Pakistan Social Sciences Review
www.pssr.org.pk

RESEARCH PAPER

Developing a Model for Educational Managers to Optimize Adoption and Use of Management of Information System (MIS) in Higher Education Institutions

Tayyiba Sherjan[1] Dr. Manzoor Hussain Shah[2] Dr. Mohammad Daud Khattak[3]

1.   Ph. D Scholar, Allama Iqbal Open University, Islamabad. Pakistan
2.   Vice Chancellor, Hazara University Mansehra, KP, Pakistan
3.   Regional Director, AIOU, Regional Campus Peshawar, KP, Pakistan

PAPER INFO	ABSTRACT
	The research study aims to design a model for educational managers to optimize adoption and use of MIS in Higher Education Institutions. Research was descriptive in nature, mainly consists of surveys, both qualitative and quantitative techniques were used to identify determinants of technology adoption and use. Questionnaires, structured interviews, field observations, focused group discussions and document analysis were used as data gathering tools for model development. On the basis of findings of the study it was concluded that people accept or reject new information Technology for many reasons like Professional Development training, Culture learning openness, social effects, Leadership attitude, various incentives like financial, moral, appreciation or recognition incentives attract the system user to adoption and use of MIS. Software design characteristics play an important role in adoption and use of MIS. User friendly Graphical interfaces are easy to work, navigate and understand. Users participation in MIS development is very crucial and can lead to optimum results regarding adoption and use of MIS

Introduction

In this digital world things are getting change day by day, the processes, routines, the storage each and every aspect has electronic mode. Access to required useful information is now no more dreams. Mangers of the organizations can make decisions on a single click. Now the information is like life blood for the organization not only at executive level but also at managerial and operational level. Timely and accurate information are very crucial for quick decision making. According to Whitten (2004) some specific arrangement of users, information, procedures required for information technology that can input or output data with the capability of storing information for future use is referred as Information System .A computer

based system has an organized set of instructions for data collection, communication, data analysis, getting convert into different useful format etc which can be use effective planning and decision making (Patterson, 2005). Effective and timely decision making is one of crucial task performed by managers based on available accurate and updated information and related procedures (Gross, 2005). In an MIS system all units like data collection, storage, processing, softwares etc. are in collaboration and follow a specific set of instructions to produce desired results (Nath&Badgujar, 2013). MIS always displayed required information and other facts and figure in predefined reports, graphics and even summarized reports are also there for executives. (Brien & George, 2007).It is always in the favor of organization to opt for MIS as it is helpful in assisting educational operations and affairs. Most of the educational institutes in the world are acquiring Information processing system to facilitate their entire system. Some of the Universities already having MIS system but they are not utilizing it effectively for academic decision making or their databases systems are not updated result in failure of MIS. While in some other institutes the reason behind failure is improper implementation or even fault in the required computer based system (Friedman, 2001). There are lots of researches showing the factors associated with Information acceptance and applications in institutions (Venkatesh& Davis, 2003). There are lots of areas need to be explore for understanding the less utilization of technology in educational institutions (Overby, 2002). There are researches and numerous examples that disclosed the failures of computerized system in institutions resulting in economical downfall (Koch, 2004). Low adoption level and very high under-utilization of designed system for administrative affairs have remain a prominent reason for all these non-productive or in efficient systems which cost heavily but performance remains lowest. (Devaraj&Kohli, 2003).

Considering the extensive impact of technology has in the teaching learning procedures, E-Learning, M-Learning and in Educational Management around the globe, it is worthwhile to study and better understand how these customized softwares or inter related technologies can be incorporated into Educational Management effectively in Pakistan. The present research is an attempt to develop a model that would be help full for educational managers to optimize Management Information System adoption and use in HEIs.

Literature Review

Managerial techniques are developed to manage institutional managerial affairs in very smooth and proper way. These techniques are basically how to coordinate and perform various tasks while achieving milestones. In management managers have to create suitable surroundings for the users for optimum output and performance. In any small institute or in a big firm all activities like planning, managing, staffing, coordination, decision making and budgeting etc are very important and it is the ultimate responsibility of a management system to initiate and perform all these managerial activities to run the organization smoothly. An

information system is a collection of some software instructions, related hardware, organizational data and few people operating the system *(*Davis, 1992).

