The impact of Organizational Culture in managing the change to the use of FOSS at a South African University

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Abstract

A recent change in the software landscape involves the introduction of the Free and Open Source Software (FOSS). FOSS offers freedom to access and enhance software source code at low or free cost, thereby demonstrating high potential to enhance the impact of ICT in the society. However, the Tshwane University of Technology (TUT) and some other higher education institutions in South Africa are yet to embrace and derive the benefits of the FOSS change phenomena. It thus seems like being unable to make sense of the FOSS phenomenon and generally in need some framework or perspective to deal with the change to FOSS. Dealing with change, according to literature and practice, requires a conducive organizational culture. But to what extent is organizational culture being taken into account in the management of technological changes like FOSS at TUT? An interpretive research approach which is qualitative in nature is adopted to investigate this problem. A case study of TUT is conducted using questionnaire and interview triangulated with document review. The study concludes that effective use of Information Technologies such as FOSS for the benefit of the organization could be enabled with properly managed change initiative enhanced by a conducive organizational culture at the University in which the management, staff members and students have various roles to play.

Keywords: Organizational culture, Free and Open Source Software, FOSS, change management, knowledge sharing, knowledge management

1. INTRODUCTION AND BACKGROUND

It is noteworthy that human beings and organizations find it difficult to get used to changes. Despite the necessity for change, Stanleigh (2007) observes that people often feel demoralized by change initiatives. This could explain why executives in organizations sometimes find it difficult to drive people out of their comfort zones (Kotter, 1995) to embrace change, even if the change holds prospective benefits.

A recent change in the software landscape that we seem unable to make sense of and generally need some framework or perspective to deal with involves the introduction of the Free and Open Source Software (FOSS). This assertion emanates from the premise that FOSS provides free access to the use of a software as well as

the opportunity and freedom to inspect, study, modify, extend and distribute the source code of the software (Ajila & Wu, 2007; Krogh & Spaeth, 2007; Henly & Kemp, 2008; Sowe et al, 2008; Cerri & Fuggetta, 2007).

Gallego et al (2007) indicate that FOSS is radically changing perspectives in development, use and distribution of software. The free or possible low cost of FOSS should be of benefit to most higher education institutions, many of which are in a dire financial status. Similarly, the freedom to inspect, study, modify, extend and distribute the source code of software should be of benefit to higher education institutions that consider it important to generate knowledge through exploration, collaboration, knowledge sharing and learning from examples. Yet, despite these foreseeable advantages of FOSS, it is yet to become widely used in most South African higher institutions including TUT.

Could the reluctance to embrace the change to FOSS be because of lack of some framework or perspective to deal with possible implications that could emanate from its use? Fortunately, the era of technological change is dawning on us as technological change is becoming the norm in the history of organizations and mankind. Much more encouraging is the fact that management of change is fast becoming a global phenomenon as a strategic initiative towards effective managerialism (Diefenbach, 2007).

Jackson and Philip (2005) note that increasingly, researchers have focused their attention on understanding the cognitive and behavioral aspects of change, by turning their attention to organizational culture. Hackney and Mcbride (1995) in Jackson and Philip (2005) indicate that lack of attention to organizational culture is often cited as an important reason for change failure. Delisi (1990) cited in Jackson and Philip (2005) observes that given the changing nature of organizations today, organizational culture is more important than ever before.

Culture and change management in the context of the research problem

The impact of culture on organizations is profound. Schein (1990:111) observes that "culture is what a group learns over time as it solves its problems of survival in an external environment and its problems of internal integration". Specific sets of culture relating to an organization can be referred to as organizational culture.

Not anchoring the changes made into the organization's culture, norms and shared values could erode the gains made. This could subject the change effort to degradation as the pressure for the change is removed (Kotter, 1995). Therefore, Kotter (1995) emphasize the need to institutionalize change in corporate culture. Two factors are important for this; First, conscious attempt is needed to articulate how the new approaches, behaviors and attitudes are positively connected to and have aided corporate success. Secondly, to avoid future leaders eroding the gains made, it is important to ensure leadership development such that succession to new leadership that will personify the new approach is guaranteed (Kotter, 1995). Organizational culture prevailing in such organizations could determine particular ways in which the employees of an organization respond to the changes.

The purpose and research question

Hofstee (2006:3) observes that the purpose of all good academic works is to attempt to find possible answers to unanswered questions, or to find better answers to incompletely answered questions. Identification of the research questions would enable the formulation of the approach for obtaining answers to the questions in clear, measurable and achievable terms. Therefore, the eventual research question for this study therefore is: To what extent is organizational culture being taken into account in the management of technological changes at TUT?

According to Hofstee (2006:20), if one can name a problem or something to argue or find out more about, one should be able to guess a solution or an outcome and to formulate a position to argue. Therefore, the hypothetical proposition for this study is that effective use of Information Technologies such as FOSS for the benefit of the organization could be enabled with properly managed change initiative enhanced by a conducive organizational culture at TUT.

