



Information technology governance, funding and structure

Information
technology
governance

A case analysis of a public university in Malaysia

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Abstract

Purpose – The paper's purpose is to investigate the issues of IT governance, funding and structure of a public university in Malaysia.

Design/methodology/approach – The study uses a case study approach, i.e. a series of interviews with users and information services provider of campus information system.

Findings – The university lacks a common approach to decision making or forum for making comprehensive assessments of IT planning and funding strategy. The campus information system was developed in an uncoordinated manner, reflecting interests of different departmental units, and a decision support system is almost non-existent. A new IT planning structure with clear roles and responsibilities is proposed to overcome existing barriers to effective campus information system.

Originality/value – This is the first study to investigate the issue of IT governance, funding and structure in Malaysian universities using a case study approach.

Keywords Universities, Information systems, Strategic planning, Communication technologies, Governance, Malaysia

Paper type Case study

Introduction

Higher education sector has a special role in the knowledge economy. By nature, a university is concerned with information, and the role of information in the delivery and creation of knowledge (McRobbie and Palmer, 2001). Therefore, there is every reason to believe that information technology (IT) revolution will radically transform universities. These changes will cause a redefining of student, lecturer, and administrative staff roles, needs, and expectations, and are likely to cause profound shifts in university functions and structures (Gayle *et al.*, 2003). Despite its strategic importance, IT relies on people for its effective utilization (Shin, 2001).

Gayle *et al.* (2003) suggested that every university and college that aspires to be competitive in the twenty-first century higher education environment has to make the most effective use of IT. Therefore, IT should be one important strategy, among others, that must be pursued by any university, especially those in developing countries (Titthasiri, 2000). However, results from few studies conducted in Malaysia suggested that most public universities in Malaysia have yet to implement comprehensive strategic IT plans (Ismail *et al.*, 2007) and the extent, mode and quality of IT utilization



in the Malaysian academic environment are still behind those of developed countries (Vicziány and 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, several empirical studies have been conducted to investigate this issue (Ishak and Alias, 2005; Mohd Basir and Nordin, 2006; Selamat *et al.*, 2006; Suhaimi *et al.*, 2006; Ismail *et al.*, 2007). However, like many other studies, most of these studies investigated either the perceptions of university planners toward strategic IT plan or proposing a new strategic IT model. While findings from these studies provide important insights into the status of strategic IT planning among Malaysian universities, they could not explain in greater depth the problems faced by the universities (Galliers, 1992).

Therefore, using a case study approach, this study aims to investigate in greater depth the current practices of IT management of a public university in Malaysia (hereafter referred to as The University). To understand better the problems faced by Malaysian public universities, this study will specifically examine current IT organizational team and funding structure, IT governance practices, and how IT is being used by the university management to make university decisions. Findings from this study are very important to the Malaysian public universities if they want to move into the top tier and be among the world top-ranked universities.

Many researchers have suggested that 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 and Palmer, 2001). In case of The University, being classified as a specialized university dedicated for management studies, The University needs to rise to a position of absolute leadership among Malaysian public universities in the management and creative use of IT, to achieve its mission as a first choice university in Malaysia. While findings of this study are deemed crucial for Malaysia and The University in particular, it is also important for other universities in developing countries of similar interest and environment.

Literature review

McCredie (2000) argued that organizations would be left behind if they fail to strategically plan IT in their organizations. 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 (Galliers *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 such as Rowley *et al.* (1997), McCredie (2000), McRobbie and Palmer (2001), Ishak and Alias (2005), and Ismail *et al.* (2007). However, results of these studies suggest that most universities lack understanding of how to

develop an IT strategic plan (Titthasiri, 2000). Results from Semiawan and Middleton's (1999) study revealed that, while users of campus information system in Indonesian university are fairly satisfied with the services provided, analysis of policy documents indicated little information systems planning as part of the university strategic planning. Similarly, Ismail *et al.* (2007) revealed that, despite the claim by the responding universities that they have implemented or in the process of implementing IT strategic plan, analysis of policy documents and interviews showed the contrary.

In this regard, several researchers including those in Malaysia have proposed a strategic IT model for use in the specific context of higher education institutions. For example, based on combination of a survey and a case study approaches, Tithasiri (2000) proposed IT strategic planning processes for use by Thailand higher educational institutions. Similarly, Ishak and Alias (2005), Suhaimee *et al.* (2006), and Mohd Basir and Nordin (2006) proposed a SISP methodology to guide IT implementation in Malaysian higher educational institutions.