All the emerging trends in teaching learning and school administration are due to advance technologies being applied in institutions. E-Learning, M-Learning, Virtual Learningetc are examples of latest technologies. We can manage our institute on a single cell phone using clouds computing. Being an administrator we can manage attendance of both administrative staff as well as students, time tabling, course offers, examination, paper setting, course tracking, venue adjustment, online presentations etc using cloud computing technologies. Virtual classrooms and online education are successful examples where learner get education at their own convenience of space and time so it is affordable as well and a great platform to meet other school of thoughts also.

Involvement of IT in Management

In a research work like Becta (2003) , Yang (2003) mentioned the role of IT as it is improving all managerial processes in an educational environment like to communicate with parents, society using web and educational administration using customized databases for all statistical and dynamic information. Usage of latest technology in academic environment is very less especially in rural areas (Yang, 2003)

Institutional administration and progression with special emphasis on academic environment is very critical process and it demands updated, accurate, consistent and easy to use information. (Naidu &Jasen, 2002) Educational customized softwares or databases can store academic data like student's registration data, their evaluation either formal or summative, manpower data , all other physical and financial resources etc (Campbell &Sellbum, 2002). Role of computer is very fundamental in this regard. Such system can be designed for top leader ship where they can plan and forecast for future on available data and decision making will be done on available facts and figure.

The back ground and prevailing situation in an educational environment are different. Higgs (1997) point out that in most of the educational setup technology implementation and usage is not successful due to inconsistent and faulty deployment. Administrative staffs are not ready for the change and they under estimate the results generated by IT oriented system.

Siegel (1999) discuss why leaders or top administrator bring or opt for technical solutions because of moving side by side with modern world and to enjoy benefits of Information Technology. Higgs (1997) show how masses are interested in information and entertainment technology for their benefit.

Management Information System (MIS)

Whitten et al. (2004) describes MIS as gathering components like softwares, hardwares, people, data, procedures etc to produce and store useful information needed to improve and pace up the practice of decision making. Research shows that IT role is very important to fortify quality education, timely decisions and future forecasting. (Zaman, Shamim& Clement 2011). Moreover acceptance and exercising customized softwares for institutional administration encourages lifelong education, authorized access, information and resources sharing and decision support system. (Khan, Hasan& Clement, 2012).

Acceptance of Technology

To use and accept new tools and techniques at your work place to make your assigned tasks more easy is very normal phenomenon. Now a day's technology is griping the whole system of education not only in teaching learning like e-learning but also in managing institutional administrative affairs. Involvement and acceptance of technology is changing the overall demographics and educational system at all. (Concannon, Flynn, & Campbell, 2005).

As the technology is getting famous most of the researchers are taking interest in exploring the factors which facilitate the use and acceptance and the barriers that stop the users to adopt new technology like leaders perception regarding use of technology, personal efforts to use technology , infrastructure and awareness etc (Surry, Ensminger, &Haab, 2005).

It is evident from literature that researchers are interested in finding out the factors involved in technology acceptance both in business and academia where emerging technologies usage has a close relationship with ease, reputation and profit. Information Technology is getting popularity in every environment including education (Baek, Jung, & Kim, 2008).

In teaching learning and institutional administrative affairs technology is playing its role in numerous activities however the situation regarding willingness to accept Technology is quite different as the users are facing variety of limitation in using and implementing Technology in their day to day operations (Clark, 2003).

Theoretical Background

There are so many models and theories elaborating and focusing on process of adoption, usage and acceptance of technologies. All these theories and models are carried out and experimented in different situations. Mostly these focus on latest innovations or technological acceptance (Compeau , 1995 ; Davis, 1989).

In all these theories some focus on adoption, acceptance and usage at social level, some discuss at individual level and some focus on deployment and usage at organizational level (Gargeya, 2005).