2. LITERATURE REVIEW

The overall purpose of the literature review, according to Cooper and Zmud (1990) as well as Creswell (2003), is to "re+view" and relate a study to the larger ongoing dialogue in the

literature about a topic, filling in gaps and extending prior studies. Simply put, the more one knows about perspectives related to one's topic, the more effectively one can tackle one's research problem (Creswell, 2003).

FOSS as catalyst for planned and emergent change management

Some of the changes resulting from the adoption of FOSS would be intended or planned, other changes bring results which are unintended and require emergent change management initiatives. Bednar and Welch (2005) note that emergent change management should be in parallel with and subsequent to planned change like FOSS. The emergent change management relates to cognitive organizational change initiatives referring to the collective change processes in the organization that occur tacitly at a pre-awareness level and commonly described by the phrase "organizational learning" (Van Tonder, 2004:58). This could also embrace learning aimed at positively shaping organizational culture for effective change management.

Williams and Williams (2007) note that benefits from ICT are likely only when ICT investment is accompanied with appropriate change management skills. Therefore, it now seems imperative for organizational members to continuously learn to deal with change on day-to-day basis especially with the use of emerging technologies. However, Macredie and Sandom in Jackson and Philip (2005) observe that this is proving more challenging than initially expected, raising some fundamental questions regarding how to successfully manage this complex change process.

Planned versus emergent approaches in the management of change

In the field of change management, Jackson and Philip (2005) observe that various theoretical insights have been used with regards to understanding changes within organizations and how change should be managed. These include planned versus emergent approaches**.** Planned approaches are based on two fundamental assumptions. Firstly they assume that the major determinants of change can be planned in advance and secondly, technology is seen as the main enabler for successful change management. Planned models postulate a top down approach, where senior management are the prime drivers in managing the change process.

Despite the popularity of planned models over the past few decades, they are increasingly becoming obsolete, as reflected by the increased failure of many planned change interventions. A major reason for planning failure is the increasingly more turbulent, complex and uncertain organizational conditions of today (Orlikowski and Hoffman, 1997 in Jackson and Philip, 2005).

A major criticism, as frequently reported in the literature and highlighted by Jackson and Philip (2005), is that planned models fail to look beyond technological issues and understand the social and cultural factors influencing the change process. From research both theoretical and case based, Jackson and Philip (2005) note that the general conclusion would seem to be that technological change should be approached from an emergent perspective. Emergent approaches recognize the importance of understanding the ongoing behavioral aspects of change. These approaches posit and share the view that change cannot be viewed as a linear sequential process planned within a given time period, by senior management. Instead actors are expected to enact change as they respond to change arising in an *ad hoc* fashion. Change from this view is something, which is ongoing or continuous, enabling understanding the social and cultural factors influencing the change process. This would involve understanding the different actor's expectations, norms and perceptions within organizational contexts (Jackson & Philip, 2005).

In understanding the cognitive and behavioral aspects of change for example, Wolff and Frank (2005) indicate numerous approaches to study and foster processes of organizational change. These are mostly focused on social and psychological aspects. Dominant topics include management of change, organizational learning (for enhancing problem-solving capacity), enabling communication (across hierarchical and domain barriers), organizational culture as well as images or metaphors of organizations for creating an awareness of potential problems.

Theoretical perspectives of organizational culture in managing technological change

A recurring theme arising within the organizational culture literature is the need to move away from traditional/ hierarchical cultural

modes of thinking to more organic, entrepreneurial ways of thinking, involving an instant shift in attitudes and beliefs towards cultural conformity (Hendry, 1999). However in practice, researchers have highlighted that, within any organizational context, there are likely to be a number of competing beliefs and values. Consequently, Hendry (1999) notes that the recent failures in managing change suggest that a fresh theoretical perspective is needed for thinking about and perceiving change. For example, given the current upsurge in the use of e-services, Standing (2002) proposes the evolutionary nature of systems, effective management structures and the development of a conducive organizational culture to enhance the impact of the Internet and Web applications.
As a step towards understanding the issues relating to the study of technological change, it is important to examine the situation in typical organizations. The next section then presents the methodology used to empirically confirm the case at TUT with respect to the assertions in the body of literature.

3. RESEARCH DESIGN AND METHODOLOGY

Research approach

The overall research approach adopted is an interpretive research approach which is qualitative in nature and aimed at developing sound explanations of the phenomenon of interest. Ngwenyama and Lee (1997) note that interpretivism focus on the development of sound explanations and understandings of the study of interest. Interpretivism contends that "either reality itself is a social construct or that at least our knowledge of reality is socially constructed or gained through social constructions (Stahl, 2005)".

