Human Factors in the 'System Selection' Stage of Library Automation

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ABSTRACT

Since the late fifties and early sixties when computers and computer-based systems were introduced in the libraries in modest forms, use of IT within libraries has evolved greatly[1]. Libraries of today use various automated systems to take care of a vast range of simple and complex tasks. The term automation has been loosely used to refer to vastly differing levels of adoption and use of IT in great many different settings. Just within libraries, this term has been used to refer to anything from utilizing a simple PC, to most sophisticated use of technology in automating all aspects of library work. To remove repetitive clarifications however, the term 'automation' and 'library automation' in this paper are hereafter solely used to refer to the adoption and use of Automated Library Systems[2] (ALS) within libraries.

BACKGROUND

Since the emergence of ALS, a large amount of literature has been accumulating on various fronts. According to Storey (1992: 1), the two lines of approach excessively found in the library automation literature are the " machine side" and "what we did in our library to install a system". Like others (e.g. Fine 1986:84), Storey finds the amount of literature written on "human aspects" less frequent. Only in the more recent years the human aspects of automation have begun to receive more attention (e.g. in Sykes 1991; Döckel 1992; Morris and Dyer 1998; Clarke and Morris 1998; and Farley, Broady-Preston et al. 1998).

However, despite the vast range of literature and guidelines available regarding library automation, costly mistakes are still made and problems are still recurring on a daily basis.

The fact that people have a pivotal role in organizations of libraries and in the process of automation is discussed and accepted widely (Jordan and Jones 1995; Clarke and Morris 1998; Olsgaard 1989; Farley, Broady-Preston et al. 1998). For example it is stated that "Libraries spend more than half their budgets on staff salaries" (Jordan & Jones 1995: 1) and that "system migration results in large scale changes which will affect all levels of staff" (Clarke and Morris 1998: 153) or that "research indicates that 90 per cent of change initiatives that fail do so because human factors were not taken adequately into account" (Goulding 1996). Similarly, Olsgaard (1989) indicates that 85% of all failures in systems implementation can be attributed to people problems.

However, research-based studies on the human factors that are of significance in the process of adoption and use of automated library systems are still minimal (e.g. see Clarke and Morris 1998).

Based on this background, the following study is just a fraction of a doctoral research project, which includes a study of the human factors affecting the process of library automation and the relationship between these factors and the outcome of the automation project and management of change.

As such, this short paper only looks at the 'system selection' phase of library automation and tries to identify possible significant factors that can have a bearing on the selection of ALS.

As a preparation for this study, a list of factors that can be of importance in the 'system selection' phase of library automation has previously been put together based on a literature review and work-related experiences. Due to the length of this paper, that literature review and the related references are not included here. However it should be noted that some of the areas that were looked at were: literatures that examine the role of system specification documents; case studies that explain the process of system selection at libraries; models of evaluation methodology for information systems; aspects of selection and evaluation software packages; technology acquisition; human behavior and decision making process; models as a basis for investigating the acceptance and use of IT e.g. Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA), and Diffusion of Innovation theory (more specifically organizational innovation adoption; factors affecting individual innovation; factors affecting new product success and failure; variables influencing inter and intra firm adoption decisions; etc).

AIM AND OBJECTIVES

The aim of this study is to complement and/ or modify the above mentioned list firstly with the factors that are seen to be of importance according to ALS vendors and library decision-makers and secondly with possible factors that could be identified as significant by listening to the story of system selection as told by library workers.

Therefore a couple of study questions have been formulated as follows:
- What do library system vendors and library decision-makers see as being the significant factors in the system selection phase of automation?
- What factors can be identified as being of significance by listening to the story of system selection as told by library workers?

METHOD

This study includes two sets of interviews:
1) The first set comprises four approximately one-hour long semi-structured interviews with:
   - a sales person with involvement in more than 200 sales of ALS,
   - a system developer/ vendor with double role of being head librarian at an academic library,
   - a head librarian at an academic library, which now runs its third ALS,
   - a systems librarian who has been involved in a major purchase of an ALS for use by a consortium of five different academic libraries.

In these interviews, the emphasis was placed on the possible factors that had seemed of significance to the informants.

2) A different approach was used in an additional interview with a library worker at a public library where the informant was asked to tell the story of how and why they had chosen their particular ALS and to relate her experiences of this system selection process to any relevant past experience in her life as she would see appropriate. Unlike the first approach, in this life-history-like interview, the emphasis was placed on the infor-

mant and her experiences and she was not directed to account for possible factors. The aim with inclusion of this different approach was to see if the data gathered could be enriched and a new perspective added.

When analyzing the first set of interviews a comparative perspective was used while for the latter interview a more hermeneutic approach was called for[3].

RESULTS AND DISCUSSION

Although, due to the scope of this paper, no epistemological considerations and discussions are included, it should be noted that this study has had a qualitative nature, where the aim of the work done has not been to produce results that could be generalized; the aim has rather been to form an insight that would aid a better formulation of the questionnaires that are to base a future quantitative study. As such, many elements were identified as possible significant factors, but as inclusion of a long list of these is not possible in this paper, the following presents just a few of the more interesting findings.

- According to all respondents in the first group of interviews, price and technical platform could be the deciding factors but only in a fraction of cases.
- According to the system vendors, system specification documents are not used constructively and in fact it was said that in many cases libraries seem to make up their minds about the system of their choice and then write the specifications to match this choice.
- According to the head librarians and the systems librarian, system functionality and functions specified in the system specification documents are the most important factors in the selection of a system. However, even they admitted that testing of all the potential systems against these system specifications is not possible and that at the time of purchase one cannot be sure as to whether the chosen system is the best match to the specifications made.
- According to all, the head and systems librarian's views can have a strong affect on the other library workers' views and thus on the choice of the system.
- Factors such as vendor company's reputation, location, language or system's innovativeness, openness, level of support offered, etc, all make deciding factors, but in both directions (positively or negatively) depending on the libraries involved.
- Sex and age of the people involved were not viewed as having a bearing on the choices made.
- In the story told by the last interviewee, only two library systems were considered. These are the two largest Swedish systems on the market that by far have the largest share of the Swedish market. No thought was even given to considering any other system. In that particular library, no system specification document was written and instead two library workers were assigned to look at possible choices and although both were in favor of one system, the other alternative was chosen and purchased by the head librarian. It seems that the price of the system has been one of the major factors in this decision but one cannot rule out the influence of personal networks that seem to have had a major bearing on the decision on several different levels. The importance of these personal contacts and their effects on the final decision was highlighted in a much stronger way in this story telling than it was in the first set of interviews.

The results of these interviews, as hoped, helped in the modification of the list of possible significant factors previously put together. Furthermore they have lead to several thought-provoking indications that require further consideration in designing the data gathering instruments of the wider doctoral research. An example that would highlight this is the role of the system specification documents as a basis for testing the suitability of potential systems. These documents are emphasized by many library decision makers as an important instrument in choosing an ALS. However, in deeper investigations, the feasibility of detailed examination of potential systems based on these documents becomes questionable. This gives rise to the question as how to design the data gathering instruments to capture such hidden contradictions between the actual cases and the initial perceptions of library workers.

Based on this study, the data gathering instruments need to be designed in a way that this and similar issues (e.g. the role and the extent of the influence of key people, social and professional networks, and previously formed personal preferences on decisions made) can be investigated in a suitable way.

ENDNOTES
[1] For some historical accounts see Duval and Main (1992) or Tedd (1993).
[2] For a definition of ALS refer to Duval and Main (1992:1)
[3] For more details on the analysis methods used see e.g. Andersson (1986)

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