

Review

Information and communication technology for participatory based decision-making-E-management for administrative efficiency in Higher Education

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Though many organizations have developed their own approaches in ensuring reliable decision making processes, not many have used technology to ensure effective participatory based decision making. This paper presents a model that incorporates reliable participatory based decision making practices and quality management indicators through strategic use of technology, an initiative of a faculty in a higher institution of learning. The model, called QuEST (Quality E-management System), integrates web-based technologies into an interconnected system to enable decision making by all stakeholders at multi levels of responsibility. Discussion in this paper is first focused on the bureaucracy and participatory models of decision making, then moves on to the research context, description of QuEST and discussion of the features and functions of the system. The paper concludes with an assessment of the potentialities of the system in taking an organization's internal and external processes to the next level, using technology to ensure evidence based decision making, to interconnect staff roles and responsibilities and to use feedback to take appropriate action. Implications are drawn for knowledge advancement, policy making and practice.

Key words: Participatory based decision making, E-management, accountability, efficiency, internal and external processes.

INTRODUCTION

Decision-making and its role in organizations can be viewed in a number of ways. Kreitner (1999) believes good management can be defined in terms of good coordination of an organization's employees. Mullins (2000), Moorhead and Griffin (2000) posit that decision-making is one of the first and a crucial step in management. Criteria of decision and its nature vary in terms of kinds and types. For instance, the theory of bureaucracy proposed by Weber (1947) is widely criticized but replacement of the model has yet to be offered. Scholars and practitioners often use the term 'red tapeism' to strongly criticize Weber's model. While the scientific management model proposed by Taylor (1917) stresses the need for employees' involvement in the decision making process, the model is actually similar to the bu-

bureaucracy model. Of late, two new approaches – the universal and the participatory based management models are being advocated by many scholars (Mullins, 2000; Miller, 1995; Weaver, 1974).

Decision-making, monitoring and controlling, regulatory approach and governance are the common factors of all these models. However, the fact remains that the informal approaches and actions of those in management are vital in achieving organizational goals, aims and objectives. As such 'accountability' is a major concern in the management process and this is often lacking in participatory approaches resulting in its replacement with the 'bureaucracy model' in actual practice. Yet many countries practicing the bureaucracy model of management failed to ensure a 'management of accountability' because of corruption, lack of inter departmental coordination and weak organizational culture. On the other hand, many other countries adopting a bureaucracy model subsidized by different kinds of participatory tools with a decent level of organizational, cultural and national

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tradition enjoy greater success (Alam, 2003).

The participatory model of decision making

Proponents of the participatory model argue that the real implementers of a decision are workers and various levels of employees; as such the participatory model not only facilitate in the implementation of decisions but also help in making communication among those involved in the process easier. Since the criteria of participation processes and their schemata have evolved out of historical social practices, interpretation of social events is guided and constrained by the prevailing rationality which itself reflects the dominant constellation of power. Even within the model of bureaucracy, there remains still some space for participation. Currently, a number of tools are used to ensure participation in decision making (consultation, delegation, meeting and committees) and the participation process in decision-making enjoys many advantages. They are 'greater pool of knowledge', 'different perspectives', 'greater comprehension' 'increased acceptance and motivation', 'training ground' and 'empowerment'. It is important to note that there is also an equally significant number of disadvantages in making decisions through the participation process. The disadvantages are, 'lack of accountability' (Handy, 1993, Kreitner, 1999), 'social pressure' (Kreitner, 1999), 'domination by a vocal few' (Morgan, 1986), 'goal displacement' (Handy, 1993), 'groupthink', (Miller, 1995) among others. In some instances, it has been noted that the participation approach in decision making ensure ostensible democratizing that results in a decision that is detrimental to the organization (Alam, 2003).