A limitation of interpretive studies is that it is inter-subjective. Orlikowski and Baroudi (1991) state that "Interpretive studies assume that people create and associate their own subjective and inter-subjective meanings as they interact with world around them" thereby rejecting the possibility of an "objective" or "factual" account of events and situations as well as generalization to a population. Rather, it seeks a relativistic and shared understanding of phenomena.

However, Leedy and Omrod (2005:133) indicate that qualitative research assumes that the researcher's ability to interpret and make sense of what is observed is critical for understanding any social phenomenon. Therefore, the research orientation of this topic assumes that the reality for different situation could differ. So, being an insider in the field of IT and in the TUT case being studied, qualitative research design is deemed appropriate for understanding the change situation. Furthermore, as a form of action research, some actions are taken to rectify some situations in the findings e.g. development of web-pages to enhance the culture of knowledge sharing found lacking.

Methodology

The method involves elements of descriptive case study. As observed by Leedy and Omrod (2005), a case study may be especially suitable for learning more about a little or poorly understood situation. The management of change in organizations is an example of such little known or poorly understood situations. Therefore, an interpretive form of case study (Walsham, 2006) is used in the light of social relativism for understanding from the viewpoint of organizational agents who directly take part in the social process of reality construction (Hirschheim & Klein, 1989).

Population representation: The representation for the case study consists of respondents responsible for using and making decisions on the use and implementation of computing and information technologies at TUT. These involve a range of different practitioners such as Information Services managers; ICT laboratory managers; Head of Departments responsible for system implementations in the academic computing laboratories; Lecturers teaching with Information application systems and programming languages; and specific IT users. This range of users is aimed at giving different perspectives.

Sampling method: Purposive sampling and snowballing sampling were used in the case study to select the respondents. In purposive sampling, people or other units are chosen for a particular purpose (Leedy & Omrod, 2005:206) while in snowballing sampling, a chosen unit will lead the researcher to other respondents. Purposive sampling is combined with snowballing sampling to target known members of the population and yet allow such people to point the researcher to other people for more information.

Research instruments: Semi-structured questionnaires were initially used to obtain responses from the respondents and interviews were scheduled to explain further and to clarify information. Documents such as policies, web-pages were also reviewed to confirm information and as a form of triangulation to enhance reliability.

Assumptions and limitations: While it is assumed that respondents give truthful information, it is however recognized that some respondents may shy away from some sensitive information. An example relate to the cost of certain software which some respondents may not want to reveal in order to hide possible inefficiencies in not seeking cheaper alternatives despite such huge costs. Such information is substantiated with data from literature and practice.

In terms of validity and reliability, interpretive IS research employs defensible knowledge claims in which implications are recognized and addressed (Weber, 2004). The validity and reliability implications of this situation are recognized. We thus acknowledge that this is a subjective view and we give detailed and clear context of the view.

Also, the generalization of the study cannot be guaranteed. The study is specific to TUT. The detailed and clear context of the view presented could guide readers towards desired generalizations and replications of the study.

Ethical considerations: Research participants were not exposed to undue physical or psychological harm (Leedy & Omrod, 2005:101) as there were no questions asked that would cause such harms. Their rights to privacy are protected as confidentiality is maintained (Leedy & Omrod, 2005:102) as anonymity protects their identity.

Informed consent is sought as the research participants are required by the Ethics Committee of the institution to be briefed on the nature of the study to be conducted and to be given the choice to either participate or not (Leedy & Omrod, 2005:101). Furthermore, the findings of the study are reported in a complete and honest fashion without misrepresentation (Leedy & Omrod, 2005:102).

4. RESULTS AND DISCUSSIONS

The search for answers in this study is begun by obtaining the participants' backgrounds which are given below:

Participants' backgrounds

The first participant has been working as a System support specialist for the past five years. He provides support to staff members in the use of PC-based systems including connections to the Web using Internet explorer, web-based applications like MIS, ITS, and other Microsoft-based applications. When asked about his motivation for having interests in using FOSS, he mentioned that he longs to belong to user-groups on major FOSS products such that he can easily get tips and contribute his experience to others.

The second participant has been working as a System support Manager for the past seven years. He manages the provision of support to staff members in the use of PC-based systems including connections to the Web using Internet explorer, web-based applications like MIS, ITS, and other Microsoft-bases applications. His motivation for having interests in using FOSS is due to the need to take advantage of the free or cheaper cost of FOSS products. He indicated that most of their requests to management for the purchase of materials to assist in their jobs were turned down due to insufficient funding. He therefore beliefs that the use of FOSS could free some funding constraints to enable management have more funds for relevant materials.

The third participant has been working as a lecturer teaching IT for the past 12 years. He lectures programming like C++, web-based application development using PHP, Java, and Microsoft-based development programs like ASP. His motivation for having interests in using FOSS is that he has been able to appreciate the benefits of using FOSS such as being able to freely give the software to students, availability of teaching materials on the web without stringent copyright and reducing funding for the computer labs.