However, despite the importance of a comprehensive strategic IT plan to the success of IT implementation, 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 implementing it (Devlin and Meyerson, 2001). For example, Stamati *et al.* (2005) revealed that despite painstaking planning that usually precedes all large IT development efforts, 80 percent of new systems are delivered late and over budget, frequently with functionality falling short of contract.

In many cases, this gap exists due to the poor IT planning team organizational structure especially in a highly complex organization such as academic institutions (Devlin and Meyerson, 2001; Nakatani and Chuang, 2005). Other dominant influencing factors identified by previous researchers include lack of commitment from the senior management, bureaucratic structure, resistance to change, tight budget, and lack of internal expertise (Smits and Van de Poel, 1995; Lederer and Sethi, 1998; Teo and Ang, 2001; Nakatani and Chuang, 2005). Ismail *et al.* (2007) suggested that to be successful, the implementation of strategic IT plans must be supported by a solid IT structure, funding, and governance, 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.

Information technology and higher education in Malaysia

Malaysia, since the inception of Vision 2020 in 1991 and Multimedia Super Corridor (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). Both policies placed a priority on Malaysia to create a new generation of knowledge workers. The government via Malaysian Administrative Modernization and Management Planning Unit (MAMPU) launched the Malaysian Public Sector Information and Communication Technology Strategic Plan in August 2003 (MAMPU, 2003). The guideline is to ensure that the planned IT initiatives are parallel to the public sector's IT vision, which is to provide efficient and quality services.

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". Results from the study revealed Malaysian universities have not taken up IT in innovative pedagogical way; do not have IT strategies and those that have encouraged IT have done so in an ad-hoc manner; IT approaches lack administrative support and training; and IT initiatives had little impact on the way university management makes decisions. Therefore, headed by Universiti Teknologi Malaysia, all public universities together with the Ministry of Higher Education have worked together to come up with a specific guideline, named "KICTSP IPTA Strategic Plan", for use by Malaysian higher education institutions. While this new guideline could help university planners strategically plan and implement IT in more innovative ways, it must be well-supported by a solid IT structure, funding and governance system to succeed (Ismail *et al.*, 2007).

Methods

The aims of this study are to investigate in greater depth current IT management practices, and to identify its impact on campus information system. To achieve these objectives, a case study approach is adopted as it enables the capture of reality in considerably greater detail than is possible with the survey approach (Galliers, 1992). For this purpose, a public university (referred to as The 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. Among the main questions asked were:

- How IT decisions are made and priorities set?
- By whom?
- How is funding allocated for IT spending?
- How are IT functions/services and staff currently organized?

The interview sessions seek to understand existing IT governance, funding and structure and their impact on campus information systems at The University.

The second interview sessions were conducted with several Faculty Deans, Faculty Deputy Deans, Faculty Head of Department, and Directors of Departmental Units 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. Among the questions asked were:

- How IT decisions at your Faculty/Department are made and priorities set?
- How is funding allocated for IT spending?
- How IT is being used to make decisions at your Faculty/Department?
- How do you think your participation would contribute to the campus information system?

A series of interviews were also conducted with several lecturers and administrative staff members to understand the underlying problems faced by users of campus information systems. Among the questions asked were:

- How do you think campus information system had served you in your daily work?
- How do you think that campus information system can better serve you in the future?

As opposed to the qualitative method, this approach allows a richer appreciation of the process by which IT planning process emerges and how campus information systems were developed in the university. Finally, information was also gathered from the university web sites and printed reports.

The University profile

The University was established in 1984, with a unique mission to provide academic excellence in the areas of business management, information technology and quality management education. The objectives of The University are to be the centre of excellence for management, the reference centre in all aspects of management, and the premier resource centre in the field of management. It comprises 13 Academic Faculties, eight 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 1,150 lecturers and 1,300 administrative staff members.

Information technology department

The University IT Department was established in 1998 as a result of the university effort to fully computerize major activities of The University. The department is divided into four main service areas:

- (1) academic computing and knowledge management systems;
- (2) user support service;
- (3) IT infrastructure; and
- (4) and administrative application.