Objective of this project and research questions

In this age of innovations in information technology and well-developed communication systems across cultures and landscapes, the world is becoming the centre for the sharing and exchange of knowledge and excellence in scholarship and in values. Information technology helps us to collect, synthesize and analyze a huge amount of open-ended and close ended data while maintaining a high level of ethical practice as well as ensuring confidentiality. Further works on these data help to introduce a research environment and culture to facilitate the running of organizations. Keeping this view a software is designed for an E-management system named 'QuEST' (Quality E-management System) in order to support the management activities of a faculty in a Malaysian University. The E-management system is designed to manage various Macro and Micro activities efficiently. The Macro aspect include Decision-making and planning, Strategic management and policy, controlling and evaluating and Governance and regulatory control.

Within the scope of this paper, we aim to focus the

discussion on the important role of this system in ensuring a scientific participatory approach in decision-making while addressing the major constraints faced by current models using the participatory approach. The results and discussion section of this paper aims to address the question of how a faculty can overcome barriers that are normally experienced when organizations use the participatory approach in making decisions.

The sub-questions addressed are as follows:

How does QuEST ensure accountability in the decision-making and management process?

How does QuEST manage activities that are currently time-consuming to ensure participatory based decision making?

How does QuEST ensure bias-free decision (avoiding grouping and lobbying)?

How does QuEST address negative aspects of participation in decision-making?

How does QuEST identify activities that are the root cause of problems/issues?

What is the statistical parameter used in this system (QuEST) to identify or analyse correlated factors?

How does QuEST address ethical and confidentiality issues?

CONCEPTIONAL FRAMEWORK AND LITERATURE REVIEW

Decision and participation

The key words of this research topic are 'decision-making' and 'participation', so before discussing the role of participation in decision-making let us explain the concept of decision-making and participation.

"If I had to sum in one word the qualities that make a good manager, I would say that it all comes down to decisiveness" (Iacocca, 1984). Before discussing what decision-making is, let us discuss what decision is, because decision-making is a process of deciding. Collins (1999) defines decision as the act of making up one's mind by collecting, sharing and gathering significant ideas from different sources. Moreover, Longman (2000) defines that "decision as a choice or judgment that you make after a period of discussion or thought". Longman's definition is very clear but it gives rise to a question on the definition of deciding or decision-making. In the end decision-making is to make a choice or judgment about something, especially after a period of not knowing what to do or in way that ends in disagreement (Alam 2008). Moreover, Fullan (1982) asserts that decision-making is the process of identifying and choosing alternative courses of action in a manner appropriate to the demand of the situation. The act of choosing implies that alternative courses of action must be weighed and weeded by sharing. So there is a very strong relationship between decision-making and participation (Alam, 2008).

We will now put forward the idea of participation in decision-making.

Participation is a word that tries to show democratic practice in educational management but it is still a rare occurrence in practice (Bonner, 1974, Padley, 1974). But to get a clearer sense of what participation is, it is important to distinguish between one-person rule and different levels of participation, that is, consultation, delegation and participation.

Different concepts of participation in decision-making

Back in 1988 Eisenhardt and Bourgeois asserted that there is a very strong relationship between decision making and participation - decision-making being the process of identifying and choosing alternative courses of action in a manner appropriate to the demand of the situation. As such the act of choosing implies that alternative courses of action must be weighed and weeded by sharing. The idea of participation in decision-making is inviting. In an organization, the head may think about an issue, revises it, makes a decision on his/her own and then announces it. This kind of circumstance is known as a one-person rule in the field of educational management (Carmeli, 2008). Later the consultation system was introduced to replace it. Consultation in decision-making refers to a situation where the head seeks others' opinions and recommendations on an issue but finally makes his own decision (Edmondson et al., 2003). However, a situation can arise when the head is not able to consult with everyone to get a unanimous recommendation. He/she then is compelled to make a decision that may not be agreeable. This implies that the system of consultation may end with the head making his/her own decision.

On the other hand, delegation in decision-making refers to the head empowering someone to act on his/her behalf to make certain decisions (Weaver, 1974). Someone can be one person or a group of people, ex officio (Head of department, deputy head, staff representative and committee) or an individual. It can be ad hoc for one particular decision or for a stated time or covering the stated sphere such as curriculum, teaching, research etc. However, depending on the situation, delegation sometimes turn into consultation and thereafter into one-person rule (Binkley, 1997).

