

Fast Pace of Change in ICTs (Information & Communication Technologies) and Knowledge Workers' Training Issues

Shafiq-ur-Rehman¹, Nasrullah Khan Khilji²

¹Registrar, Quaid-i-Azam University (QAU), Islamabad 45320, Pakistan
Email: shafiq64 {at} yahoo.com

²Executive Director, PEARL Institute of Management & IT, Quetta, Pakistan

ABSTRACT--- *The senior executives of modern management face the dilemma of continuous investment in a rapidly changing ICT advancement and constant staff training needs. Modern organisations today continuously consider innovation and ICT expansion to transform their organisational structure for enhanced efficiency and effectiveness. The senior executives are interested to ensure that their ICT investment remain sustainable to achieve their long term objectives. This researcher study thoroughly and critically reviewed the literature in context of technological advancement and manpower technical skills requirements. During the fieldwork a survey was conducted in an ICT intense organisation to achieve and present a better understanding for improved performance.*

The major objective of this research paper is to explore the technological variation, manpower capabilities and organisational restructuring in order to identify knowledge based management for enhanced efficiency and effectiveness. The examination of management approaches within a participating organisation provides a ground to identify and analyse technological innovation for improved organisational productivity. The key finding of this research paper is the stability point between fast pace of technological change and an on-going staff training needs for sustainable development. This research paper is based on a comprehensive review of the relevant literature that conceptualise the technological challenges and continuous staff training needs for quality service delivery.

Keywords--- ICT, Knowledge Management, Training and Development, Intellectual Capital, Technological Advancement, Efficiency and Effectiveness.

1. INTRODUCTION

The Information and Communication Technology (ICT) is continuously reforming and reshaping itself with a fast pace of change to restructure organisations and the way people work in modern organisation. The enhanced workers' performance requires innovation and technological advancements in the organisational processes such as: flat, agile, lean, extended, globally networked, and customer oriented. The restructuring of operation, production and distribution around ICT has fortified the implementation of new processes, procedures and globalisation.

ICT has enabled the senior executives to project a strategy for sustainable development, quality assurance and responsiveness. Early evidence of emerging technologies started around mid-1990s for business management in developed countries (Brynjolfsson and Hitt, 2000; Litan and Rivlin, 2001). The fast pace of change in ICT became a serious contest for senior executives to deliver quality service and to achieve best performance from their staff. Their major concern is related to ongoing advancement and staff training to achieve best use of ICT investment. The senior executives need to deal with the dilemma of investment in ICT and the continuous workers' training.

The focus of this research paper is around the ongoing advancement in emerging technologies and staff training for sustainable development. The fieldwork was conducted to collect and analyse primary data in order to examine the cross road between technological and human resources. It is tried to explore the knowledge management practices for enhanced productivity within the participating organisation. It has been observed that ICT plays a key role to collect, process, store, retrieve, send, receive, filter and manipulate data for improved efficiency and effectiveness.

This research study examines how technological tools support the manpower for operative communication and knowledge based management to achieve enhanced efficiency and effectiveness. ICT advancement plays a crucial role in the success of organisations if the senior executives pay attention to balance the cross-road between technological and human resources.

2. LITERATURE REVIEW

It is now possible to have large scale organisations that are at the same time customer oriented, productive, flexible, agile, and focused due to ICT. The latest advances in areas such as mobile, broadband and collaborative technologies

(Web 2.0) have further intensified the transformative impact of ICT on knowledge workers' performance (Fingar, 2006). ICT based organizations are also designing their supply chains ever more tightly and strategically (Fine, 1998). The forces of increased competition, globalisation, combined with the ICT revolution, have urged senior executives to focus on their essential capabilities while outsourcing increasing amounts of activities and services. The ICT revolution had given rise to network-centric enterprises, virtual organisations, and business ecosystems (White, et al.; 2004).

This involves establishing a network-centric organisation that connects various stakeholders within the enterprise ecosystem to support different value creation strategies. The knowledge workers are put at the centre of the innovation, training and infrastructure planning for real time communications, collaboration and synchronization. Nonaka and Takeuchi, stated two types of knowledge: explicit knowledge, contained in procedures and manuals and tacit knowledge, learned only by experience (1995).