Theories focusing on social and psychological aspect are Theory of Reasoned Action (TRA), Motivational Model, Theory of Planned Behaviour (TPB), Social Cognitive Theory (SCT) and Innovation Diffusion Theory (IDT)

One of the very famous models regarding Technology acceptance is TAM (Technology Acceptance Model) contribute a lot to research and literature. This model specifically and strongly focused on users's willingness, perceptions, behavior, innovation while employing any new trend or technology at their work place (Ajzen, 1991)

Different studies find out different factors that are most influential for technology like Theory of planned behavior TPB focusing on behavioral aspects (Sheppard, Warshaw, 1988).

Comparison of Technology Acceptance Theories/Models

Technology acceptance is an area remains in discussion for several years. Most of the researchers are related to technology acceptance in teaching learning environment. There are various theories and models underpinning the paradigm relevant to Technology acceptance. CDT (Cognitive Dissonance Theory) &EDT (Expectation-Disconfirmation Theory) are theories most popular for technology acceptance. (Bhattachargee, 2004). However these two yet not received the kind of attention got by Theory of Reasoned action , Theory of planned Behaviour , Technology Acceptance Model and Unified Theory of Acceptance and Use of Technology which are worldwide used and discussed under the technology acceptance paradigm both in academia and business.

Use of MIS in Higher Education in Pakistan

As noted by Al-Mammary that Management information system is a complete setup linked with all information, data, procedures, transactions with a sole purpose to provide very reliable and accurate information to its users. Higher education institutes are continuously facing the shortage of resources provided by the government (Gill &Battacharjee, 2009). Same applies to Pakistan, as current socio economic situation put the education of low priority that's why institutions are trying to generate their own resources in order to fulfill their running expenditures. It all requires data analysis for correct decision making hence information systems become important (Rainer & Watson, 2012).

Users of the MIS are facing a lot of problems due to lack of post implementation support. There is no proper system to get the feedback from users about the challenges faced by them (Franco, 2010). System implementation,

involvement, feedback and users interest decides its future either success or failure (Marchewka et al, 2007). Internal as well as external factors like fluctuating policies of the management, advancements in technologies (hardware and software) may lead to system's instability, which need to be taken care of by revising strategies and planning.Education system of the third world countries like Pakistan, are literally striving hard to improve the system. Quality of education is improved through proper use of available resources, accurate allocation of resource, internal and external effective management in order to achieve system efficiency (Allen, 2009).

Spreading in Pakistan since last two or three decades, creating associations linked with information generally known as information associations (Dighe et al., 2009). These associations have enormous links in knowledge based societies (Binghimlas, 2009; Sharma, 2007). This all requires skilled labour, favorable governmental policies, technology oriented attitude, technology literate management and infrastructure (Chowdhury&Czerniewicz et al, 2005). Digitization of the system not only helps to reduce the divide present in developing and developed countries but also generating new knowledge societies with quality oriented and improved learning system (Alev, 2009). Higher education system has crucial role in development of education at all level as state of education system is measured by the quality of its Higher Education System (Afolabi, 2010; Yusuf, &Shaheeda et al., 2007).

Gurr (2000) is of the view that MIS has brought a revolution in human resource management, marketing, financial management, resource allocation, communication and coordination, real time facts and figures at all levels of market / industry.

Research is Descriptive in nature, mainly consists of surveys, both qualitative and quantitative techniques were used. Peter et al (2013) frame work and TAM (Technology Acceptance Model) by Vankatesh and Bala (2008) was used to identify determinants of technology adoption and use. Twenty four Federal Chartered Public Sector Universities in Pakistan distributed across federal and provincial areas was the population. Population of the study were Vice chancellors, Registrars, Deans, System Administrators and System Users from these twenty four Federal Chartered Public Sector Universities of the Pakistan. According to Gay recommendations (1996) 60% of the population was finalized as sample for safe side and to avoid low response rate.

Existing trend of MIS adoption and use in federally chartered Public sector universities were find out by anlysing responses from university respondents regarding various factors that motivate or deprived to adopt and use MIS.

Descriptive statistics for various factors that affect adoption and use of MIS were calculated and item wise analysis was carried out. Summary showing strength of relationship among influential factors (independent variables) and MIS adoption (dependent variable) was find out and shown in table 1.0.