Supported by 90 dedicated IT officers, computer technicians, and data processing operators, its main responsibilities include providing IT facilities for teaching, research and administration activities; developing and maintaining computer-based information systems for the university; planning, implementing and managing campus network system; assisting the campus community in the use of IT; providing software training, support and consultation; and maintaining computer resources. It is also responsible for the campus IT plans.

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:

- (1) university management information system; and
- (2) data warehouse information system.

University Management Information System, which is an integrated online transaction processing system, provides the university with an electronic management environment. Its main application systems include Personnel Information System; Academic and Student Records Information System; Students Affairs System; Postgraduate Information System; Research and Consultation System; e-Academic; and Integrated Finance and Accounting System. Data Warehouse Information System, on the other hand, is an online analytical processing system, which extracts and combines data from online transaction processing system for decision-making. This system, which is still at its infant stage, consists of Strategic Information System application, while other applications are still at the planning stage.

Information technology infrastructure

The University is leading other Malaysian universities in terms of IT 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. The University has also established more than 70 wireless access points and base stations networks, providing pervasive coverage at the maximum transmission speed of 54 Mbps. The University allocated an annual IT budget of RM5million to the IT Department. 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 computers to students is 1:11 and 1:1 for administrative staff members. Ironically, The University does not have an allocation of personal computers for lecturers. Moreover, while IT Department is responsible for maintaining campus IT infrastructure including personal computers, this does not include computers personally owned by lecturers used for office works.

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 the university Vice Chancellor. Members of the committee include Deputy Vice Chancellors, Directors of Departmental Units, and Faculty Deans. Director of IT Department acts as a secretariat to the committee. The committee normally meets twice a year to discuss and approve IT proposals submitted by User Departments and to plan for future IT development, which commonly span a period of six months. In addition to the IT Steering Committee, it has a 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 The University. 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, will be assigned to each sub-committee. As an *ad hoc* based committee, there is no schedule meeting but the committee would meet whenever problems exist.

Analysis of structure, planning, funding and governance

The previous sections provide an overview of The University and its IT Department, campus information system, IT infrastructure, and IT planning team structure. This section discusses in greater-depth issues relating to The University IT structure, funding, and governance and their implications to the campus information systems. Analysis of the university 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. In some cases, plans were acted on, in other cases they were overtaken by events, while in others there was no action at all.

IT structure

This study found that current organizational structure of the IT planning team, the roles and responsibilities of existing committees 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 suggestions, 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 ...

Similar to Fallshaw's (2000) argument, 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.

IT plan

Analysis of current university organizational structure and IT planning team structure 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 and his staff members. 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 ...

Similar to Fallshaw's (2000) comment, he 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 Paré (1992) argued that organizations must consider not only the technological issue, but also informational, functional, and managerial to developed 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 such as e-Academic, Research and Consultation System, and Personnel System 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 suggestions, he offered:

[...] 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. Decisions regarding the architecture or design of campus information systems 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 suggestions, he replied:

[...] 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 architecture standards, systems integration or university benefits has resulted in an 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. Decision-support feature in the campus information system is almost non-existent.

IT funding

Analysis of IT planning team structure also revealed that The University lacks a common approach to decision making relating to IT funding strategy. 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. For example, while one of the strategies pursued by the university is to provide greater opportunities for innovations in teaching and learning styles, basic computing facilities are still at the minimum level. 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 in a formal proposals format, are discussed and debated by the IT Steering Committee. However, decisions made by the committee will not culminate directly in 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 suggestions, 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 ...

IT governance

Director of IT Department, while acknowledging the importance of IT governance to an effective campus information system, admitted that the issue is not on the priority list. IT governance issues like strategic alignment, value delivery, and performance measurement are not given due consideration due to lack of time and expertise. He complained:

[...] my staffs have already been buried with so many IT projects, so it is a bit unfair to shoulder them with extra burden ... many of them are not given proper training other than the technological aspect ... however, I believe that we need a committee to look into the IT governance issue ...