In knowledge based economy, it is important to establish a dynamic connections between organisations, employees, customers, and other partners to achieve improved performance. It involves integrating enterprise knowledge sharing with external information systems and processes to enhance 'sense and response' capabilities (Carlson and Wilmot, 2006). Central network is pertinent to government as well as business and some non-governmental organisations.

It is also applied by social support groups to enhance the reach, speed, and overall effectiveness of social activities. In contrast to the traditional Implications of the ICT advancements, the demand of knowledge workers' training increasing to aim at improved efficiency and effectiveness. Information technology is continuously changing the workplace in fundamental ways, with important implications for human resources. Studies suggest increasing returns to worker characteristics such as people skills, capacity to work in teams, multi-tasking, work without supervision, take initiative and be entrepreneurial (Levy and Murnane, 1996).

A variety of administrative innovations like total quality management (TQM) are initiated to achieve improvement. General tasks are computerised, while the exceptional special tasks are intensely becoming knowledge based (Morgan and Liker, 2006). The demand is for both human capital deepening and widening and for knowledge workers to become able to adapt to rapidly changing environments. Together, ICT and balancing organizational innovations are enhancing access to information resources and management of knowledge based assets. There is also increasing service innovation, empowering project-based teams and educational learning and knowledge sharing demand at various levels of the extended enterprise. Knowledge management is the fast-track route to leveraging the intellectual capital in any organisation (Frappaolo, 2006).

A new type of organizations is emerging because of ICT to exploit and tailor real-time information for decision making and service delivery (Ranadive, 1999). These days organisations are giving increasing attention to their information infrastructure, knowledge management and communication competencies. Investment in the intangible 'knowledge, information and communication systems, collaboration, talent, intellectual asset, quality, performance, etc.' in developed nations is increasing to accomplish improved performance. Most organizations initially were restructured for efficient operation and effective functions of the 21st century, but a sudden fall in these investments is now considered because of internet technologies and advances in ICT (Davenport, 2005).

The fast pace of change in ICT opens the possibility of restructuring organizations to integrate their intangible assets and their creative knowledge of the 21st century workforce (Bryan and Joyce, 2007). The reduced investment with improved efficiency, issues of trading off hierarchy versus collaboration and centralization versus decentralization are major concerns. The senior executive would like to continuously train manpower in order to make the best use of ICT for knowledge and innovation. Knowledge workers create the innovations and strategies that keep their firms competitive and the economy healthy (Davenport, 2005).

Organizations are devising means to accumulate employees' knowledge in electronic databases to use them as repositories of the shared, firm-wide 'structural intellectual capital' (Stewart, 1997). ICT enables efficient and effective large-scale collaboration, significantly increases the relative value of intangibles assets and simultaneously improving communication and service delivery for the economies' scale, scope, and specialization (Cohen, et al.; 2004). ICT has opened new frontiers to organizational and managerial innovation, beyond current best practices. The primary responsibility of most senior executives is to continuously train their staff about organisational philosophy in order to carry out their quest of 'serving the customer better' (Austin and Peters, 1989).

Knowledge management as a concept with people taking the centre stage has prompted us to rethink information management and shift focus from trying to develop intelligent systems to that of developing tools for intelligent people (Suliman, 2002). At a more basic level, information and communication are the lifeblood of efficient markets, and ICT can develop markets and alleviate poverty, even without advanced ICT applications like e-commerce. The ongoing up-gradation of technology and knowledge workers' skill are both vital for enhanced success (Smith, 2001). Time is the most precious and timely decision is the ultimate solution for major challenges.

This research study focuses its finding towards the success of any organization related to its workers' skills and performance enhancement strategy. The senior executives and their employees understand the need of both technology up-gradation and employees' continuous skill improvement (Bakshi, 2002).

3. ANALYSIS AND RESULTS

The analysis has been made to evaluate the importance of ICTs and the regular training of employees in order to keep the organisational leading position maintained. It has been analysed to understand how to keep the organisation up to date within the fast pace of changes in ICTs. The challenging issue is to deal with the dilemma of regular and fast advancement in ICTs and the allocation of budget for staff training to sustain their required skills. It has been noticed that the senior executives are facing the tricky problem related to the staff training to meet the technological advancement. It is also challenging to get the best out of technological investment for sustainable development.