Table 1.0
Strength of relationship among influential factors (independent variables) and MIS adoption (dependent variable) as per regression table.

S. No	Influential Factors	R2	Strength of relationship
1	Technology uses	0.698	69%
2	Culture factor	0.530	53%
3	Social factor	0.335	33%
4	Institutional Infra Structure	0.236	23%
5	Software development factor	0.214	21%
6	Resources	0.201	20%
7	Professional Development Trainings	0.123	12%
8	Resistance factor	0.110	11%
9	Self efficacy	0.101	10%
10	Incentive factor	0.080	8%
11	Awareness about benefits	0.044	4%
12	Political factor	0.033	3%
13	Anxiety	0.031	3%
14	Information Storage	0.207	2%

Table 1.0 shows the strength of relationship among various influential facto (independent variables) and MIS adoption (dependent variable) . Technology uses h maximum affect (69%) on MIS adoption. Culture factor (53%), Social factor (33% Institutional Infra Structure (23%),   Software development factor (21%), Resourc (20%), Professional Development Trainings (12%), Resistance   factor (11%),   S efficacy (10%), Incentive factor (8%), Awareness about   benefits (4%), Politi factor(3%), Anxiety (3%) and Information Storage (2%).

Strength of relationship among influential factors and MIS adoption through regressi enables the researcher to find out the factors that strongly affect the MIS adoption a use and incorporate those factors in model development for optimum adoption and u of MIS.

Model Development for Educational Managers

One of the core activities of the research is developing a model focusing on all factors required for optimum adoption and use of MIS in Higher Education Institutions. Qualitative research enables the researcher to get involve and interpret the naturalistic approach to the world Denzin and Lincoln (2005). Qualitative research is subjectivity based activity.   According to Hammersley (2000) qualitative research urges to understand people behavior in specific circumstances.   So researchers have the opportunity get closer to their subjects by observing them or interviewing them (Denzin& Lincoln 2005).

Interviews, focus group discussion, document analysis   and field visits were arranged to get an insight of all views of Leadership ,system administrators , IT personals, the ongoing procedure related to MIS, expert opinions from the field and

an in depth analysis of related documents enable the researcher to develop a model defining pre and post steps for optimum adoption and use of MIS in universities. In qualitative analysis researcher have to find out the underlying themes by analyzing various documents and other materials Bryman (2008).

All relevant documents involved in the management processes of the universities as well as the information system software itself were reviewed. Some of the documents reviewed include, MIS notes, Registration system for new students, , student and teacher attendance registers, student log book, accounts, academic activities, exams, grading credit hours etc. Focus group discussion with experts from various related field helped the researcher to finalize the model. Development of Pre and Post implementation steps were the most crucial step for researcher as there are variety of models and steps being developed for adoption of Information technology in various environments including education specifically Teaching Learning process. The researcher didn't find even a single base study for adoption of MIS specially in Higher education institutions. Rational behind conducting this research and developing pre and post implementation steps is less research work regarding MIS adoption and use in Educational administration and Management Higher Education institutions specifically in Pakistan . Another reason to opt for this research study is less adoption and high under utilization of MIS across the globe and this is not only for education but various other fields also as per CHAOS Report in 2015.

In developing Pre and post implementation steps researcher tried to find out the various factors that influenced adoption of MIS positively or negatively. Keeping in view different researches discussing various factors in different environment , researcher tried to combined various factors and strategies that results in optimum adoption and use of MIS in Educational administration and Management in Higher Education Institutions.