The fourth participant has been working as an acting Head of Department for about two years now, but has been lecturing IT in TUT for the past 14 years. He manages the provision of software for teaching various IT practicals. His motivation for having interests in using FOSS

stems from the national government's challenge to the country to adopt and use FOSS. He explained that since the various government departments are now using FOSS and most of students typically find jobs and in-service training in the government departments, it is our duty to adequately prepare these students for the use of FOSS before they start working.

The fifth participant has been working as a part-time lecturer in IT for the past 6 years, and has also been a post-graduate student at TUT for the past 8 years. He lectures programming subjects with software like C++, PHP, Java, as well as with Microsoft-based ASP.NET. He has also being using other Microsoft-based applications for his postgraduate studies. His motivation for having interests in using FOSS is that during his post-graduate studies and part-time lecturing, he has used some FOSS as well as proprietary software, and realize the importance of the availability of free downloadable software and learning materials for teaching and learning. Also, he mentioned that useful with FOSS is the communal support on the web. Sometimes when he is stuck on some programming techniques, he usually just post it on the web, and within days, he gets tips from other users and some also send him code snippets for solving such tasks.

Other findings

Next, information on aspects of the organizational culture in TUT that could have impeded previous change initiatives experienced by staff members are obtained. These are given below.

Culture of extremely firm management control: A participant explained that management dictates everything without taking the views of majority of staff into consideration. This assertion is illustrated with the example in which ICT support services even dictate what computers ICT faculty can use both for teaching and for office use. This was done to the extent to which a participant preferred to buy an HP laptop from his own pocket rather than using an Acer laptop purchased by the institution about a year ago and whose battery is so weak that the computer can not last a minute without electricity supply.

The management's insistence on buying only Acer laptop demonstrates aspects of the organizational culture in TUT could have impeded the change initiatives experienced by staff members. This is because it seems management is rather more concerned with other factors like uniformity, exercising control unlike being concerned with flexibility, trust and other factors that could ensure that staff members adapt quickly to change initiatives.

Another participant indicates that ICT Support Services indirectly doesn't allow them to use some open-source-based equipment/machines e.g. Linux-based systems since they prefer and support only Microsoft Windows-based systems. The participant exclaimed: "Why don't they train their technicians to be able to support other reasonable systems? The money for the training will probably be less than the money that could be saved using open-source-based systems given the various benefits of open-source systems". Again, this portrays management's short-sightedness on the possible benefits of change to the use of FOSS.

Culture of centralization: Services such as ICT support including the service desk or helpdesk, printing, physical development *etc* are centralized in TUT. A participant exclaimed that this is done to the extent that: "if you need to install software on your computer in any campus, you still need to call the service desk in the Pretoria campus and wait for the order to be transmitted to the technician that will come and do the job". Sometimes, one has to wait for three to five days to get such jobs done. A participant said that for example, if he as a lecturer fails to mark scripts, students will complain and he would be fired. But if he as lecturer complains about a service not done promptly, still nothing happens to that unit responsible.

At the TUT's monthly Academic Leadership Programme held at Topieshoek on 1 June 2011, Dr E. van Heerden, the Director of Student Development and support questioned that "why are these supporting services like ICT, HR not supporting us, why are they 'kingdom' in their own right?" Obviously, it doesn't seem they realize their role is to support academic activities. They seem more interested in exercising authority and controlling in the name of 'centralization'.

Such centralization also indicates the enforcement and use of uniform equipment in the various campuses. While this approach is said to be aimed at leading to efficiency and reduced cost of maintenance, it is important to realize that it creates the lack of freedom

needed for knowledge to flourish. Nonaka (1991) observes that the systemic view of an organization as a "machine" involving quantifying productivity in an organization with only formal and systemic principles such as increased efficiency, lower costs, improved return on investments are no longer enough, especially in organizations that uses knowledge extensively.

Rather, Nonaka (1991) suggests that in knowledge creating organizations, other more qualitative factors are equally important. Actions of employees or their ideas should embody the organization's vision and should be an expression of the goals and aspirations of top management. Furthermore, actions of employees or their ideas should have the potential to build or extend the organizational knowledge network. In order words, as the major goal of higher institutions is to create knowledge, minimizing cost should not be the major concern, though one is not encouraging wastage.

In actual fact, Nonaka (1991) observes that while wastage is a feature of redundancy, yet redundancy is one of the ways in which Japanese companies excelled themselves and technologically overtake Western organizations. For example, Nonaka (1991) explains how Japanese organizations create advantage by dividing specific project teams into competing groups to develop different approaches to the same project.

