A Case Analysis of Information Technology Management in a Public University

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ABSTRACT

Using a case study approach, this study investigates the issues of IT management in a public university in Malaysia, called The University. Findings indicate that The University lacks of common approach to decision-making or forum for making comprehensive assessments of IT plan and funding strategy. Campus information system was developed in an uncoordinated manner, reflecting interests of different departmental units, and decision support system is almost non-existence. A new IT planning structure with clear roles and responsibilities is proposed to overcome existing barriers to effective campus information system.

Keywords

Universities, Campus Information Systems, Information Technology, Strategic Planning, Malaysia

1.0 INTRODUCTION

University has a special role in the knowledge economy as it is concerned with information and the role of information in the delivery and creation of knowledge (McRobbie & Palmer, 2001). Every university that aspires to be competitive in the 21st century higher education environment has to make the most effective use of IT (Gayle et al., 2003). IT should be one important strategy, among others, that must be pursued by any university (Titthasiri, 2000). The reason is that the revolution of IT has radically transformed universities and caused a redefining of student, lecturer, and administrative staff roles, needs, and expectations, and is likely to cause profound shifts in university functions and structures. Therefore, universities need to take an imaginative leap in devising their strategy via innovative use of IT to improve the quality and flexibility of their institutions and management. Proper IT management is crucial, as IT is now fundamental to the teaching, learning and research mission of a modern university (McRobbie & Palmer, 2001). Results from few studies conducted in Malaysia however suggested that most public universities in Malaysia have yet to implement comprehensive strategic IT plans (Ismail et al., 2007), whereby the extent, mode and quality of IT utilization in the Malaysian academic environment are still behind those of developed countries (Vicziany & Puteh, 2004). Despite many great efforts done by the government of Malaysia to create a new generation of knowledge workers, most public universities have yet to effectively integrate IT into their administrative, and teaching and learning approaches (Juhary, 2005). Therefore, using a case study approach, this study aims to investigate in greater depth current practices of IT management of a public university in Malaysia (hereafter referred to as The University). Findings from this study are important to the Malaysian public universities if they want to move into the top tier and be among the world top-ranked universities.

2.0 LITERATURE REVIEW

Lederer and Sethi (1988) defined strategic IT plan as a process where an organization determines a portfolio of computer-based applications to help achieve business objectives. It consists of strategy for both information planning and management, including the use and features of IT (Gallliers et al., 1995). With a well-developed strategic IT plan that fit into university broader strategic plan, university can use IT more competitively, identifies new and higher payback IT applications, and better forecasts on IT resource requirements (Basu et al., 2002).

The importance of strategic IT plan to the success of campus information systems was highlighted by many researchers. However, results of these studies suggest that most universities lack understanding of how to develop an IT strategic plan. In this regard, several researchers have proposed a strategic IT model for use in the specific context of higher education institutions (e.g. Tithasiri, 2000; Ishak & Alias, 2005; Suhaimee et al., 2006; Md Basir & Nordin, 2006). However, Hevner et al. (2000) warned that many IT initiatives have failed due to the specification gap between the description of the recommended systems and the detail needed for actual system implementation. Even organization with a solid IT framework fails when it comes to implementation (Devlin & Meyerson, 2001). In many cases, this gap exists due to the poor IT planning team structure (McCredie, 2000; Nakatani & Chuang, 2005). Other dominant influencing factors include lack of commitment from the senior management, bureaucratic structure, resistance to change, tight budget, and lack of internal expertise (Teo & Ang, 2001; Nakatani & Chuang, 2005).

Malaysia, since the inception of Vision 2020 in 1991 and MSC in 1996, has regarded new technologies as a critical

factor in ensuring that Malaysian economic development will continue at the highest level (Juhary, 2005). Ironically, Vicziany and Puteh (2004, p. 19) argued that despite various IT programs established by the government, "Malaysian government strategies have not placed much emphasis on education and the use of IT". Ismail et al. (2007) argued that IT plans must be well-supported by a solid IT structure, funding and governance system, and more importantly concerted efforts from all parties, particularly commitment from the university top management to lead the campus community to transform the plans into actions.