Advantages and disadvantages of participation

In the discussion on participatory model on page two, we have pointed out some merits and demerits of the participatory model in decision-making. The key objective of this research is to maximize the benefits and minimize the threats caused by participatory based decision-making through an intelligent use of information and

communication technology. So the following section elaborates the advantages and disadvantages caused by the traditional participatory approach which is currently in practice.

Advantages of participation in decision-making

Here, some key advantages of participation in decision-making for educational management are examined.

Firstly, 'greater pool of knowledge': A group can take much more information and experience to bear on a decision or problem than can an individual acting alone. Consequently, the decision will not only be healthy for quantitative weight but be also vigorous for qualitative weight. This means to ensure good qualitative weight by participation, it is important to consider those who will participate in decision-making. Nutt (2004) and Barnes (1994) posit that the people who have the knowledge of contribution, have the more accessible right to management and have the responsibility for implementing the decision taken, they will then be the more accurate participants in decision-making. So the participation of lecturers in decision making, to some extent will be important in achieving the institutional aims.

The second point is, 'different perspective': Individuals with varied experience and interests help the group see decision situations and problems from different angles. This may help to reveal the probable disadvantages/demerits of the decision and also to find out how the decision will work out (Simsek et al., 2005; Alam and Khalifa, 2009).

Another point is, 'greater comprehension': Those who personally experience the give-and-take in group discussion about alternative courses of action tend to understand the rationale behind the final decision (Kreitner, 1999).

Another attribute of participation in decision making is, 'increased acceptance and motivation': "Those who play an active role in group decision-making and problem solving tend to view the outcomes as 'ours' rather 'theirs'" (Kreitner, 1999). This motivates the participants so it helps the implementation of decision taken (Fullan, 1991).

'Training ground' is yet another advantage. Less experienced participants in group action learn to cope with group dynamics by actually being involved. Involvement helps them to learn management and will also help the institute to sort out the future confident and competent head.

Finally, the point raised by Karl (1995) is very important. She concludes that participation in decision-making can bring about empowerment which causes decentralization of power and which can mobilize the activities of the institution. She notes that by providing empowerment through participation, people feel appreciated. Her writing on women participation in decision-making concludes that women participation in decision

making especially where women are often neglected can bring a good working atmosphere to inspire women.

Disadvantages of participation in decision-making in practice, sometimes some advantages of participation may turn out to be disadvantages and also sometimes disadvantages may prove to be advantages (Ling et al., 2008).

Disadvantages of participatory approach

The following is an analysis of the key disadvantages of participation in decision-making.

First is 'accountability': If the head no longer has the power to make the final decision, he/she can not be responsible. He/she is also not accountable for the decision made (Kozlowski and Ilgen, 2006). Moreover, Alam (2008) cautions that without accountability, management does not exist in an institution. Beal et al. (2003) concluded that often the head is no longer interested in answering the question of decisions made via participation. He also notes that in this situation nobody would like to work as a motionless head. Kreitner (1999) reminds us that when a decision is appreciated, every body likes to enjoy the credit but if anything goes wrong, nobody is enthusiastic to take the responsibility. As it is clear that accountability is vital in good management, when accountability is lost, the decision may affect the institution as a whole (Handy, 1993; Bass, 1983).

The second point against participation in decision making is 'social pressure; "unwillingness to rock the boat and pressure to conform may combine to stifle the creativity of individual contributions" (Kreitner, 1999). Under these circumstances nobody likes to brainstorm to find the best decision. Everybody usually thinks that somebody else will do that.

Thirdly 'domination by a vocal few': Sometimes the quality of group action is reduced when the group gives in to those who talk the loudest and longest (Carmeli and Schaubroeck, 2006).