Culture of disregarding staff members' opinions on issues that concerns them: Participants report that management do not consult them before the introduction of some change initiatives and do not even bother to investigate how some changes are affecting their works. Typical examples of such disregards include the introduction of the policy on buying only Acer laptop computers, the setting of 2Gig limit for email documents, the deletion of email older than three months, the limitation on the purchasing of specific IT equipment such as routers, the restrictions to the use of Ms-Windows-based systems *etc*. However, exclusion from such decision making has been observed to be "a significant barrier to organizational change" (Kotter & Schlesinger, 1979; Lines, 2004).

On probing into the possible background cause for such disregard for staff member's opinions, a participant explained that this have started in the olden days of the institution as 'Technikons' where most of the staff were lowly qualified. The top managements were unsure of the abilities and capabilities of such middle managers due to their low qualifications. Subsequently, the top management occasionally micro-manages the affairs in such departments, and in no time, the culture of firm control, centralization as well as the culture of disregard became the norm.

A participant further observed that "with the transition to a university in 2004, more qualified staff members have been employed. It is now time for the top management to change such cultures highlighted above. The trend in the society is moving towards viewing employees as the greatest assets of the organization especially in the knowledge-based organizations". Nonaka (1991) observes that "new knowledge always begins with the individual" as a shop-floor worker could draw on years of experience to come up with a new process innovation.

It is in the light of the above that Nonaka (1991) declares that "a company is not a machine but a living organism" emphasizing the impact of people on the whole system. This study further believes that when the people or employees are not disregarded but trusted to be capable of taking initiatives and making the right decision, then they can work with all their might and knowledge towards the success of organizational initiatives including change initiatives.

Conspicuous by its absence in the above list of of the organizational culture in TUT impeding the change initiative experienced by staff is the culture of resistance to technological change. Resistance to change is a prominent impediment to organizational change. In some organizations, resistance has become a norm, culture or a way of life by staff members to express various grievances they may have or to voice their oppositions to specific change initiatives.

Culture of resistance to change: According to the participants, TUT staff members are not used to active resistance on technological changes in the organization. A participant commented that while the whole staff in the institution can easily start protesting on salary or other employee relations aspects, most staff members are usually silent on technological changes in the organization. This could be because most of the staff members using technologies are relatively educated and not

willing to portray active resistance. On a closer look, one could say that the culture of firm control, centralization, and disregard for staff as explained earlier, could have changed the staff members into people not willing to portray active resistance.

Other forms of culture missing in TUT:
There are obviously other cultures and sub-cultures that are not being practiced by staff members at TUT. Some of these cultures and sub-cultures however, could be necessary for effective management of change initiatives. These are discussed below:

Culture of organizational support: Eisenberger et al. (1986) theorized that perceived organizational support creates a warm emotional climate. The findings for this study however points to inadequate culture of organizational support with respect to matters arising from individual staff member's quest for innovation deviating from the management's laid down strategies. A participant indicated that the quest for change into the use and adoption of FOSS fall into this category of culture that needs organizational support in TUT. It needs to be pointed out however, that without the assurance of the management's support, staff members would not be motivated to spend valuable time seeking innovations that could uplift the institution.

Participative culture: A participant observed that a participative culture seems missing at TUT. He explained that most staff members seem not interested in participating in voluntary initiatives not directly from their bosses. As an example, he illustrated with the new ICT website project that the faculty is doing as a change initiative to improve information dissemination. For this website, respective departments are expected to write details about their departments, but the participant noted that for almost a year now, some departments are yet to send in their information despite various reminders.

Furthermore, staff members and even postgraduate students tend not to like to participate in extra-learning activities. A participant mentioned that even when free courses are arranged, few staff members apply, and similarly, when postgraduate presentation forums were arranged, few students and staff members attend.

Culture of knowledge sharing: A participant indicated that a "culture of knowledge sharing is missing at TUT" as organizational culture in TUT does not seem to foster knowledge sharing. This is contrary to what is expected of academic institutions, but is in line with literature. Maponya (2009) explains that the kind of culture in higher institutions is a competitive 'publish or perish' culture in which academic staff members are promoted based on publications, thereby making academic staff to conceal ideas in order to be perceived as more knowledgeable than colleagues. Furthermore, a participant explained that there are lesser forums with friendly atmosphere to facilitate knowledge sharing. In practical terms, the participant observed that unlike in other universities, the ICT faculty in TUT has no practical forum like web pages on the ICT website showing what professors, lecturers and postgraduate students have published. Dehinbo and Ojo (2011) attempts to address this as shown in figure 2 while current website is shown in figure 1 in the Appendix.

Even at the institutional level, the Library webpage on the institution's website has no database of postgraduate thesis and dissertations. Subsequently, the participant observed that an implication is that if a student or a lecturer had a 'revelation' or 'realization' on implementing FOSS and is so 'fired' about it and wrote these in a thesis or dissertation or published it in an article, other students and lecturers in the faculty have no forum to learn and share this knowledge, let alone think of emulating or taking the idea further. Additional web-pages by Dehinbo and Ojo (2011) to address this are given in figure 3 and figure 4.