Towards reaching a solution

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

IT 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. Therefore, our first recommendation to The University is to restructure its IT planning team structure. The proposed structure exhibited in Figure 1 is drawn after carefully reviewing existing literature (Oh, 1995; Semiawan and Middleton, 1999; Nickols and Thirunamachandran, 2000; Titthasiri, 2000; Ishak and Alias, 2005; Suhaimee *et al.*,

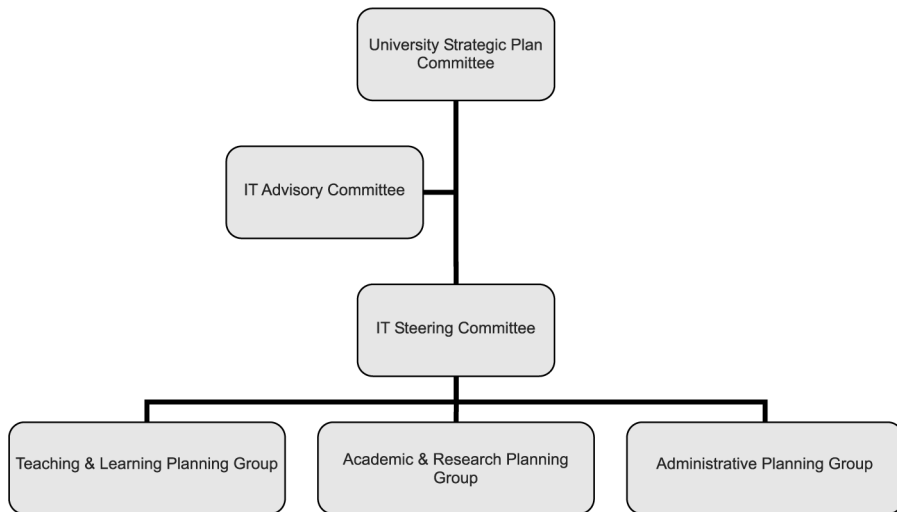


Figure 1.
Proposed IT planning structure team

2006; Mohd Basir and Nordin, 2006) and some of the structures adopted by universities that had successfully implemented strategic IT plan such as Indiana University (Indiana University, 1998), California State University (California State University, 2006), and University of California Berkeley (University of California Berkeley, 2006). 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.

IT advisory committee. The committee will act as a governing body of all IT-related activities in The University. 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.

IT 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.

It is very important for The University management to recognize that, to make The University a leader, they must plan for IT development on a regular basis, both technically and financially. What is important is for IT strategies to support The University broad strategic plans. While The University needs to improve the integration aspects of existing campus information systems, it also needs to give due consideration to the Enterprise Data Warehouse (EDW) to support campus wide decision making and related information needs such as reporting, analysis, and planning discussed in the previous section. This is important, as EDW would integrate divergent information from various systems to enable users to quickly produce powerful *ad hoc* queries and perform complex analysis. The vision for the EDW should be to provide information that is secure, accurate, timely, consistent, integrated, appropriately detailed, well-organized, and easy to obtain so that people throughout the campus such as staff, faculty, researchers, and executive-level administrators, will be better able to assess their needs, set priorities, understand the impact of change, and fulfill their programmatic responsibilities more efficiently.

IT task force. Each planning group should correspond to the major divisions of The University management 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 planning group are discussed below.

- *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.
- *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 at The University. 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.
- *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 e-mails, 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.

IT governance

Given a more systematic IT structure team with clear roles of responsibility of, among others, information, business processes, applications, and infrastructure, The University should then focus on the issues of governance. Gray (2004) defined IT governance as management, policies and procedures used to direct the IT function within the organization, the ability to achieve monitoring and control of the function, identifying risks while achieving the organizational strategic aims and objectives. IT governance is important as it will ensure that significant amount of money invested in IT would be able to generate the expected business value and the mitigation of risks associated with IT (Williams, 2006). Proper IT governance system can help organizations manage IT external costs and assess the value of internal IT overheads by focusing on the efficient running of the IT function, the alignment of that function with business objectives, the development of an IT strategy, and the introduction of necessary control and monitoring to provide visibility and feedback (Gray, 2004). The return on investment (ROI) of an organization IT governance program will therefore be derived from a better-organized and more effective IT function, and the ability for senior management to understand and address these areas (IT Governance Institute, 2003).

The University should give due consideration on the following five important aspects of IT governance: strategic alignment, value delivery, risk management, resource management, and performance management in all areas of IT developments (Gray, 2004). Strategic alignment focuses on the issue of aligning IT strategies with the university strategies to provide collaborative solutions to the campus community. Value delivery concentrates on optimizing expenses and proving the value of IT. Risk management addresses the safeguarding of IT assets, disaster recovery and continuity of operations. Resource management optimizes knowledge and IT infrastructure. Finally, performance measurement would help the university tracks project delivery and monitors IT services.