Figure Proposed Model after focus grouped discussion
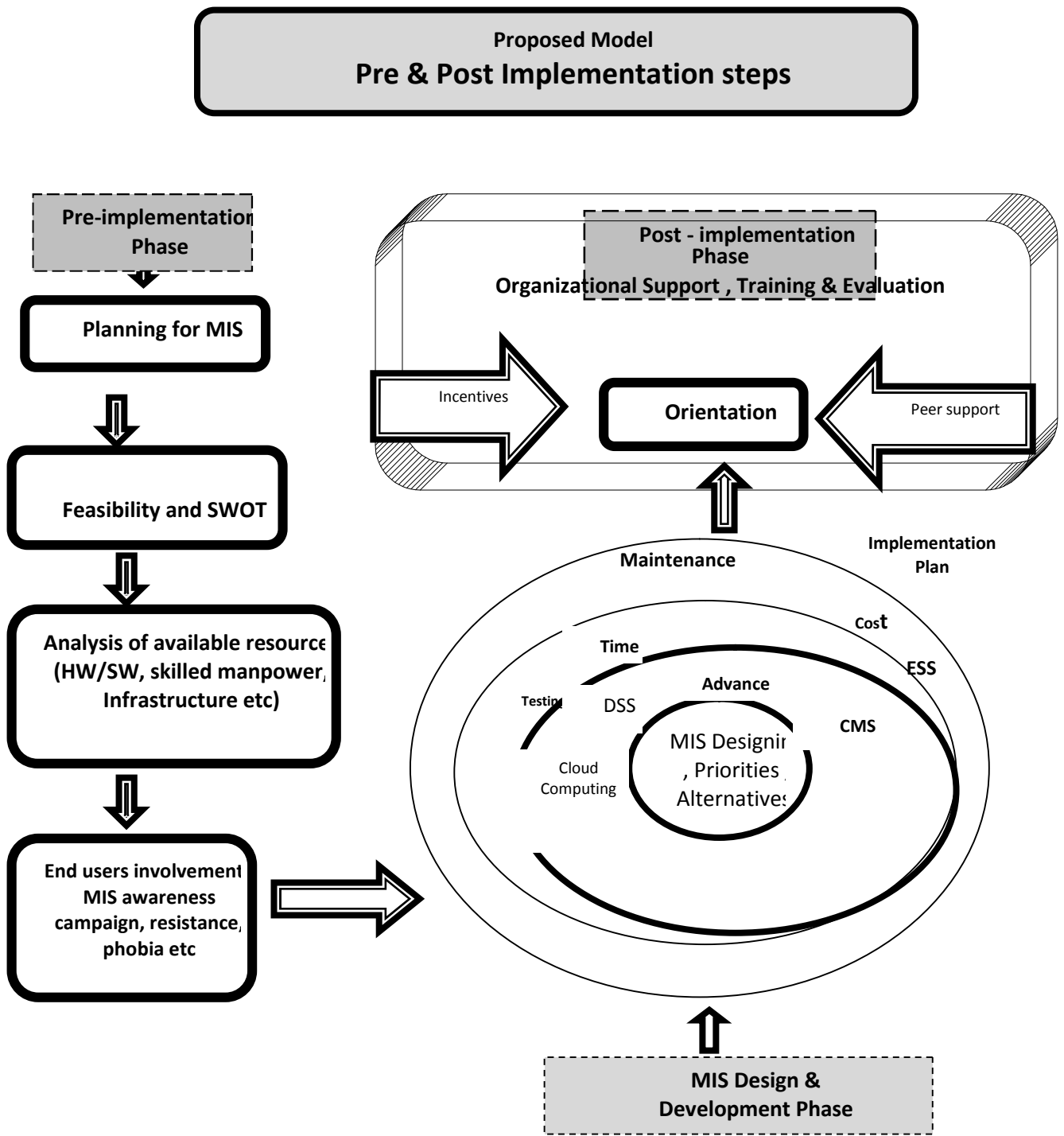
Results and Discussions

Acceptance or rejection of information technology is topic researchers are interested to find out factors involved and to suggest a solution to convince users towards more adoption and use. As we know that if our institution is having good and efficient soft wares , all the related activities will be efficient and accurate with accurate information. Why people or users accept or discard computing is most challenging area in information system.

Purpose of present study is to make a contribution to the theory and practice of information system acceptance or rejection in higher education institutions. Research work confirms the existing theories of acceptance or rejection of information technology like Davis model of TAM(Technology acceptance Model) including perceived ease of use and perceived usefulness .