Fourthly 'logrolling: "political wheeling and dealing can displace sound thinking when an individual's pet project or vested interest is at stake" (Kreitner, 1999). This situation can bring grouping and lobbying in decision-making which pollutes the institutional atmosphere (Alam, 2003). Alam discusses how third world countries especially suffer from these problems. In the report he concludes that one of the reasons for the chaotic atmosphere in Higher Education in Bangladesh is political grouping and lobbying in decision-making - teachers and students are controlled by political leaders.

The fifth point is, 'goal displacement': Sometimes secondary considerations such as winning an argument, making a point, or getting back at a rival displace the primary task of making sound decisions or solving a problem (Chen and Tjosvold, 2005).

Another important point is, 'groupthink': sometimes cohesiveness in groups lets the desire for unanimity

override sound judgment when generating and evaluating alternative courses of actions (Miller, 1995).

The final point is time: participation accesses a lot of people's time so the summation of the decision's value may be less than that of everyone's time (Alam, 2008).

There are a good number of advantages as well as disadvantages. Despite these limitations, participation often makes the institution a happy and lively place for employees (Kreitner, 1999). Moreover, Whitaker (1993) observes that the leader with his/her leadership style can levy the maximum benefit from participation by addressing the possible disadvantages and by properly enhancing the advantages.

Decision-making, monitoring and controlling, regulatory approach and governance are the common factors of all these methods in leadership. However, the fact remains that the informal approaches and actions of those in management are vital in achieving organizational goals, aims and objectives (Alam, 2009a). As such 'accountability' is a major concern in the management process and this is often lacking in participatory approaches resulting in its replacement with the 'bureaucracy model' in actual practice (Alam et al., 2009a). Yet many countries practicing the bureaucracy model of management failed to ensure a 'management of accountability' because of corruption, lack of inter-departmental coordination and weak organizational culture. On the other hand, many other countries adopting a bureaucracy model subsidized by different kinds of participatory tools with a decent level of organizational, cultural and national tradition enjoy greater success (Alam, 2003).

A means to maximizing the benefit and minimizing the threats of participatory approach

Fullan (1991) theorized that decision-making is the process of identifying and choosing alternative courses of action in a manner appropriate to the demand of the situation. The act of choosing implies that alternative courses of action must be weighed and weeded by sharing. As such there is a very strong relationship between decision-making and participation.

Participation can be defined as a kind of considerable freedom and considerable power of practice (Weaver, 1974). Participation in decision making is advantageous as there is greater pool of knowledge. A group can take much more information and experience to bear on a decision or problem than can an individual acting alone. So the participation of lecturers in decision making to a certain extent will help faculty management achieve the institution's aims. In addition, individuals with varied experiences and interests help the group see decision situations and problems from different angles (Boot and Reynolds, 1997).

As mentioned before, in practice, there exist some issues of participation in decision-making. However if these issues are addressed, participation in decision-

making can be maximized (Weaver, 1974; Thomas et al., 1987).

From the discussion of the previous section, it is worth noting that to get maximum benefit from participation; the institution must receive the optimum utilities from all participatory levels. This means that if properly monitored we can enjoy maximum profit of participation in decision-making (Ling et al., 2008). This raises two major questions, what is to be cautiously observed and who will be the observer? Selection of participants for specific decision-making is not only crucial but is also a major concern to ensure success. So keeping in mind the benefit for the institution, if the participants are selected then questions will be raised about the methods of participation. As mentioned before, time is very important and there are a number of advantages and disadvantages concerning participation so the method of selection for participation is also one of the key factors. Ultimately, all these processes demand good coordination.

In educational management, every institution has an appointed head who is paid duly for the accountability of the whole institute (Stogdill, 1984; Whitaker, 1993). So the head has to be a person who has leadership qualities because he/she is responsible to answer all the questions raised. Either the specific function is done by coordination of all employees or done by him/her (Whitaker, 1993). So in order to obtain maximum benefit through participation, it is very important for the institution to have an acceptable leader. His/her leadership style can secure the significance of real participation. Leadership is the performance or acts which assist the group for the necessary management steps in achieving institutional goals (Bottery, 1992). Hence, good leadership can ensure considerable participation in decision-making.