3.0 METHODS

To achieve the objectives of this study, a case study approach is adopted as it enables the capture of reality in considerably greater detail than is possible with the survey approach. For this purpose, a public university is selected as a subject of this study, whereby a series of interviews were carried out with both users and providers of The University campus information systems. First, interviews were conducted with Director and several staff members of IT Department. The interview sessions seek to understand current IT planning, funding, and structure and their impact on campus information systems. The second interview sessions were conducted with several Deans and Departmental Heads to seek and clarify information gathered from the first interview sessions. This second session also seeks to understand how IT is being used to make university or faculty decisions. Finally, a series of interviews were conducted with several lecturers and administrative staff members to understand the underlying problems faced by users of campus information systems. Information was also gathered from the university websites and printed reports.

4.0 THE UNIVERSITY PROFILE

The University was established in 1984, with a unique mission to provide academic excellence in the areas of business management, IT and quality management education. It comprises of 13 Academic Faculties, 8 Administrative Departments, and 11 Institutes and Centers of Excellence. It currently has around 23,000 undergraduate students and over 2,000 postgraduate students, supported by a strong 1,150 lecturers and 1,300 administrative staff members.

4.1 Information Technology Department

The University IT Department, which was established in 1998, is divided into four main service areas: Academic Computing and Knowledge Management Systems, User Support Service, IT Infrastructure, and Administrative Application. It is supported by 90 dedicated IT officers, computer technicians, and data processing operators.

4.2 Campus Information System

The University campus information system has evolved through several stages of growth over the last two decades. Current information system can be divided into two categories, University Management Information System (UMIS) and Data Warehouse Information System (DWIS). UMIS is an integrated online transaction processing system that provides the university with an electronic management environment, while DWIS is an online analytical processing system that extracts and combines data from online transaction processing system for decision-making. DWIS, which is still at its infant stage, consists of Strategic Information System application, while other applications are still at the planning stage.

4.3 Information Technology Infrastructure

Current campus network system uses Gigabit technology, which provides Internet access to the students and staffs in teaching and learning process such as surfing for course content, access to the university Web-based application systems, and access to the Learning Management System. It has also established more than 70 wireless access points and base stations networks, providing pervasive coverage at the maximum transmission speed of 54 Mbps. Currently, there are over 66 computer labs around campus with 2,430 personal computers. The highest computer specification available is Pentium IV with 256MB memory and 40GB hard disk, while the lowest is Pentium III with 64MB memory and 10GB hard disk. The current ratio of PC to students is 1:11 and 1:1 for administrative staff members.

4.4 Information Technology Team Structure

Unlike many other universities worldwide, The University does not have a proper IT planning team structure. The main IT committee is IT Steering Committee, chaired by Vice Chancellor. Members of the committee include Deputy Vice Chancellors, Directors of Departmental Units, and Faculty Deans, while Director of IT Department acts as a secretariat. The committee meets twice a year to discuss and approve IT proposals submitted by User Departments and to plan for the future IT development, which commonly span a period of six months. In addition to the IT steering committee, it has the so-called System Development Committee. The committee is actually not a committee by itself but consists of several sub-committees relating to each major application system in campus. Each sub-committee is chaired by Directors of Departmental Units responsible for the system. A group of IT Department staff members, often lead by a system analyst, is assigned to each sub-committee. As an ad-hoc based committee, there is no schedule meeting but the committee would meet whenever problems exist.

5.0 ANALYSIS OF STRUCTURE, PLANNING, AND FUNDING

This section discusses in greater-depth issues relating to IT structure, planning, and funding and their implications to the campus information systems. Analysis of IT planning environment indicated that, while considerable investment of time, thought and resources had been made in IT, there was no coherent overall framework directly linking IT plans to the mission of the university. Anecdotal evidence suggested that the results of IT plans had been mixed.

5.1 T Structure

This study found that current structure of the IT planning team and its roles and responsibilities are not well defined and undocumented, thus unclear to most people on campus. One senior administrative staff member noted:

"…the current structure is not functioning as it should…very few people in campus understand its functions or may be its existence…the role of Chief Information Officer (CIO), (currently assumed by Deputy Vice Chancellor for Research and Innovation), is also not functioning…I even doubt he understands the roles and responsibilities of a CIO ."