People are reluctant from change as they don't want to go out from their comfort zone, users are afraid of their jobs as in any new technology may be they'll not be eligible any more for specific jobs, people are not certain regarding specific training to cope with any change that's why they are reluctant to change. Change is not easy as breaking the norms is difficult. When users are used to do something one way it is very much difficult to change their routine. Role of leaders, training, attraction and available infrastructure is very crucial for acceptance of innovation.

User participation while designing an information system shows that the leadership is very much concern about the success of the information system. But in real practice this component is missing where users feedback is taken into account to design the new system. Adapting the software to the user's needs is always easier in the construction phase as noted by Orlikowski (2010). One of the MIS success factor is to involve the end user while designing and implementing the software. While interacting with MIS staff researcher felt that the software are mostly graphical but little bit complex to easily understand and self descriptive so certain parts of it could be improved.

Conclusions

On the basis of findings of the study conclusions regarding factors affecting adoption and use of MIS , reasons behind people acceptance / rejection of technology, incentives that attract users to adopt and use technology and to what extent software design and user participation in system development play its role in MIS adoption and use. Infrastructure plays pivotal role in MIS adoption and use. Professional development/ training, technology usage, cultural,social &political factors, resources, software design characteristics, motivation & incentives, technology acceptance or rejection. Prime purpose of an information system is to provide accurate, timely and efficient information to its users for right decision at right time. MIS is a very demanding field. Now days it is very difficult to live in this world in isolation, organizations have to opt for MIS to run their affairs effectively.

In Pakistan most of the HEIs have mainly websites, software that manages Students registration and examination data, attendance, payroll etc but very small number organizations have a centralized software for Content Management System, Decision support system, Executive support system, Expert system and Campus management system.

Recommendations

On the basis of conclusions the following recommendations are made

1. There is lack of infrastructure required for optimum adoption and use of MIS in HEIs in Pakistan. It is therefore recommended that executives of the HEIs should focus and invest in infrastructure to go maximum adoption and use of MIS. Feasibility study may be conducted for this investment and even it may be phase wise. This investment in infrastructure will definitely save lots of resources of HEIs in future and smooth all the digital transactions and data processing.

2. In Higher Education Institutions in Pakistan the situation is quite disappointing regarding Professional development and competency training of IT personals. It is there for recommended to formally plan and implement continuous professional development programs and on job training of IT staff and administrative cadre officers to cope rapid technological changes. Training may be managed at semesters break time by giving maximum opportunities for practical training to IT staff.

3. Latest customized soft wares according to departmental requirements are not available in HEIs in Pakistan. In this twenty first century HEIs are still using MS-Excel for maintain students' records etc. Users don't have proper login and access according to their roles, security of both system and data is a serious concern. It is therefore recommended that HEIs should opt for a very secure interconnected centralized system with defined access roles of users according to their responsibilities. This may be achieved by placing central servers connected with all departments under the supervision of database and network administrators. It will definitely smooth the data flow among various departments, executives and managers at a single click.

4. There is no concept of users' participation in MIS development in HEIs that definitely leads to low adoption and use of MIS. It is recommended that there should be a proper plan to include users' opinion in MIS development as they are the utmost users of this system. Beside this other stakeholders of MIS like parents; teachers even students opinion should be included before finalizing any change in MIS. This option can be implemented by properly surveying the stakeholders of MIS.

5. All the MIS users in HEIs are aware of related benefits but still it is recommended that administration should plan for various campaigns in various departments of institutions to give awareness regarding MIS usage to get full benefits from their employees regarding adoption and use of MIS.

6. Resources are important and unavoidable factor for successful adoption and use of MIS in HEIs. Resources required for MIS adoption and use should very clear and defined as there is a confusion regarding MIS resources versus its benefits. Mostly people at executive level believe that MIS consumes lots of financial and manpower resources. Resources can be defined by properly conducting a feasibility showing each and every resource required for MIS like fiancés in terms of hardware / soft ware purchasing, furniture, connections, salaries, technical hands and up-gradation of system etc. This effort may lead to clear the confusions and maximum adoption and use of MIS.