It has been analysed from the fieldwork that there is always a continuous need of manpower training, which is vital for the organisation to achieve efficiency and effectiveness. The fast pace of change in technological advancement demands senior executives to become pro-active and to become capable to prepare the necessary grounds for continuous staff training needs. It is also observed that organisations are seriously considering to focus their knowledge management strategy for their intellectual capital. The organizations' efficiency depends on their staff motivation, coordination and communication processes as well as their interaction with the technology to get the desired outcome.

The critical analysis of fieldwork is the overall organization's environment and the implementation of knowledge based atmosphere. This study has focus to make recommendation based on the collected and analysed data from interviewing the executives of ICT intensive organization (i.e. TCQ Triangle). It has been observed that organisations can only get the desired result from the advanced technology on regular basis if their staff are equipped with latest technological skills. From fieldwork, the researcher noticed that knowledge workers need to make appropriate use of ICTs by having good command on technological advancement for fruitful results.

Field survey provided the evidence that both technological innovation for improved productivity and well trained knowledge workers can help to boom the organisation success. The recommendation from this study is about the senior executives' strategy towards the link between ICTs and Knowledge Workers. Knowledge workers indeed use technological tools to manage, create, process and share knowledge. The result of data analysis from fieldwork is about technological advancement and manpower skill strategy for enhanced operation efficiency and functional effectiveness.

DISCUSSION

Information and communication Technology has been recognized as the most important source of organizational success in every field of life. Among the top three key elements of organisational challenges are people, technology and process as shown in the following graphical illustration (Figure 1.1).

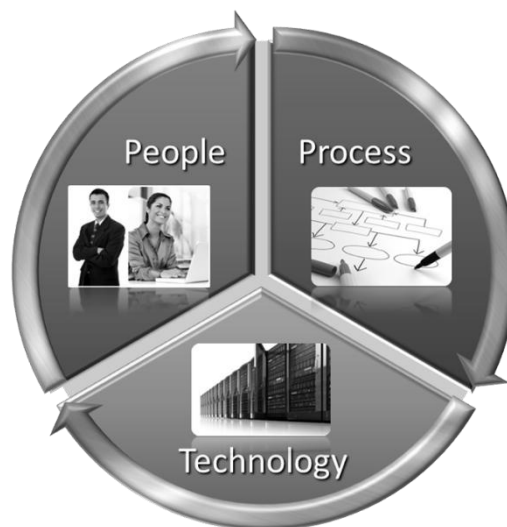


Fig 1.1: People, Technology and Process Model
Source: (Akahtcas, 2007)

People are always considered as the most important key factor for the organizational success while these days due to ICT and its daily applications people equipped with advanced technological skills are considered the source of success. It is therefore equally important for the senior executives to give regular importance to their manpower's technological skills.

Due to emerging technologies knowledge worker constantly deal in the creation, process, storage, retrieval and transmission of Information to efficiently perform the assigned responsibilities (Choo, 2002). To meet the need of today's competitive market, manpower is required to be fully equipped with the applications of Information Technology. Knowledge management has generated much interest in recent years and has become the latest and modern management (Al-Hawamdeh, 2002). The arrival of the information society and the move toward the knowledge-based economy highlighted the importance of knowledge management and the need to manage intangible resources including soft skills and competencies. Every leading organization has realized this fact that they need to develop and implement their knowledge management policies in order to get benefit from sharing manpower expertise.

The executive committee of modern organisation decides for their technological advancement at the same time they want to analyse benefits from their intellectual asset. It is the fact that senior executives need the regular up-gradation of their technological advancement and manpower skill up-gradation. The senior executives have realised the ongoing demand for technological advancement but they it is still challenging for them to deal with the dilemma to manage the technical skill training for their staff. This is also challenging for them how to address the need to invest and for how long their initial investment will sustain for manpower technological training.

