development of the collaboration system.

Regarding the first goal, a participant from library DUL commented that "the learning process throughout different stages of SSM and the workshop contributed to enhancement of our understanding and readiness for collaboration". Another issue that concerned participants was the capacity of the workshop to involve representatives from every participating library. This was important since they are all considered owners of the collaboration system; planning and designing the system, moreover, must be a responsibility of all organizational personnel. A participant from a private university library commented on the sharing of experience among private university libraries from one side and SQU library from the other. According to him, 'sitting at the same table with staff who had been involved in collaboration programmes since 1987 was useful, and their long experience contributed to identification of the requirements for designing collaboration activities". In this stage, the interaction between members of different libraries was observably more effective than in previous group discussions due to learning that been achieved through different stages of the SSM.

The second contribution of the action stage was the facilitation of implementation of some issue-based and task-based collaboration activities. A participant from SQUL indicated that "it is important that different kinds of systems are implemented at the same time… we cannot, for example, implement an interlibrary loan system without putting in place an effective communication system for participating libraries". Reaching the stage of implementation of some of the conceptual models proved, according to participants, the validity and reliability of using SSM for academic library collaboration. The actions taken were relevant to the real world problem situation and effective, and led to the improvement of collaboration and communication among academic libraries. Participants, especially those who participated in all SSM stages, believed that the situation of collaboration had been improved through the new learning achieved and the issue-based and task based activity systems implemented.

The third objective achieved by the workshop was the building of a framework or for future strategy. The system owners believed that collaboration is a dynamic system that requires on-going modification and creation of new activities. After discussing their current priorities, participants discussed the future of their collaboration system. By the end of the workshop a conceptual model was in place for developing the collaboration activity system. A participant from library DUL commented that the learning achieved through different stages of SSM would continue through implementation of this conceptual model. In the workshop, participants expressed a need for planning action strategy to continue the development of the collaboration system based on the new understanding gained over the last four years.

The limitation of this stage, according to participants, was the insufficient time allowed for the workshop. One participant stated that a "one-day workshop involving representatives from every participating library was not enough to discuss all the related issues". He gave the example that in setting up a committee for managing the collaboration activities and coordination between library members, not all the committee members' roles were identified and there was a lack of clarity regarding the frequency of meetings and communication. Another issue raised during the discussion was the failure to develop a funding system that would fulfil the financial requirements of collaboration strategy. This may affect the implementation of action strategy for collaboration activities in the future.

5. Methodological Processes and Results Achieved by Other LIS-SSM Studies

This section aims to explore different ways in which other studies in the field of library and information

management have used SSM in comparison to the present study. In addition, the main results of these studies will be highlighted and compared with the results of the current research. Although the focus and scope of LIS-SSM studies may differ, this comparison will offer insight into how different ways of structuring the assessment of the problematical situation, naming and building models, and changes according to feasibility and desirability lead to new conceptualization of a situation.

The following LIS literature is used in this comparison: Brember (1985) "Linking a medical user survey to management for library effectiveness", Kurbanoglu (1991) "Planning an information network for Turkey", Knowles (1993) "A CD-ROM network for a multi-site polytechnic", Al-Hassan and Meadows (1994) "Improving library personnel management", Underwood (1996) "The management of libraries information services and resource centers", Brown-Syed (1996) "an automatic library consortium", Somerville, Mirijamdotter and Collins (2006) Systems Thinking and Information Literacy: Elements of a Knowledge Enabling Workplace Environment and Delbridge (2008) "An illustrative application of SSM in a library and information services context".

Among LIS-SSM studies two studies have used four-stage models to carry out the research: those of Kurbanoglu (1991) and Delbridge (2008). Kurbanoglu (1991) used surveys and interviews to address the possibility of building a national network among Turkeys' libraries. The four-stage model assisted in building a rich picture of the situation, developing conceptual models, and defining feasible and desirable changes. Delbridge (2008) found the four-stage model effective for structuring different themes within the situation and identifying the activities which a library management system (LMS) needed to support. The model was used as a stage-by-stage process, starting with finding out about the problematical situation, then developing and discussing different conceptual models for activities and finally identifying feasible and desirable activities which could be used to make improvements to the situation.