Limitations and future research opportunities

Several methodological limitations influenced findings of this study. First, the lack of respondents' knowledge on IT governance, funding and structure issues may affect the answers provided by the respondents. The second limitation relates to the lack of documented reports available to validate the claims made by respondents. Few reports available also lack descriptions covering data regarding university IT governance, funding and structure. The final 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. Therefore, the study may be regarded as exploratory. Future research needs to address a mechanism for establishing a causal relationship of the effect of IT governance, funding and structure on the effectiveness of campus

information system, and to find better ways of assessing the value of information provided by the campus information system. Nevertheless, the study provides detail explanations of the process of IT management, and an investigative framework for further analysis of the issues of IT governance, funding and structure in a university.

Conclusions

The main objective of this study is to investigate in greater depth the current practices of IT management (governance, funding and structure) and to identify its impact on campus information system of one of the public universities in Malaysia. While The University is already enjoying a relatively good IT infrastructure, the main challenge is to harness that infrastructure to meet the needs and expectations of students, lecturers, administrative staff members and university management. Findings from this study suggested that there is still room for improvement in the areas of decision support systems and IT governance, funding and structure. In order to be a leader in the use and application of IT, The University needs a more 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 can be a vital part of The University plan to move forward to the next level until it is recognized as one of the world-class universities. A comprehensive strategic IT plan 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. All these will require concerted efforts from the campus community including management, users (students, lecturers and administrative staff members) and IT service providers. 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 within the university 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. In conclusion, findings from this study is hoped to have provided some useful insights into the existing IT management for The University to take appropriate actions.

References

- Basu, V., Hartono, E., Lederer, A.L. and Sethi, V. (2002), "The impact of organizational commitment, senior management involvement, and team involvement on strategic information systems planning", *Information and Management*, Vol. 39 No. 6, pp. 513-24.
- California State University (2007), "Aligning with the future: the IT strategic plan", available at www.csuchico.edu/ires (accessed 31 July, 2007).
- Devlin, M. and Meyerson, J. (2001), "Strategic and financial planning for information technology in higher education", *Forum Strategy Series*, Vol. 3, pp. 127-40.

- Fallshaw, E.M. (2000), "IT planning for strategic support: aligning technology and vision", *Tertiary Education and Management*, Vol. 6 No. 3, pp. 193-207.
- Galliers, R.D. (1992), "Choosing information systems research approaches", in Galliers, R. (Ed.), *Information Systems Research – Issues, Methods and Practical Guidelines*, Blackwell Scientific Publications, Oxford.
- Gayle, D.J., Tewarie, B. and White, A.Q. Jr (2003), "Governance in the twenty-first century university: approaches to effective leadership and strategic management", *ASHE-ERIC Higher Education Report*, Vol. 30 No. 1, pp. 1-132.
- Gray, H. (2004), "Is there a relationship between IT governance and corporate governance", unpublished Master's thesis, UK.
- Hevner, A.R., Bern, D.J. and Studnicki, J. (2000), "Strategic information systems planning with box structures", *Proceedings of the 33rd Annual Hawaii International Conference on System Sciences*, Vol. 1 No. 4, pp. 101-20.
- Indiana University (1998), *Information Technology Strategic Plan: Architecture for the 21st Century*, available at www.indiana.edu/~ovpit/strategic/ (accessed 30 June 2007).
- Information Technology Governance Institute (2003), *Board Briefing on IT Governance*, 2nd ed., IT Governance Institute, available at: www.itgi.com (accessed 15 August 2007).
- Ishak, I.S. and Alias, R. (2005), "Designing strategic information systems planning methodology for Malaysian institutions of higher learning", *Issues in Information Systems*, Vol. VI No. 1, pp. 325-31.
- Ismail, N.A., Raja Mohd Ali, R.H., Mat Saat, R. and Hsbollah, H. (2007), "Strategic information systems planning among public institutions of higher learning in Malaysia", *Campus-Wide Information Systems*, Vol. 24 No. 5, pp. 331-41.
- Juhary, J. (2005), "Malaysian defense and e-learning", *US-China Education Review*, Vol. 2 No. 9, pp. 35-41.
- Lederer, A.L. and Sethi, V. (1988), "The implementation of strategic information system planning methodologies", *MIS Quarterly*, Vol. 12, pp. 445-61.
- McCredie, J.W. (2000), "Planning for IT in higher education: it's not an oxymoron", *Educause Quarterly*, Vol. 4, pp. 14-21.
- McRobbie, M.A. and Palmer, J.G. (2001), "Strategic and financial planning for information technology in higher education", *Forum Strategy Series*, Vol. 3, pp. 127-40.
- MAMPU (2003), *Standard, Policies and Guidelines: Malaysian Public Sector ICT Strategic Planning Guide*, Version 1.0, MAMPU, Putrajaya.
- Mohd Basir, H. and Nordin, A. (2006), "Investigating applicability of SISP success model in Malaysian public institutions of higher learning", *Proceedings of International Conference on ICT for the Muslim World, Kuala Lumpur*.
- Nakatani, K. and Chuang, T. (2005), "The development of a datamart system at a public institution", *Journal of Information Technology Case and Application Research*, Vol. 7 No. 4, pp. 30-52.
- Nickols, K. and Thirunamachandran, R. (2000), "Strategic planning in higher education: a guide for heads of institutions, senior managers and members of governing bodies", Northern Ireland.
- Oh, D. (1995), "Developing a campus-wide information system: a global experience", *Campus Wide Information Systems*, Vol. 12 No. 1, pp. 15-30.
- Raymond, L. and Paré, G. (1992), "Measurement of information technology sophistication in small manufacturing businesses", *Information Resources Management Journal*, Vol. 5 No. 2, pp. 4-16.