Participation in decision-making enliven all the members of an organization or institution. When all the members are enlivened, it becomes easier for the heads to run the institution smoothly. Though participation has many positive aspects, it has some demerits too. So, to make participation fruitful, all the members of the institution have to be devoted.

Currently leadership is used as the key parameter to maximize the benefit and minimize the threats of participatory approach to decision making. However, leadership approach is not error free as it is not prejudice free and it also consumes a high volume of time and resources. Thus, it is argued that in the 21st century, intelligent use of Information Technology (IT) will result in decent participatory based decision-making reducing poor utilization of time and resources but ensuring more bias free and accountable participation (Alam, 2009b).

Research context - QuEST

E-learning, E-governance, E-management, E-sale and Sale management are new concepts increasingly gaining

acceptance. Information technology helps us to collect, synthesize and analyze a huge amount of open ended and close ended data while maintaining a high level of ethical practice as well as ensuring confidentiality. Further works on these data help to introduce a research environment and culture to facilitate the running of organisations. In the field of education, advances have been made, for instance the development of an educational information service platform based on WebGIS (Yue-Feng et al., 2009) and the introduction of an ontology based document driven memory adapted to an e-learning situation (Hunyadi and Iulian Pah, 2009).

Researchers in this team are both academics and practitioners of management in a higher institution of learning. Working alongside a team of professional computer programmers they designed an E-management system named 'QuEST' (Quality E-management System) in order to support the management activities of a faculty in a Malaysian University. The E-management system is designed to manage various Macro and Micro activities efficiently. The Macro aspect include Decision-making and planning, Strategic management and policy, Controlling and evaluating and Governance and regulatory control. On the other hand the Micro involves staffing, financing, curricula design process, instructional materials and methods as well as other daily activities and responsibilities.

Within the scope of this paper, we aim to focus the discussion on the important role of this system in ensuring a scientific participatory approach in decision-making while addressing the major constraints faced by current models using the participatory approach. Since the main aim of this project is to ensure a greater benefit of participatory based decision-making through a decent and ethical use of information and communication technology (ICT), the discussion that follows provides the answers to our research questions outlined earlier.

Before, presenting the findings, we firmly acknowledge that while using ICT for business organizations and their decision-making processes is a recent trend, this kind of initiative for educational management is very contemporary. Both management and ICT professionals strive to develop systems that are highly efficient and user friendly. As in any other ICT initiative, QuEST is not without limitations. It is being continually improved as the system is used and feedback gathered.

RESULTS AND DISCUSSION

What is QuEST?

As mentioned in the previous section, the Quality E-Management System (QuEST) was developed as a project to incorporate participatory decision making and to ensure greater efficiency in the management of a faculty in a university. It is a "one-stop centre" that con-