The learning culture: A participant indicated that "the learning culture is missing at TUT" as evident in low attendance in free courses and postgraduate presentations arranged. However, the participant observed that when some of the few lecturers willing to learn indicate interests in attending a local conference, they are told they have to write a very strong motivation if they are not presenting paper there. This, he explained, is like the management don't know already that one can learn what others are doing in such conference.

And moreover, a participant observed that when a lecturer manages to write and present one article in an international conference, and struggles to write a second article accepted for presentation in another international conference,

the management says a lecturer cannot attend two international conferences in a year. This, he said, is despite the article likely to fetch 0.5 units of subsidy (about $6,000) to the institution from the Department of Higher Education, and irrespective of the lack of other journal and conference articles to fetch more subsidies by other lecturers. The participant further lamented that apart from missing subsidies, its like management don't know that one can learn what others worldwide are doing in such international conference, e.g. how other universities worldwide are utilizing and benefiting from FOSS.

To corroborate the accounts given by the participant, the university policy on funding international conference attendance is examined. The first sentence in section 3.1.2 of the policy in TUT Policy (2008) indicates that "the university will normally approve participation in one overseas conference per person per academic year". However, the second sentence indicates that "subsequent conference participation abroad will be considered on merit and with proof of R&I output". The participant indicated that while he has got some R&I outputs, the management simply didn't consider the second sentence.

Furthermore, the third sentence in section 3.1.2 also indicates that "early career researchers may be allowed additional single conference participation abroad before they show proof of R&I output". Section 3.2.1 further adds that preference for funding should be given, to staff members with a track record of R&I output and/or potential as researcher to deliver research output. Obviously, a lecturer who can write two articles per year can either be considered as early career researcher or as showing potential as researcher to deliver research output, and so qualifies for second funding to present papers at international conference. An organization that values learning ought to encourage such a willing participant to keep learning.

The culture of mentoring, transferring knowledge and sharing knowledge: A participant mentioned that the "culture of mentoring, transferring knowledge and sharing knowledge is missing at TUT". To buttress this point, the participant explained that for example, some lecturers want to be the 'shinning ones' among others, so they do not want to pass their knowledge around. As another example, the participant observed that some supervisors of postgraduate studies like to act as 'solo supervisors' without having others as co-supervisors. Even in few cases with co-supervisors, he explained, the main supervisor doesn't usually call the co-supervisor to attend discussion meetings with the student. This way, the participant observed that the knowledge of the main supervisor is not tacitly transferred to the co-supervisor.

The participant also observed that while it is usually the case that the co-supervisor is lower in qualifications but likely with the more technical knowledge, the opinions of the co-supervisors such as suitability of FOSS platforms, would end up not being shared with both the main-supervisor and the student. Subsequently, the participant asserts that knowledge emanating from such opinion is usually missed in the absence of suitable forum to convey such opinions and share related knowledge.

Summary

In summary, Bratton, Grint and Nelson (2005: 51) observes that "the most critical function of corporate culture is to generate commitment and enthusiasm among followers by making them feel they are part of a 'family' and participants in a worthwhile venture". The management is obviously responsible for creating and maintaining such corporate culture.

TUT management, however, knowingly or unknowingly, do not seem to be focused at enhancing organizational culture climate that could enhance the adoption and use of new technologies such as FOSS. Staff members that show slight commitment are often discouraged in different forms e.g. by high-handedness, excessive control, disregard, lack of trust in employees, over-concentration on cost minimization *etc*.

In a follow-up interview, the staff member that was asked to write a strong motivation to attend a local conference said that he wonders how with his over 20 years of lecturing experience and 15 years of service to TUT, the faculty management can not trust him to make a right decision to attend a conference? One also wonders if the cost of transport of about $60 plus registration and 3-day accommodation costs is considered too high to be invested on such a senior staff member? A motivated staff

member would he happy to mentor other staff members.

And if financial resources are the major constraints, then one wonders why the faculty research committee is willing to forfeit further subsidies rather than allow a staff to present second paper in an international conference even in the absence of other people having papers to present? If the institution is a viewed as an organization deriving income by producing a product, would they rather stay broke than allow the few employees that can bring in funds to keep producing, especially while others are not producing? Would any reasonable organization be satisfied by simply narrowly applying policies rather than shaping policies to the overall benefit of the organization?

Rather than perpetuating the culture of firm control, centralization, and disregard for staff on issues that affects them, top management should adopt the view of Nonaka (1991) which states that "the best that top management can do is to clear away any obstacles and prepare the ground for self-organizing groups or teams". FOSS champions are examples of such self-organizing groups or teams. Believing in them and giving them the "room" to explore will be of future benefits to the organization, especially as an institution whose prime mission is to create and propagate knowledge to empower people.