Similarly, this study used a four-stage model as a learning cycle, involving four stages of SSM: finding out about the problem situation, developing a root definition and conceptual models, exploring the situation, and taking action to improve the situation. The points of view of directors and staff of academic libraries were considered and rich pictures represented their different perspectives and concerns. The perceptions and worldviews were developed by means of cultural analysis and the intervention process into concepts in order to create root definitions and conceptual models of human activity systems. The activity systems of the conceptual models were compared with the real world situation of Omani academic library collaboration in order to achieve desirable and feasible changes to the situation. The following types of learning were expected as outcomes of the present research: improvement in procedures, attitudes, and structure of the situation of academic libraries, and learning based on methodology which will be addressed in terms of the validity and reliability of using SSM in collaboration among libraries.

The three studies (Kurbanoglu, 1991; Delbridge, 2008; and the current study) used four-stage models to achieve different objectives. Kurbanoglu (1991) was attempting to identify the human and technical requirements for building a network among Turkish libraries; while the focus of Delbridge (2008) was to test the methodology for developing a framework of activities to inform LMS design. The current research utilized the latest ideas and modifications of SSM presented by Checkland and Poulter (2006). In their book "Action for learning", SSM is described as an approach for developing understanding about the problematical situation, which in the current research necessitated applying the learning model of SSM to the situation of OALC. The learning model facilitated not only finding out what people needed in order to collaborate but also how to achieve what they needed. The intervention process within SSM methodology enabled involvement of the participants in the learning

process and enhancement of their understanding regarding many issues related to collaboration, such as technical, human, and financial requirements.

Regarding the results and outcomes of LIS-SSM studies, analysis of previous studies showed that using a soft systems approach would be appropriate for understanding the attitudes of the people under investigation (Brember, 1985; Knowles, 1993; Brown-Syed, 1996). SSM was also found applicable to identify the human elements and technical components that were required to improve the problematical situation (Al-Hassan & Meadows, 1994; Underwood, 1996; Delbridge, 2008). In addition, the applicability of SSM as a strategy and an action plan for improving a problematical situation has been widely discussed in LIS-SSM studies. For example, Knowles (1993) suggested a number of conceptual models that could be used to develop action plans for increasing access and security in the use of CD_ROMs in medical libraries in Oxford. Another example involves connecting a soft approach with hard approach when application of hard systems is required. Underwood's study (1996) focuses on abstract processes for developing a reference system for libraries that lead to suggestions for an action plan to implement a system that can respond quickly to users' questions.

Likewise, the current researcher employed a number of different processes to achieve the required results. The intervention approach, which involved organizational personnel in different stages of the research, assisted in changing their behaviour regarding working collaboratively. Consequently, they agreed to participate in collaboration meetings and workshops to discuss the potential for initiating collaboration activities among their libraries. Conflicts among participants from different libraries were minimized and accommodation areas where all members would feel confident were sought. Using SSM as an action plan for making changes was also found appropriate in this research. The four-stage model allowed the library members to develop their thinking and understanding regarding the significance of collaboration. Finally, this research also reinforced the idea that focusing on abstract issues can enhance thinking and, as a result, increase readiness to change. Investigating different issues related to behaviour, organizational culture and the roles and influence of various personnel, led to the development of conceptual models that could be implemented in the real world of OALC. For example, lack of knowledge and experience in sharing resources led to the development of a conceptual model of a system for resource sharing.

6. Conclusion

The value of the current study lies principally in its investigation of the real world complexity of OALC and achievement of improvements to the original problematical situation. This task was beset with difficulties at the beginning due to many factors. These factors included the fact that the situation of OALC was surrounded by many HAS that required investigation, such as human resources, services, perceptions of people regarding collaboration and technology. These were interorganizational phenomena that involved four participating libraries and were affected by a number of abstract and concrete issues. Moreover, the majority of personnel of the participating libraries were lacking in knowledge and experience in the field of library collaboration.

However, SSM utilizes a set of methodologies capable of dealing with these factors, and the provision of a holistic view enabled the complexity of the situation to be addressed. It has the capacity to elicit information from individuals and groups, discovering internal and external factors that affect the situation and facilitating comparison between reality and thinking. SSM in this research was instrumental in achieving accommodation among the different viewpoints of participants. This is a critical issue in collaboration since all participating

libraries must reach the stage of common values and interests. The experience of research supports the idea that SSM is valid for achieving a good understanding about complex situations. It also proves that every social phenomenon is unique and reality is based on perceptions of its people.

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