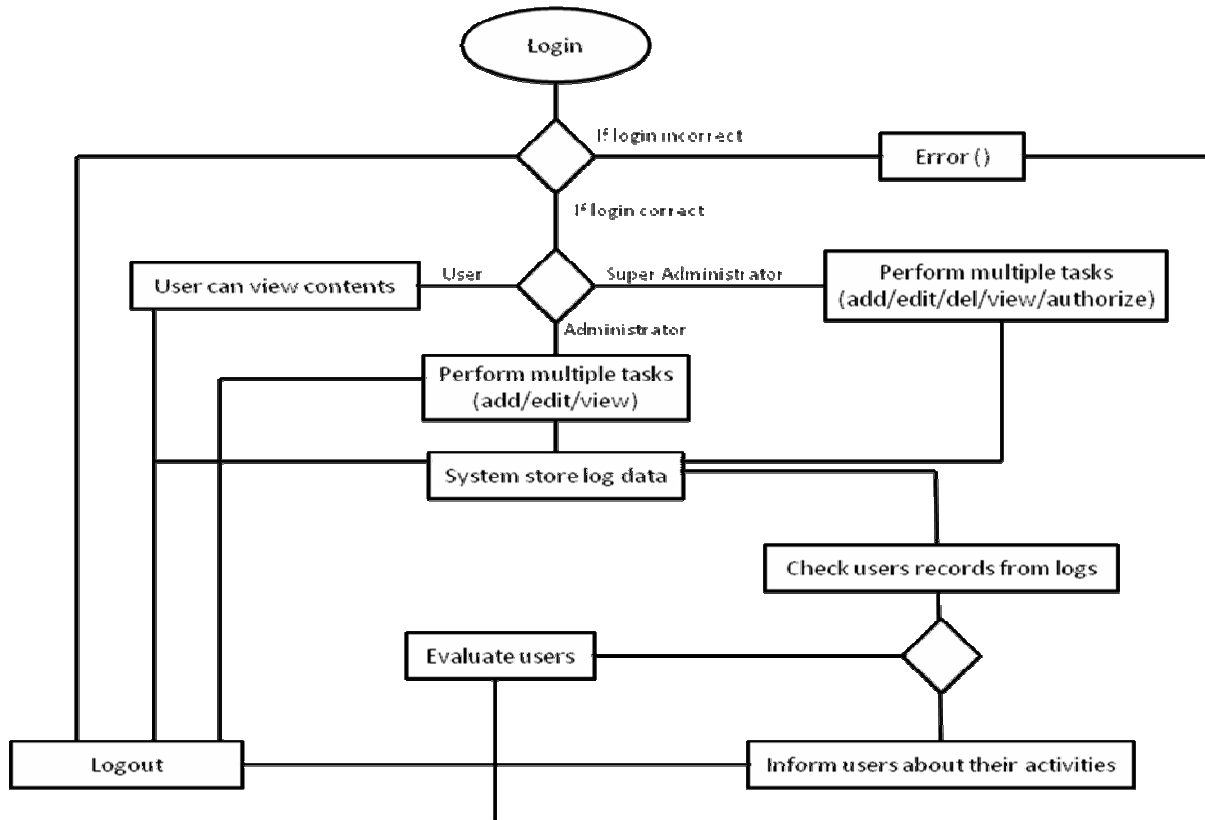


Figure 1. Flow-chart that is developed as a basis for the system design.

nects, links and monitors important decision making processes. It is a unique platform for administrators to monitor internal and external processes, for academics to participate in group decision making and to provide feedback to management and for support staff to play their role and show their potential. QuEST is also an important element in maintaining good academic calendar. Included in the system are teaching and research input, record of student supervision and projection of staff strength, among other things. As discussed in the previous section, not included are some activities such as budgeting, promotion and other similar aspects of management that cannot be made public.

System design

Using the information identified and categorized as in Figure 1, the architecture used to adopt the framework in the design phase is based on the distributed system model. This underlying IT infrastructure easily permits connecting services to organizational information from a variety of sources. This application is much faster and less expensive than previous forms of development and permits the activities to be highly responsive. There are two steps to the design of the system. The first step is the identification of information needed to provide the

database. The second step is testing the design to detect inconsistencies that need to be corrected. This is to ensure information accessed by the users is acceptable.

System generation

First the resources are selected and they include all key internal processes of the faculty. All these processes and the metrics required of each process are clearly presented for viewing. Detailed descriptions of all capabilities of the system are defined and a description is provided as to what the system should not do.

Technical specifications are examined to ensure compatibility between program used and resources (Figure 2). As the system is parked in a web server, complex tasks such as database communication were carried out. The final stage is the testing period to ensure that the indicators provided by the system are reliable.