When asked for suggestion, the officer had this to say to the management:

"…the university needs to appoint a full-time CIO, someone with good business (university) and IT knowledge and skills to be a champion and to lead the university with coherent and comprehensive IT initiatives…with the office of CIO in place, the Director of IT Department would be able to concentrate on his job…"

A senior IT officer added:

"…most of the members of IT Steering Committee do not have the knowledge of recent technologies and what they can do for our campus information systems...some of them do not even bother to give inputs to improve our existing systems, even those that affect his or her Department or Faculty…they think it is our (IT Department) job to think about anything related to IT…"

Members of The University management, while spending most of their time addressing university issues, did not consider IT as an important tool to solve university problems. The lack of commitment and participation of The University management is evidenced by the instances where scheduled meetings for IT Steering Committee were sometimes delayed for more than a year, which resulted in the delay of important IT projects, thus unsatisfied User Departments.

5.2 Information Technology Plan

Analysis of current university structure and IT planning team indicated that The University lacks of common forum for making comprehensive assessments of IT plan. The responsibility for the campus IT planning rests on the shoulder of the Director of IT Department. It is interesting to note the comments made by the Director:

"…IT plans should not be the sole responsibility of IT Department…we need cooperation and support from all Departments and Faculties to provide us with information which would help us understand their requirements…they understand the university core businesses better than us…"

He further noted:
"…my department lacks staff with management skills…while technologically they are very competent, they tend to focus more on the short term issues of relevance to them…"

Raymond and Pare (1992) argued that organizations must consider not only the technological, but also informational, functional, and managerial issues to develop an effective computer-based information system. The absence of these skills is evidenced by the lack of decision support systems in campus information systems. For example, while campus operational systems have improved over the years, they did not support decision-making and related information needs such as reporting, analysis, and planning at the Faculty or Departmental level. These supposedly integrated systems seem to work independently and in disintegrated manner, reflecting different interests of different Departmental Units. Discussions with several Faculty Deans and Directors of Departmental Units further confirmed the findings. One Faculty Dean commented:

"…some departments think that they own certain application systems and their content, which in their opinion should not be shared with others unless a formal request is made…"

When asked for suggestion, he suggested that:

"…we need to change this traditional work culture…of course this is not going to be easy but everyone needs to view campus information system from a wider perspective for us to succeed…what I meant is everyone must view it from the university perspective not individual units…"

His comment and suggestion has a sound basis as discussions with the former and current Director of IT Department revealed that most IT decisions were based on user-champion basis. Most decisions are often left to the individual units responsible for operating them, without sufficient input from the vast array of users either Faculties or Departmental Units that are also

depending on the systems. Deputy Dean (Postgraduate Studies) of a Faculty, when asked about how he measure lecturers' performance in relation to research, publication, and consultation activities, noted:

"…I hate to admit this but there is no information readily available about these activities other than those keyed-in by my clerk, which are often not updated…in many instances we have to ask IT Department to provide us with the information (if any)…I think you now understand why we cannot monitor our lecturers' performance… "

When asked for suggestion, he suggested:

"…data relating to academic activities such as teaching, research, publication, and consultation must be centralized where everyone can have access to the same data and management is provided with appropriate analytical tools for data analysis…"

A Faculty Head of Department whom agreed with the suggestion, added:

"…I think Research and Innovation Department need to be more proactive in this regard by soliciting inputs from all Faculties, whereby Deputy Vice Chancellor (Research and Innovation) could be a champion for this project to gain cooperation from all parties …"

The "order taker" role currently assumed by the IT Department with no thought to systems integration or university benefits has resulted in uncoordinated campus information system. The "let's build the solution together" culture is not in everyone's thought. Major implication of this approach is lack of coordination among Departmental Units and Faculties. This is evidenced by the fact that despite various application systems that have been developed over the years, there were many instances of duplication of efforts and poor dissemination of solutions to common problems.