- Rowley, D.J., Lujan, H.D. and Dolence, M.G. (1997), *Strategic Change in Colleges and Universities*, Jossey-Bass, San Francisco, CA.
- Selamat, M.H., Suhaimi, M.A. and Hussin, H. (2006), "The strategic information systems planning and strategic information security planning implementation in Malaysian government agencies", *Proceedings of International Conference on ICT for the Muslim World, Kuala Lumpur*.
- Semiawan, T. and Middleton, M. (1999), "Strategic information planning and campus information systems development in Indonesia", *Campus-Wide Information Systems*, Vol. 16 No. 2, pp. 70-6.
- Shin, N. (2001), "The impact of information technology on financial performance: the importance of strategic choice", *European Journal of Information Systems*, Vol. 10, pp. 227-36.
- Smits, M.T. and Van der Poel (1996), "The practice of information strategy in six information intensive organizations in The Netherlands", *Strategic Information Systems*, Vol. 5, pp. 93-110.
- Stamati, T., Kanellis, P. and Martakos, D. (2005), "Challenges of complex information technology projects: the MAC initiative", *Journal of Cases on Information Technology*, Vol. 7 No. 4, pp. 46-63.
- Suhaimee, S., Abu Bakar, A.Z. and Alias, R. (2006), "Knowledge, information and communication technology strategic planning methodology for Malaysian public institutions of higher education: a study", *Proceedings of International Conference on Knowledge Management in Institutes of Higher Learning, Bangkok*.
- Teo, T.S.H. and Ang, J.S.K. (2001), "An examination of major IS planning problems", *Information Management*, Vol. 21, pp. 457-70.
- Titthasiri, W. (2000), "Information technology strategic planning process for institutions of higher education in Thailand", *NECTEC Technical Journal*, Vol. 3 No. 11, pp. 153-64.
- University of California Berkeley (2006), *Information Technology at UC Berkeley: Governance, Structure and Funding*, Final Report and Recommendations, available at: http://technology.berkeley.edu/pdf/IT_Report.pdf (accessed 30 November 2006).
- Vicziany, M. and Puteh, M. (2004), "The multimedia supercorridor and Malaysian universities", *Proceedings 15th Biennial Conference of the Asian Studies Association of Australia, Canberra, Australia*.
- Williams, P. (2006), "A helping hand with IT governance", *Computer Weekly*, September 19, p. 26.

Further reading

- Galliers, R.D., Swatman, P.M.C. and Swatman, P.A. (1995), "Strategic information systems planning: deriving comparative advantage from ED", *Journal of Information Technology*, Vol. 10, pp. 149-57.

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