System implementation

Basically this includes regular maintenance to update or add new entries. A reasonably affordable budget has been allocated for this purpose. As this initiative is project based, the team will continually assess new technologies

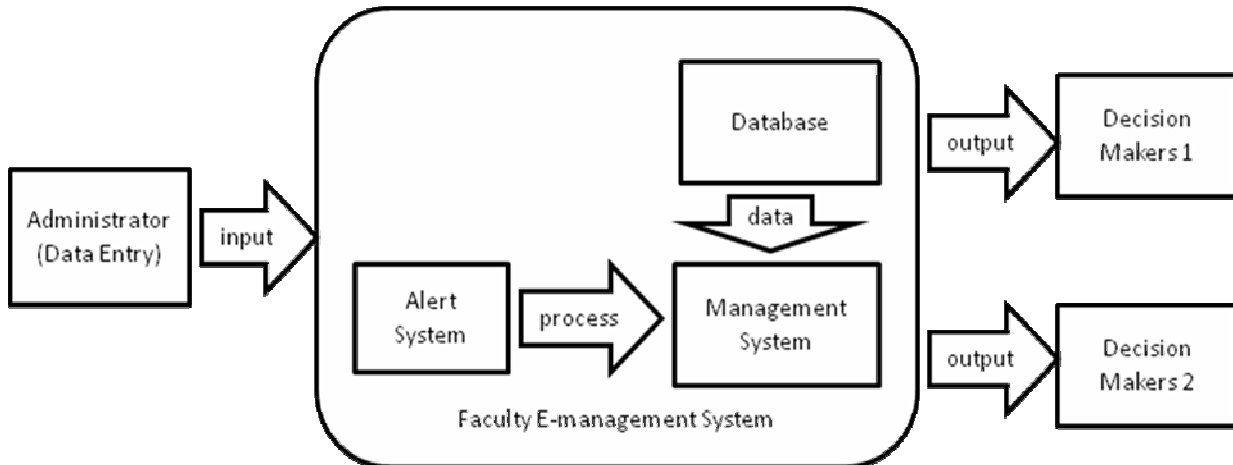


Figure 2. Data flow of the system.

No	Name	Module	Action	Date/Time
1	M M Arif	Viewing login history	Viewing	18-11-2009 07:43:44
2	M M Arif	Viewing alerts page	Viewing	18-11-2009 07:40:44
3	Hamizah	Viewing Home page	Viewing	18-11-2009 07:40:07
4	Arif	Viewing alerts page	Viewing	18-11-2009 07:39:54
5	Kugan	Viewing under observed undergraduate student page	Viewing	18-11-2009 07:26:15
6	Kugan	Viewing undergraduate student profile page	Viewing	18-11-2009 06:29:12

Figure 3. Recording, auditing, accessing and retrieval of data.

as they become available.

Significant features and specific functions of the system (QuEST)

How does QuEST ensure accountability in the decision-making and management process?

Every action taken is recorded. Data is kept in the system for external and internal audit and the data is easily accessed and retrieved (see Figure 3). This is made possible through a content management system built from scratch as has been shown in other ICT related initiatives (Johnson and Tang, 2005). As discussed

earlier, accountability is an issue often faced in participatory decision making. This model connects role responsibilities and decision making. Different levels of management are able to identify and monitor actions taken. This leads to possibilities of proactive approaches being taken in the decision making process. Through the system, every action and inaction can be traced to the person responsible.

How does QuEST manage activities that are currently time-consuming to ensure participatory based decision making?

The system is designed to incorporate all important pro-

Home Administration Staff Students Infrastructure Alerts Quality Assurance Rules & Regulations Bright Ideas Logout

Wed November 18, 2009, 8:06 AM

Important Deadlines

Select :

No	Alert Id	Header	Priority	Deadline Date & Time	Posted Date & Time		
1	2	Faculty Meeting	High	30-10-2009 15:23:23	24-10-2009 15:24:45	More...	Edit
2	1	Vetting session	Normal	23-10-2009 07:46:51	22-10-2009 07:47:10	More...	Edit

User details :
 Name: M M Arif
 Username: edu
 Category: Super Administrator
 Category ID: 1001
 Last Login: 18-11-2009 05:54:53

Your recent activity was:
 Activity: Viewing
 Date@time: 2009-11-18 08:06:33
 Details: Viewing edit module for alert

Quick links:

Figure 4. Monitoring and ensuring actions taken.

cesses in the faculty. Data is updated on a daily basis. Deadlines and three levels of alert are provided. Decision made by one staff member can be monitored by the staff/head of department in charge. To address possible non-compliance (e.g. not meeting deadlines), the alert goes to all those responsible for taking action as well as for monitoring and ensuring that action has been taken (see Figure 4). This way of maximizing the efficiency of the organization has been well documented (Badrudin, 2004).