5.3 IT Funding

This study found that the process for discussing IT needs, priorities and potential investments is almost entirely disconnected from the process by which the campus and its Departmental Units prepare annual IT budgets. Furthermore, while IT is listed as one of the important strategies in the broad university strategic plan, it does correlate with other strategies. The lack of coherent and comprehensive funding strategy coupled with weaknesses of the IT planning structure further complicate the issues. For example, IT-related ideas and initiatives, normally submitted by individual Departmental Unit, are discussed and debated by the IT Steering Committee. However, decisions made by the committee will not culminate directly into actual funding decisions, as the final budget decision will only be made by the Treasurer. Deputy Director of IT Department revealed that:

"…The treasurer has full authority when it comes to money… there are many examples of IT projects that have been approved by the IT Steering Committee were cancelled because of lacks of fund…."

The Director of IT Department highlighted another major setback to this disintegrated approach. He noted:

"…our university received a significantly lower IT funding in the 9th Malaysia Plan compared to other public universities…the main reason is that our uncoordinated IT plans have resulted in segmented fiscal plans…the problem is that everybody wants to be a champion in the eyes of the university management but unfortunately nobody wins in the end…"

This is not surprising as the lack of comprehensive IT plans to guide campus IT developments meant lack of coordination and synchronization between IT funding at the campus level and departmental level, resulting in some missing projects from the proposal submitted to the Ministry of Higher Education. When asked for suggestion, the Director of IT Department said:

"…to solve this, I think we need to find a mechanism, sort of a committee to discuss campus IT planning in a comprehensive and coordinated manner by soliciting inputs from all Faculties and Departmental Units, whereby the preparation of campus IT budget can be centralized and no plan is missing out…"

6.0 TOWARDS REACHING A SOLUTION

This section offers several recommendations to remove existing barriers relating to IT structure, planning, and funding for effective campus IT utilization.

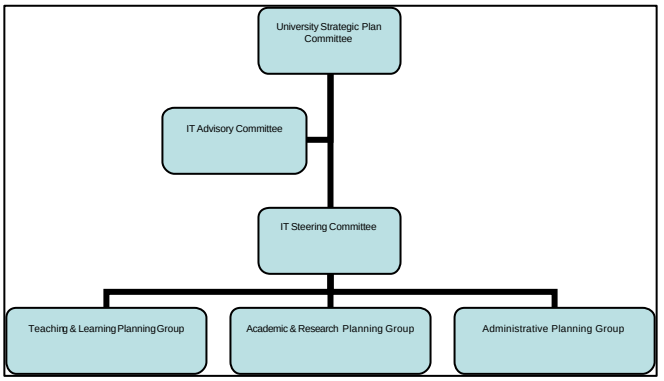

Figure 1: Proposed IT Planning Structure Team

6.1 Information Technology Structure, Planning and Funding

Findings from this study indicated that existing IT structure has inhibited The University from adopting a

coherent and comprehensive IT plan and funding strategy. Thus, our first recommendation is to restructure IT planning team structure. The proposed structure exhibited in Figure 1 above is drawn after carefully reviewing existing literature and some of the structures adopted by universities that had successfully implemented strategic IT plan. In this regard, the functions of CIO need to be strengthened and defined more clearly. A new office, the office of CIO, should be created and distinguished from the current structure. The primary role of the office is to provide leadership for the continued development of a modern IT environment throughout The University. Its primary responsibility should be on the development and use of IT in support of the university's vision for excellence in research and academic (scholarship), teaching and learning, and administrative support and services. The CIO should also be the key link between input and advice from IT stakeholders and formulation of campus-level IT budgets. The roles and responsibilities of each committee in the proposed structure are explained below.

6.1.1 Information Technology Advisory Committee

The committee will act as a governing body of all IT-related activities. The aim is to provide a forum for discussion at the highest level of IT problems, needs, future planning, and review of an IT strategic plan. It is also responsible in ensuring that IT strategies are parallel with the university broad strategic plans. Members of the committee may include Vice Chancellor, Deputy Vice Chancellors, Registrar, Treasurer, CIO, and representatives from Faculties and Departmental Units.

6.1.2 Information Technology Steering Committee

The committee will act as The University think-tank on IT-related activities. It is responsible in advising CIO on matters concerning IT policy and to formulate general IT strategies to seed IT Planning Groups. This could be done, initially, without the constraints of a specific budget, so as to present a vision of what is needed to make The University a leader in the use and application of IT to support the traditional missions of teaching, research, and administrative service. Based on the specific IT strategies provided by IT Planning Groups, the committee should provide a detailed financial plan and how it will be allocated across divisions and then monitored to help achieve the outlined plan. Members of this committee may include CIO (chair), Director of IT Department, Chairman of each IT Planning Group, and representatives from Faculties and Students Association.