The major challenge for senior executives to deal with technological advancement is the resistance to change. There is a need to address the issue of regular changes, advancements and continuous improvement in the technologies, processes and employees' skills for sustainable development. To find an answer for such dilemma, there is a need to investigate organisation's restructuring and reforming while understanding the manpower training needs for better solutions. The importance of advanced technology with skilled manpower in modern organisations is already reforming working terms and conditions. It became quite difficult to compete in the knowledge based economy without investing in ICT and manpower skills improvement on regular basis. The emerging technologies is helping organisations to get the best out of their investment with staff intellectual capabilities to accomplish stable ground of enhanced efficiency and effectiveness.

4. SURVEY REPORT

The modern organisations continuously looking for substantial change and recurrently requires finding more efficient and effective ways of working. It is believed that their ICT strategies can play a significant part, not just in supporting the day to day operations of service delivery, but also enabling smarter ways of working to deliver quality customer oriented services. This fieldwork survey report outlines how currently ICT strategies support the delivery of the sustainable objectives through emerging and innovative processes. The survey report is focused to analyse a smart and sustainable development, which includes the deployment of innovative ICT strategy and identifying effective staff training needs to support staff mobility, hot-desks, and flexible working. The survey undertaken is intended to examine emerging technologies as an innovative drive for organisational ongoing transformation.

In this study a survey was conducted to identify the role of emerging technologies and staff training. The survey report is based on the fieldwork carried out in TCQ (Time, Cost and Quality) Triangle firm. In this survey it is the research has tried to consider the scenario of their executives and knowledge workers understanding for continuous ICT change. TCQ assumes that they are a specialist in quality and cost consultancy assurance and they work in a field office of the Middle East with multinational organizations. A global workplace learning solutions provider 'TCQ Triangle', is a leading consultancy firm based in UAE. TCQ Triangle helps companies improve their performance and bottom-line results through a series of Conferences and Workshops.

TCQ consistently delivers high-impact learning interventions, facilitated by leading subject matter experts. TCQ's learning philosophy is to maximize the retention of knowledge and translate it into action (TCQ, 2006). The executives of TCQ Triangle provide the world class quality assurance services to different organization for their competitive edge. Some large organizations such as TCQ know a lot of things, although their senior executives were interviewed to identify solution how they deal with their continuous ICT changes and their staff training challenges on constant basis.

In this survey twelve senior and middle level staff participated; semi structured interviews were conducted to collect data. The focus of survey was to find out the ground reality about the senior and middle level executives' attitude and behaviour toward ICTs' regular up-gradation and the expert consultants' staff training programmes. It was stated that this organization (TCQ-Triangle) is fully aware about the importance of their day to day advancement in the latest technology. The survey participants also accepted that they do believe in the employees' regular training on regular basis. One of the senior executives was with the view that technology up-gradation is not the only solution unless until there is an understanding how to get the best out of technological investment. He further emphasized that they do encourage novel technology but the most important for them to identify how staff welcome new ICT changes to enhance efficiency and effectiveness in their daily assignments.

Another participant 'Programme Manager of TCQ', has expressed his views and stated, *'it has been observed that technology gets obsolete within no time that's why it is very important to fully utilize these new ICTs and get the maximum output. If we do not give equal importance to such important issue than shortly we would be again changing*

the existing set up. Investing in ICT is always a dilemma as we do not understand the mystery of investment and its limit as well as span of time’.

In the same lines, other participants from administrative and consultancy responsibilities shared their views about the balance point between ICT innovation and staff training. All participants in this survey expressed their views in the favour of regular change and staff training while the most senior management also expressed their concerns. From survey work it was identified that why senior executives were interested to understand the need of time and challenge of their competition on constant basis as they conveyed their discomfort with the fast pace of change in ICT as they believe it is very difficult and costly for them to manage new advancement within short period of time. They did accept that manpower training itself is a difficult and time consuming task and if it is tackle on regular basis than it is both challenging and expensive.

This survey at TCQ is the one examples but it reflects the mixed feeling of employees in many other firms. The executives of today modern firms do believe in technological advancement and their workers regular training but they do not find the answer for their quest, which is the dilemma of investment. They want to know how much they need to expend and for how long that will last to achieve sustainable development.

From this survey report, it is suggested to recommend one of the solutions that may assist the senior executives to understand regular investment in both technology and employees’ training on regular basis. The focal point of this survey is to suggest how to remain competitive and keep leading position by recognising the importance of ICT and staff training on regular basis in order to achieve the desired results with quality service, efficiency and effectiveness.