How does QuEST ensure bias-free decision (avoiding grouping and lobbying)?

The QuEST model emphasizes both the scientific and social contributions to the decision making process. While on the one hand, all decisions are evidence-based since they are data driven, on the other individual insights are made available for testing and use by the organization as a whole. While activities like reports on student progress, taking timely remedial action on students who are underachieving, making payments to suppliers accordingly are documented, for certain actions and decisions, individuals can choose to remain anonymous. In this way, where decisions on sensitive and controversial matters are concerned, staff can contribute decisions without fear of being reprimanded or otherwise. The dynamics of the system are based on predetermined sequence of actions as found in many e-system prototypes.

How does QuEST address negative aspects of participation in decision-making?

This project, through the system, takes a proactive approach to knowledge contribution. It has a built in mechanism for structuring and updating contributions. Efficiency in management can only be achieved if specific roles are assigned. The system includes roles assigned

based on validation of database content, monitoring and support as well as coaching of staff. As such negative aspects such as social pressure, groupthink, domination by a vocal few are minimized.

How does QuEST identify activities that are the root cause of problems/issues?

All the information is stored in the same location. The system stores and records all activities, the root cause of problems can be easily identified at the click of a button. This is normally time consuming through the traditional paper based system. The technology behind the system enables tracking of activities and identification through user logins. This enables the system administrator to trace the raw input. However, careful steps are taken in deciding who manages the system. The system administrator is someone whose job specifications are mainly technical and is not in any way connected to the running of the faculty. This is found in similar ICT initiatives (Mahadevan, 2000).

What is the statistical parameter used in this system (QuEST) to identify or analyse correlated factors?

As in any good E-management system (Bichler, 2001; Hodge and Cagle, 2004) this system is built to provide accurate measurements for the indicators required for an effective management decision – as we can not manage what can not be measured. The most compatible, easily available and inexpensive data analyzing program is used to generate statistics for this system.

How does QuEST address ethical and confidentiality issues?

Although this system provides easy access to databases and important documents, stresses openness and right to

information, the faculty has in place internal standards and procedures to ensure that confidentiality is not breached. Staff members have been trained to avoid disclosure risk. To ensure that data in their possession are subject to appropriate handling, the faculty instituted a continual process of reviewing and enhancing the training of these staff members. Privacy and security are very important issues being discussed in the literature on the current use of ICT. In their analysis of privacy and security issues in the information age, Feng and Hughes (2009) raised concerns about ethical practices in organizations. QuEST is committed to ensuring that high ethical standards are practiced.

CONCLUSIONS

E-management in the context of this study has been shown to facilitate participatory decision making in an organization while ensuring tight quality control and monitoring procedures. Ethical and confidentiality issues are addressed as well. QuEST has the potential to take the organization's, in this case the faculty's, internal as well as external processes to the next level by putting into place electronic record management while maintaining flexibility. Using technology, the faculty can ensure reliable participatory decision making through the enforcement of policy guidelines. Most of all, the model has internal consistency as it integrates good management practices with dependable technology. Taking the cue from many reports and publications on threats that modern technology can give rise to (Androulidakis, 2009), QuEST was carefully designed taking into account various issues including ethical practices. As the main aim was to increase administrative efficiency, the system has a built in mechanism for minimizing wastage of resources, staff time as well as workload. As such it can maximize accountability, staff participation and to a certain extent, commitment. These being the case, in a small way, QuEST has managed to advance knowledge in e-management systems. It has implications for policy making in that policy makers can look to this system to perhaps improve management efficiency as well as staff commitment to achieving institutional aims. In as far as the efficiency of the system itself, commitment from top management especially in terms of monitoring is the key.

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