7. Front end of most of the software are not graphical that takes lots of time to understand and perform transactions so HEIs must focus on interfaces of customized software or MIS to make it more appealing and user friendly for their employees. For this institutions may define specific time period to upgrade their MIS to accommodate systematic changes and user's needs.

8. One of the reasons behind low adoption of MIS is no reward for the users who support and use Technology at its best. It is the human psyche that attracts /hinders users towards adoption/ rejection of new system. It is recommended that some incentives should be defined for the users who try to learn and implement new technology as compared to one who is not accepting. Incentives may be as simple as appreciation, a certificate, one day leisure or time relaxation or may more systematic like promotional, financial incentives, medical funds, further studies incentives or accommodation etc. This stance will definitely encourage the users for more adoption and use of MIS in HEIs.

9. MIS is misused in HEIs in Pakistan as only websites and maintaining students' registration, marking system and payroll doesn't mean an MIS. In Pakistan most of the organization did not have any proper MIS that deals every of its user at different level from data entry operator to vice chancellors of the HEIs. It is therefore recommended HEIs should opt for a full fledged MIS package having support for latest technologies like expert systems, DSS, Campus Management system and Expert system to facilitate and provide data not only at administrators, managers for their day to day decisions but also to top level executives for making long term decisions and policies.

References

Ajzen, The theory of planned behavior, Organisational Behavior and Human Decision Process, vol. 52, no. 2, pp. 179-211, 1991

Allen, N. H. (2009). What must we invent for tomorrow? Five critical forces that will challenge the U.S. learning community (and perhaps yours) to innovate for the future.*EDEN 2009 Annual Conference, 10- 13 June 2009. Gdansk, Poland.*

Alev, N., Altun, T. &Yiğit, N. (2009).*Perceptions of Pre-Service Science Teachers About the Use of ICT in Education*. Ankara: Proceedings of IETC2009, Hacettepe University.

Baek, Y., J. Jung, and B. Kim. (2008). What Makes Teachers Use Technology in the Classroom? Exploring the Factors Affecting Facilitation of Technology with a Korean Sample.Computers & Education. 50(1): 224–234.

BECTA (2003). What Research Says about Barriers to the Use of ICT in Learning.Retrieved from www.becta.org.uk/research.

Bhattacherjee, Anol and Prekumar, G. (2004). Understanding changes in belief and attitude towards Information technology usage: a theoretical model and longitudinal test (FN1). MIS Quarterly, 28(2), pp. 229-254.

Bhattacharya, I., & Sharma, K. (2007).India in the knowledge economy – an electronic paradigm. International Journal of Educational Management, 21(6) 543-568.

Binghimlas, K. A. (2009). Barriers to the successful integration of ICT in teaching and learning: A Review of literature. Eurosia Journal of Matematics, Science and Technology Education. 5 (3), 235-245.

Braun V. & Clarke V, 2006.*Using thematic analysis in psychology.*

Campbell D. &Sellbom, M. (2002), =Barriers to Adopting Technology for Teaching and Learning', Educase Quarterly, 25 (2), 22-28.

Clark, B.R. (1983). The higher education system: academic organization in cross-national perspective. Berkeley, Los Angeles, London: University of California Press.

Chowdhury, M. S., &Alam, Z. (2009).ICT-Driven Knowledge Economy in Bangladesh: Issues and Constraints. Journal of Knowledge Management Practice, 10(1).

CHAOS Report (2004). The Standish Group International Inc.

Czerniewicz, L., Ravjee, N., &Mlitwa, N. (2005). *Information and Communication Technologies (ICTs) and South African Higher Education: Mapping the Landscape.* Report for the Council for Higher Education.

Concannon, F., Flynn A., & Campbell. (2005). What campus-based students think about the quality and benefits of e-learning. *British Journal of Educational Technology. 36(2), 501–512.*

Compeau ,Computer self-efficacy: development of a measure and initial test, *MIS Quarterly,* vol. 23, no. 2, pp. 189-211, 1995.

Devaraj,&Kohli (2003). Performance impacts of information technology: Is actual usage the missing link? *Management Science*, 49, 273–289.

