

8-25-1995

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Recommended Citation

Middleton, Catherine, "A Tale of Two Systems? Success and Failure in a Single Information System Implementation" (1995). *AMCIS 1995 Proceedings*. 14.
<http://aisel.aisnet.org/amcis1995/14>

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A Tale of Two Systems? Success and Failure in a Single Information System Implementation

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Introduction

This paper presents a case study of an information system (IS) implementation in a new university. A successful implementation was anticipated but was not achieved. The designers were satisfied with the system but secondary users were dissatisfied and frustrated by restricted system access. An examination of the university's culture and management structure reveals strong political reasons for the primary users to exert power over the secondary users. Markus's (1983) interpretation of interaction theory is used to discuss the political implications of the system design. It is concluded that senior management must be aware of the broad implications of information systems adoption in their organizations, and understand the potential for designers to use systems as sources of power.

The case is significant as it is evaluated from the perspective of both user groups, using a framework derived from the literature on systems implementation and information systems failure. The study shows how a single system can be a success and a failure simultaneously.

University Background

Private University was a new university, with the goal of becoming an institute of higher education significantly different from those existing in the public sector at the time. It was the administrative staff's responsibility to establish the organizational structure and systems that would allow the university to meet this objective.

System Implementation and Development

The implementation of an automated student information system was recognized as an essential administrative task. The university was in an ideal position to implement a system successfully. There was no existing system to replace and as the university had no established routines and administrative procedures, it was expected to be easy to install a system to meet the university's needs. After an intensive search, a system used in many American universities was purchased. The system met the university's basic needs but would require much customization.

The system development process was under the jurisdiction of the registrar, who was responsible for daily operations, future modifications and maintenance. The development

team consisted of three individuals, two with extensive university experience and one who was a skilled programmer. This team worked closely with the registrar to determine administrative procedures, and spent much time designing the individual components of the system.

The system was developed by the project team alone, with no input from other users, who were fully occupied with their own responsibilities. The functions that were being developed initially were ones that would remain within the jurisdiction of the registrar's office, thus the exclusion of other users from the design process was perhaps understandable.

However, subsequent design stages involved information and processes essential to the secondary users who would need to use the system extensively. But the design process was entrenched, allowing no opportunity for these users to have input into the system, or more importantly, into the design of the processes that were being institutionalized by the implementation of the system. The entire system was designed with minimal input from secondary users, who were presented with a finished product and an indication that it was not open to modification. Aware that a student record system of some sort was essential, users were forced to accept the system as provided, even though it was barely adequate and had many shortcomings.

How did primary and secondary users evaluate this system? The registrar's office (primary users) maintained control of the system, and was responsible for all data input, regardless of the nature of the data. Read-only access was granted to secondary users who required information on current and prospective students. These users were not, however, able to generate reports, search the database, or download information. The registrar's staff had full access to the database, and were to provide the other users with additional information on request. But was this situation satisfactory? Could the system be considered a success?

Two Perspectives on Private University's Information System

Literature on systems failure and successful systems implementation was reviewed to determine evaluation criteria for system implementation projects (see full paper for the details of this review). Twelve criteria were identified for use in evaluating the university's system, using the work of Ackoff (1967), Bostrom and Heinen (1977), Schmitt and Kozar (1978), Senn (1978), Ginzberg (1981), Davis et al. (1992), DeLone and McLean (1992) and Pollalis and Frieze (1993).

Evaluation Criterion	Primary Users' Perspective	Secondary Users' Perspective	Primary Users' Assessment	Secondary Users' Assessment
Was the project terminated?	No	No	Success	Success
Was it agreed that the project was a failure?	No	Uncertain	Success	Uncertain

Did the users resist the system?	No	Yes	Success	Failure
Were the users satisfied with the system's scope?	Yes	Uncertain	Success	Uncertain
Was the system designed to meet users' needs?	Yes	No	Success	failure
Was the quality of the information system acceptable?	Yes	Not entirely	Success	Failure
Was the information produced by the system of acceptable quality?	Yes	Sometimes	Success	Failure
Was the information used?	Yes	Not always	Success	Failure
Did the information impact upon management decisions?	Yes	Sometimes	Success	Failure
Did the information impact organizational performance?	Yes	Lack of info. had a negative impact	Success	Failure
Did senior management support the system?	Yes	No	Success	Failure
Was the system able to evolve with a changing organizational environment?	Yes	Uncertain	Success	Failure

The table shows two vastly different assessments of the system. As expected, the system designers and primary users considered the system to be a success on most criteria. In stark contrast, the staff in the faculties and the marketing office viewed the system as inadequate and unresponsive to their needs. From their perspective, the system was a failure.