5. IMPLICATIONS FOR MANAGEMENT

The implications of the study are that executives need to realize the importance of both ICTs advancements and Employees training as a mean of continuous transformation. The Knowledge Workers’ skills and their competencies help to enhance their own transformational leadership. Therefore, the challenge for a contemporary organization is to enhance the existing set up for their key players and managers.

Appropriate interventions may be needed to enhance staff technological skills and IT competencies that would involve education and specific on job training. Knowledge workers and Managers may also be encouraged to enhance their skills through continuous self-learning. It has been observed that the senior executives need conceptual skills and intellectual competences, which could focus on the capabilities required for excellence within their designated role.

It is suggested that organisations would provide positive reinforcements for learning and improving managers' and workers’ essential advanced in ICT competencies needed for specific jobs and modern management. The recent literature shows that learning organizations are providing ample opportunities to employees for continuous learning that should help to improve their required capabilities for ICTs and knowledge management.

The technological advancement and staff training may be of limited value when it comes to improving organizational efficiency, effectiveness and overall productivity. Organisations may have to adapt the policy of recruiting managers with vision and charisma who are likely to be high on understanding and analyzing the need for new change. There is a need for appropriate changes in the organization design that would require creating flatter, horizontal, decentralized and less complex structures. It is suggested that there could be appropriate changes in organisational culture that provides rewards for learning, knowledge sharing, new competence, empathy and social skills. These changes in the organisation design, culture, and positive reinforcements will encourage managers and knowledge workers to acquire advanced training competencies needed for constant performance improvement to achieve sustainable development that lasts for long period.

6. SUGGESTIONS FOR FUTURE RESEARCH

Realistically the knowledge based organisational work transforming particularly from long hierarchy to challenge the process of innovation. Today there is a demand for modern management practices and latest technological skills. The continuous and rapidly changing environment has carried new hurdles for people to be more competitive to reach the top of the organisational structure. In order to become competitive means being tough and self-affirmative by being the kind of person others get inspiration and feel safe to team up. The new organisational structure requires staff to play a number of roles, as good followers and team players as well as leaders and subject matter experts equipped with various soft and hard skills.

This study endorses further research in the area of ICT advancement and regular manpower training needs. Furthermore information and communication technology with its fast pace of change demands from modern organisations to develop the necessary grounds to feel comfortable during the continuous and rapid up-gradation both in ICTs and workers’ skills training. Kiernan (1995) stated, *‘the scope of technology that an organization can adopt or employ is vast, ranging from something seeming simple, such as buying a personal computer with a word processor, to investing in the latest state-of-the-art computer-aided manufacturing machinery*’. Regardless of the complexity of the

system or the size of the organization, one thing is certain that the incorporation of such technology or information systems will continuously change.

If organization gets stagnant with its advancement and employees training and up-gradation than it may start decline. Therefore, it is suggested that senior executives need to consider the regular change in technology but with ground reality for better and productive output. It means that the desired output can only be achieved if senior executives have trained manpower and latest technology on the same pitch. This research study contributes to suggest how to work out and continuously carry out further research in order to minimize the dilemma of ICT investment and continuous staff training challenges.

7. STRENGTHS AND LIMITATIONS

The strength of this study is to identify and develop strategic base to achieve enhanced organisational efficiency and effectiveness with the availability of latest technology and trained manpower. The other strength of this study is that the two variables that are directly proportional for the success of organization requires a balancing point for smooth operation with enhanced performance.

Key limitations encountered by the researcher was related to fieldwork, data collection, data reliability and time management. This took long time from researcher to establish ground for data collection within the participating TCQ organisation. The interview confirmation was a challenging job because of the time constraint and preoccupation of participants. Interviewees were found very much occupied in their day to day work load in order to confirm the slot for interview. The researcher was successful to overcome this limitation by maintaining parallel contacts with multiple participants though email correspondence and follow up calls to confirm their availability in their own time.

The data analysis suffers from the small sample sizes for the survey report from modern organisation in the developing county, but the research results seem to support a constant ICT change and staff training requirements.

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