Davis, F. D., Bagozzi, R. P. and Warshaw, P. R. (1992).Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology,* 22(14), pp.1111-1132.

Dighe, A., Hakeem, H. A., &Shaeffer, S. (2009). ICTs in non-formal education in Asia Pacific. Digital Review of Asia Pacific 2009–2010.

Franco., J. (2010). *ERP system acquisition planning process*. In ERP toolkit edition

Friedman., D. & Hoffman., P. (2001). The politics of Information.Change,Vol.33, No.2, pp.50-57.

Gargeya, V. B. & Brady, C. (2005) Success and failure factors of adopting SAP in ERP system implementation. *Business Process Management Journal*, 11 (5), 501–516.

Gross, G. (2005). Standards a must for adoption for health-care IT. CIO Magazine.

Gurr, D. (2000). How information and communication technology is changing the work of principals. Paper presented at *the International Congress of School Effectiveness and Improvement*, Hong Kong, January 4-8.

Higgs, J. (1997). Barriers to the Effective Use of Technology in Education', *Journal of Educational Computing*, 17 (4), 385–395.

Khan, H. Hasan, M. & Clement, K. (2012). Barriers to the introduction of ICT into education in developing countries: the example of Bangladesh International Journal of Instruction, 5 (2) 61-80.

Koch, C. (2004a). When bad things happen to good projects. *CIO Magazine*, December 2004.

Lincoln, Y. S., &Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage.

Marchewka, J.T., Liu, C. &Kostiwa, K. (2007). An application of the UTAUT model for understanding student perceptions using course management software. *Communication of the IIMA*, 7(2), 93-104.

Naidu S.D., &Jasen, C. (2002). The Experience of Practitioners with Technology Enhanced Teaching and Learning [Electronic Version]. *Educational Technology & Society*, 5 (1), 23-34.

Nath, R. P., &Badgujar, M. (2013).Use of Management Information System in an Organization for Decision Making. ASM'sInternational   *E-Journal of Ongoing Research in Management And IT*, 2 (6), 60-171.

O'Brien, J. A., & George, M. (2007).*Management information systems 10 e*. New York: McGraw-Hill/Irwin

Orlikowski, W. J. (2010). The sociomateriality of organizational life: considering technology in management research. *Cambridge Journal of Economics, 34(1), 125-141.*

Overby, S. (2002).How to win friends and influence users. CIO Magazine.

Patterson,   A. (2005). Information Systems -Using Information.Learning and Teaching Scotland.

Rainer, R.K& Watson, H. (2012).Management Information Systems: Moving Business Forward. Fourth edition. Danvers, USA, John Wiley and sons.

Shaheeda, J., Dick, N., & Laura, C. (2007). The role of ICTs in higher education in South Africa: One strategy for addressing teaching and learning challenges. International Journal of Education and Development using Information and Communication Technology. 3(4), 131-142.

Siegel, J. (1999). The State of Technology and Educational Management in Schools: [Electronic Version] Electronic Learning, 14 (8), 43-53.

Surry, D. W., Ensminger, D. C., and Haab, M. (2005).A model for integrating instructional technology into higher education.*British Journal of Educational Technology, 36(2), 327–329.*

V. Venkatesh&nDavis, User acceptance of information technology: toward a unified view, MIS Quarterly, vol. 27, no. 3, pp. 425-478, 2003.

Whitten J. L., Bentley L.D. and DittmanK.C. (2004).*System Analysis and Design Methods*. New York:edisi ke-6 Mc.Graw-Hillk.

Yang, S. (2003).*Teachers' Perception of Use of Student Performance Information: Technology Acceptance Mode*l. Austin: An Unpublished Thesis. The University of Texas at Austin.

Yusuf, M. O., &Afolabi, A. O. (2010). Effects of computer assisted instruction (cai) on secondary school students' performance in biology. *The Turkish Online Journal of Educational Technology, 9(1), 62-69.*

Zaman, M, Shamim, R, & Clement K (2011).Trends and issues to integrate ICT in teaching learning for the future world of education.*International Journal of Engineering & Technology*