5. CONCLUSIONS

This study investigates the extent to which organizational culture is being addressed in the management of technological changes in the form of FOSS at TUT. The hypothetical proposition for this study is that effective use of Information Technologies such as FOSS for the benefit of the organization could be enabled with properly managed change initiative enhanced by a conducive organizational culture at TUT.

Management should avoid perpetuating the culture of firm control, centralization, and disregard for staff on issues that affects them. Rather, management should clear away any obstacles and prepare the ground for self-organizing groups or teams such as FOSS champions. Such teams should be encouraged to explore for future benefits to the organization, especially in creating and propagating knowledge to empower people. The management is obviously responsible for creating and maintaining such a corporate culture to generate commitment and enthusiasm among followers by making them feel they are part of a 'family' and participants in a worthwhile venture. Staff members and students are also required to play their part by enabling a participative culture, learning culture, information sharing culture as well as the culture of mentoring.

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Appendices and Annexures

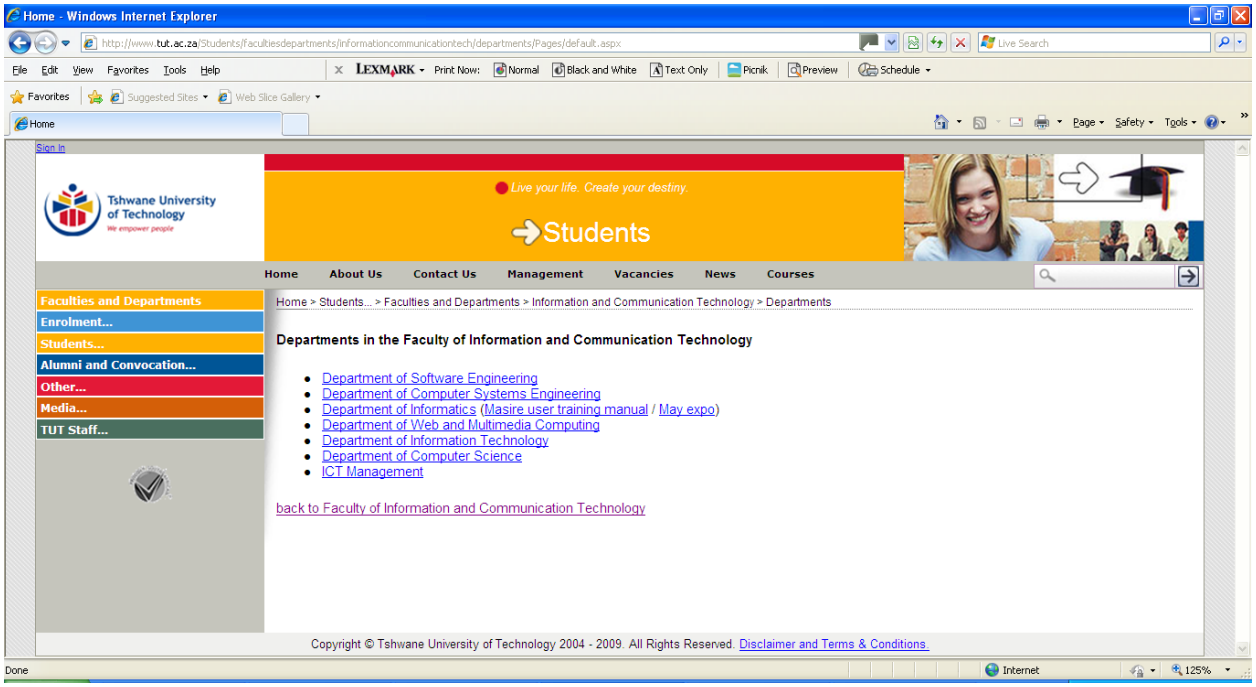

Figure 1. Current ICT Faculty website at TUT

Figure 2. New ICT Faculty webpage to enhance information dissemination (Dehinbo & Ojo, 2011).