6.1.3 Information Technology Task Force

Each planning group should correspond to each major divisions such as Teaching and Learning, Research and Academic, and Administrative Support and Services. The task of each planning group is to provide specific IT strategies, including recommendations and action plans specific to their respective division, and to ensure that the plans are in tandem with the general IT strategies outlined by the IT Steering Committee. Each task force may also form sub-committee(s) whenever necessary. If formed, chair of the sub-committee needs to report to the respective task planning group on a regular basis. Chair of each planning group is also responsible to articulate ways to cooperate whenever overlaps exist between these sub-committees. IT Department should have a representative in each planning group to advice on the technical aspects of each recommendation and action plan. Chair of each planning group will automatically become a member of IT Steering Committee, whereby each of them will report the progress of each project. Members of each IT planning group may include staff and students relevant to the division. The roles and responsibilities of each group are discussed below.

6.1.3.1 Teaching and Learning Planning Group

This planning group is responsible to provide and coordinate computer support services for students and academic staff members. It needs to reorganize, rationalize and enable technology investments in classrooms and instructional-technology support systems, and the provision of the IT resources that faculty, students and staff require as part of their expected jobs and roles, including responsibility for a minimum standard level of computing capability and desktop support such as personal computer for office use.

6.1.3.2 Research and Academic Planning Group

This planning group is responsible to provide, support and coordinate world-class computing resources that would enhance the quality and quantity of research and academic activities. The division should provide support for the lecturers and students in accessing (research, consultancy, and publication activities and e-library), storing and managing (e-academic), and disseminating research and academic related products; fosters collaborations between faculties, with other institutions of higher learning, and with government/industry agencies; and aids innovations that would advance research that are influenced and enabled through IT, and consultancy services.

6.1.3.3 Administrative Planning Group

This task force is responsible to develop, implement, manage, and coordinate university-wide information systems that support the university's core business processes. An integrated and secure approach, including an information environment for management decision support and reporting should be central to these information systems. Furthermore, IT Department needs to reorganize and rationalize an approach to hiring and training professional IT staff particularly in the aspects

of functional, informational and managerial aspects of IT implementation. This would encourage the development of a campus community of IT professionals and to identify and disseminate best practices.

Finally, The University need to establish a mechanism such as Web page, bulletins, and emails, to explain the IT committee structure, list the membership of all the committees and their roles and responsibilities, list the recommendations and action plans for each division, and soliciting input from the campus community on a regular basis. Dissemination of this information will increase the accountability of those involved in the planning process. This participatory process would also provide invaluable inputs to the working committee.

7.0 LIMITATIONS AND FUTURE RESEARCH OPPORTUNITIES

Several methodological limitations influenced findings of this study. The first limitation relates to the lack of documented reports available to validate the claims made by respondents. The second limitation relates to the weaknesses of a case study approach. For example, its application is usually restricted to a few organizations, and the difficulty in acquiring similar data from a statistically meaningful number of similar organizations, and hence the problems associated with making generalizations from individual case study.

8.0 CONCLUSIONS

The University needs a comprehensive and well-coordinated IT strategic plan, backed by strong commitments to action from the campus community. The plan should provide an aggressive and bold, yet thoughtful and measured vision for how IT should be developed, used and applied to support university main activities such as research and academic, teaching and learning, and administrative support services. This exercise can help The University re-look and possibly overhaul IT and the way it was structured to better prepare The University to take the leadership position in IT. This process may include reorganizing the entire IT committee structure, reviewing and re-prioritizing IT expenditures, and having good governance system in place. A strategy of cooperation as a means of pulling together the diverse departmental interests and resources is very much needed to achieve the vision. Nevertheless, effective cooperation between different departmental units is always a difficult matter. Therefore, much needed are clear-cut statements of mission and, where these overlap, clearly articulated ways to cooperate at their intersection. To achieve the overall goal of becoming one of the leading public universities in Malaysia, The University must find ways to overcome these difficulties.

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