Analysis

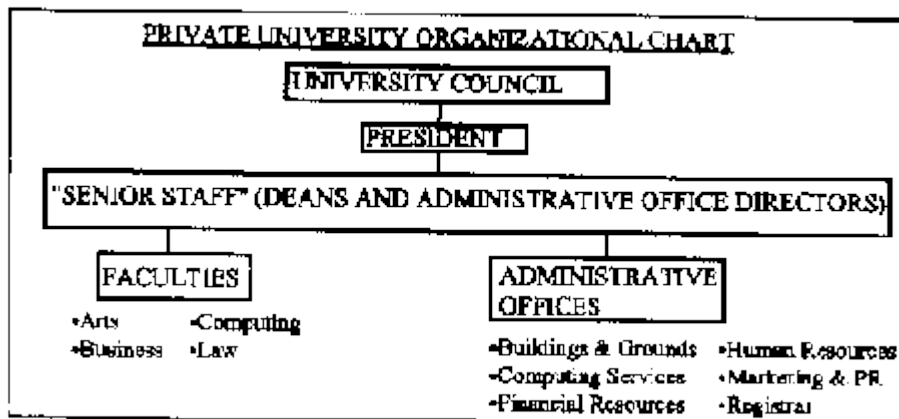
Was the misfit between the secondary users' system requirements and the system as implemented intentional or was it because of the technical limitations of the system?

Because users were led to believe that the system was technically complex, they did not demand access to it immediately. The developers allowed users no access to system

documentation, thereby perpetuating the myth of technical complexity and discouraging users from learning the true capabilities of the system. The control that the developer exerted over system access is indicative of a faulty design process. By their refusal to accord users the necessary access privileges for effective system use, the systems designers exhibited a Theory X view of the system users (Bostrom and Heinen, 1977). But did the designers restrict system access because they felt secondary users were incompetent, or was there another motive? At this early stage of the university's development the designers were extremely busy developing and implementing administrative procedures and academic policies. However, by allowing the secondary users access to the database, a portion of their excessive workload could have been reduced. The secondary users were not looking to input or change data, they merely required access to useful data for administrative purposes. To them it was incomprehensible that direct access to the system was denied, as it would reduce the workload of the administrative staff.

To understand this apparent paradox, it is instructive to consider the structure of Private University, and to understand the implications of funding this university on tuition fees alone.

The diagram on the next page shows the organizational structure of Private University, with the faculty and administrative links. It also shows, indirectly, the division between revenue generators and expense generators. Tuition revenues were earned by the faculties. Although the support services of the offices were essential in generating enrollments, the administrative offices were considered cost centers. When funds were abundant, faculties worked in close cooperation with the administration, sharing the common goal of excellence in education. But the bankruptcy of the university's founder just prior to the university's opening created a split in the ranks. The faculties became critical of the expenses generated by the administration, and demanded significant cuts in staffing levels. Administrative managers effectively lost control of their budgets, as they were forced to comply with the wishes of the faculties. The centralized nature of the university's structure came under fire, with the faculties suggesting that they could better provide the centralized administrative services themselves.



The administrators were defenseless and had little choice but to comply with the requests of the faculties. The student information system, however, was one area where the administration could retain control and resist faculty demands. The deans were generally unaware of the system's capabilities, and despite pleas from their staff to gain more control over the system, deans showed little interest in its management, thus allowing the registrar's staff to use the information system as a potent political tool.

By controlling access to the system, the registrar's staff became indispensable. Granted, there was a need for central maintenance of student information, but control was not what secondary users sought. They simply required access to the information. By denying this access, the registrar's staff created a power base around the system. The faculties could not decentralize the student information system, and thus were subjected to the power plays of the registrar's staff.

A Political Perspective on the System Development

Markus's (1983) use of interaction theory to examine the political aspects of systems design is instructive here. She suggests that information systems failure is "because of an interaction between the characteristics related to the people and characteristics related to the system". There were no inherent power implications in the system used in this case. It was in determining access privileges to the system that power issues arose. As gatekeepers, the primary users could exert power over the secondary users, power that could not otherwise be derived from their position in a non-revenue generating office.

The registrar's office denied access to the system for technical reasons. Yet they used a simple, accessible report writer to generate the data requested by secondary users. If the secondary users had been granted access to this system, the primary users in the registrar's office would have ceded their sole source of power.

Markus and Bjørn-Andersen (1987) discuss the exercise of power by IS professionals over users. This is precisely what occurred in this case. Markus and Bjørn-Andersen could be describing the design team in noting: "IS professionals exercise power over user behavior by creating organizational structures and routine operating procedures that give them formal authority over users or foster user dependence on them for important resources."

Conclusion

What can be learned from this case study? It is clear that systems designers can exert significant power over users through the structure of system-organization interaction. The power exerted at Private University was not a function of the technology employed, but of organizational politics.

The systems designers were able to use the system as a political tool because the senior managers were unaware of its importance to those who most needed it, and of its potency for providing essential information. This case highlights the necessity for senior management to understand the technology implemented in their organizations. As Ackoff

(1967) notes, "No MIS should ever be installed unless the managers for whom it is intended are trained to evaluate and hence control it, rather than be controlled by it".

This case also shows that information systems should fit the environment in which they operate. The gatekeeping role played by the designers was not appropriate in an atmosphere where all offices had to be responsive to faculty needs. The university needed a system that encouraged the users to work toward common goals, rather than one that allowed one group of users to play political games and exert power over another.

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