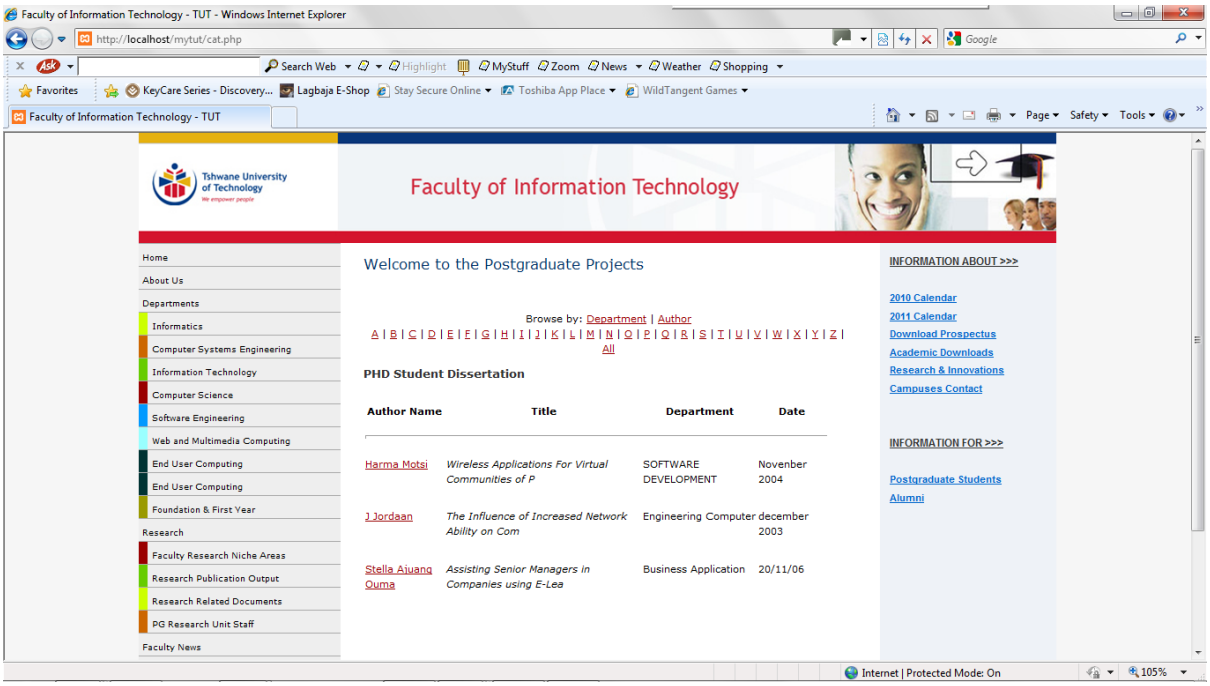

Figure 3. New ICT Faculty webpage to enhance information and knowledge sharing culture through past postgraduate projects (Dehinbo & Ojo, 2011).

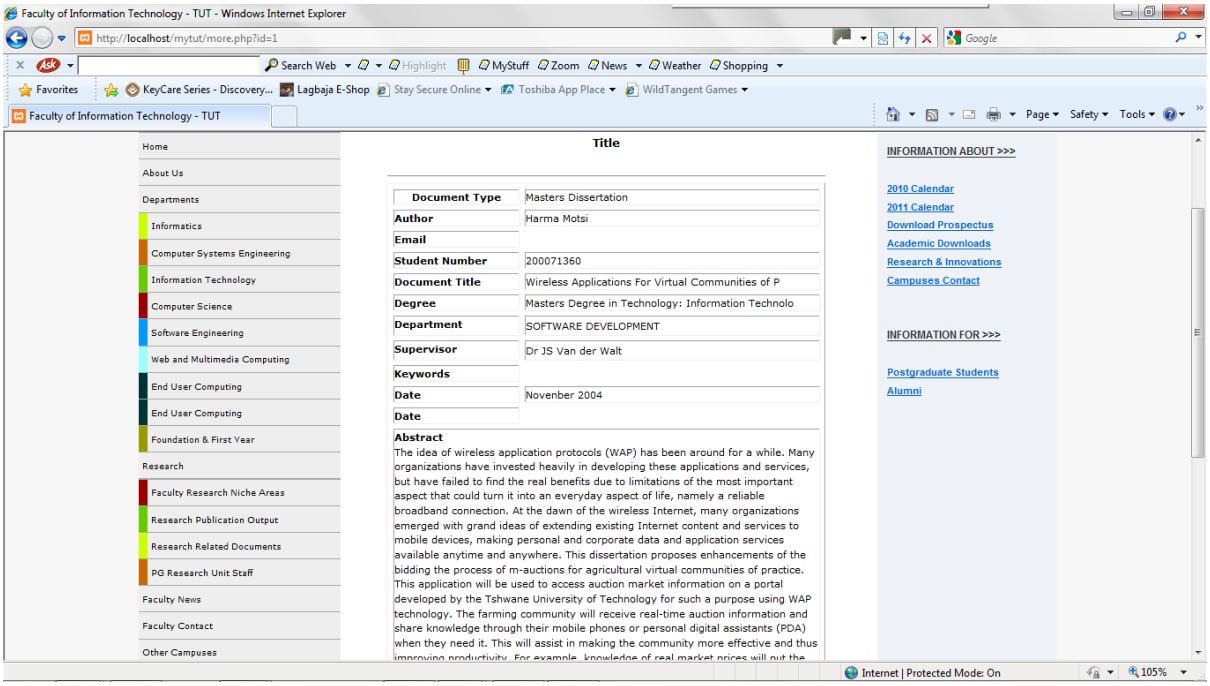

Figure 4. More new ICT Faculty webpage to enhance information and knowledge sharing through past postgraduate projects (Dehinbo & Ojo, 2011).