The impact of information and communication technology on organizational change: field study at the mobile operator company Mobilis Tlemcen

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Abstract:
In this paper a study on the impact of information and communication technology on the organizational change is presented. we will test the relationship between ICTs components which are networks, databases, and software and the organizational change, using statistical methods. Results showed that, the most influential component was software, followed by networks, then databases. It also revealed that information and communication technology strongly influence organizational change, confirming that respondents have an awareness about ICTs role in the change process.
The overall conclusion is that the success of organizational change largely depends on using ICT to ease communication among employees, and between them and their officials, during the different phases of the change process.

Keywords: Information and communication technology, Organizational change, …
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Introduction:

The environment outside of an organization is constantly changing, it is fast, dynamic, and unstable, thus, putting a lot of pressure on organizations that can cause a threat or provide opportunities. In response to this dynamicity, organizations must be ready, flexible, and dynamic. That what will provide them an immediate responsiveness, or proactive one. Therefore, change becomes an

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urgent necessity for every business organization that wants to survive on the market. According to Abrahamson (2000), "Change is a corporate truism".

A lot of organizations, and telecommunication companies in particular, are constantly changing in response to internal and external factors. Organizational change is sometimes a product of a crisis that spurs the urgency of the change initiative (Kotter, 1995). But this change is not so simple or easy. The Organizational Change literature shows that many processes of change are failing.

The literature reveals that change is difficult (Burke, 2008)

Despite the environment is cruel, and harsh, but it is not always a source of threats, sometimes it could provide opportunities and entrancement to help enterprises grow and enlarge their customers markets.

One of these opportunities, is technology. The technological big bang, development is considered a threat by some organizations that are unable to adopt it, but at the same time, it can be an advantage for others, providing tools and techniques to help them gain competitiveness.

Over the last 50 years, organizations have increasingly come to rely on technology to support communication and information processing in all areas of their operations. One of the biggest drivers of organizational change over the last two decades has been the introduction of information and communication technology (ICT), as its implementation "is often accompanied by redefinitions of organizational routines, cultures, structures, skills and knowledge" (Mengesha, 2010, p. 1).

Access to information is a Key factor for the success and survival of enterprises in the global market (Rasmussen, 1997). In addition, ICTs enhance enterprise efficiency, reduce costs and broaden market reach, both locally and globally. ICTs are becoming ever present in our everyday lives and are heavily implicated in many aspects of contemporary organizational change.

The relationship between information and communication technology adaptation and organizational change is a central concern for scholars studying the change process management and implementation.

The literature reveals that change is difficult (Burke, 2008), and there are many technological tools to aid his advancement (Sirkin et al. 2005) noted that change management projects that fail, often lack communication and interconnectivity among different departments in the organization

Researchers note that the use of technology is one of the factors contributing to a successful change initiative. Many studies also indicate that the adoption of information and communication technology is one of the factors contributing to the success of organizational change. Senge (1990) believed that organizations must take advantage of the interconnectedness of people and businesses in order to change. This requires departments and teams to work together throughout the change initiative. Technology can provide the platform for staff to create synergy. ICT adoption improves information and knowledge management inside the firm and can reduce transaction costs and increase the speed and reliability of transactions. In addition, they are effective tools for improving external communications and quality of services for established and new customers.

Balthazard and Cooke (2004) stated that the advancement of change in organizations will be derived from managing intangible intellectual assets, such as interpersonal relationships, knowledge-sharing, and communication. Organizations

must embrace social media as tools to create change to meet employee demands and develop a productive and efficient work environment.
Embracing new technologies, such as social media, will facilitate the advancement of change. ICTs can provide this platform, through its ability to engage employees, enable dialogue, and develop collaboration. Despite of the importance role of organization change, a survey of the change literature reveals a dearth of studies that focus directly on the connections between ICTs and change. From this perspective our study comes as an attempt to participate in filling this gap.

1. **Research problematic:**

Given the difficulty of change combined with the rapid rise of the use of information and communication technology, the purpose of this study is to explore the ICT role to advance organizational change.

This research study focuses on the information and communication technology that organizations employ to manage organizational change. The study is based upon the following research question:

Is there in impact of Information and Communication Technology on Organizational change?

And How ICT's affect this change?

2. **Research hypotheses:**

To answer this question, the study will be relied on the following hypotheses:

The main hypothesis: There is no statistically significant impact of the use of ICT on organizational change at Mobilis Tlemcen.
And it results in the following sub-hypotheses:

H1: There is no statistically significant impact of communication and networks on organizational change at Mobilis Tlemcen.

H2: There is no statistically significant impact of databases on organizational change at Mobilis Tlemcen.

H3: There is no statistically significant impact of software on organizational change at Mobilis Tlemcen.

I. Information and Communication Technology:

1. 1 Definition of Information and communication technology

The term ICTs is defined in a broad sense as technologies dedicated to information storage, processing and communication (Rao, 2004, p. 262). According to Martyn et al. (2003, p. 307) ICTs constitute a range of software, hardware, telecommunication and information management technologies, applications and devices that are used to create, produce, analyse, process, package, distribute, retrieve, store and transform information. Thus, ICTs are organized communication networks and data resource that collect, transform and disseminate information within and among organizations (Seyal et al., 2000, p. 8; Sharma and Bhagwat, 2006, p. 204).

ICTs refer to any artefact, technique or knowledge used for capturing, storage, processing, and dissemination of information (Duncombe & Heeks, 2002)

2. The Role of ICT Use in Enterprises:

Research that has been conducted on the role of ICTs among individuals and business entities has defined three roles of ICTs, namely automate, informate and transform (Tarafdar et al., 2012). Automate looks at ICT as a means for automating repetitive, structured and high-volume information processing. The automate role increases the speed and accuracy of information processing and reduces the costs of processing between buyers and sellers.

the automate role of ICTs primarily improves the mechanism to facilitate transactions, by enabling faster and more efficient execution of processes, such as transfer of goods and services, and quality control. It also enables more accurate communication between the enterprise and buyers (Tarafdar et al., 2012).

In their informate role, ICTs provide access to valuable, timely and accurate information to buyers and sellers. The informate role of ICT also enables the matching of buyers and sellers.

The informate role of ICT enables the SMEs to find potential buyers and determine prices and enables buyers to determine the availability of products (Tarafdar et al., 2012).

Finally The transform role of ICTs looks at fundamentally redefining processes and relationships within an organization or between organizations by facilitating new forms

of information transfer

3. Benefits of ICTs adoption in Enterprises:

ICTs enhance the competitiveness of business enterprises, In the contemporary business world. ICTs have enormously contributed to improved knowledge management, access to robust business information, efficient administration, control and accountability, access to markets and growth of SMEs in both developed and developing economies. ICTs also contribute to the management of enterprise resources economically and effectively.

With ICTs infrastructure, enterprises can engage in e-commerce. Electronic commerce will aid them in increasing their efficiency in their day-to-day business operations and sustain their business growth through the opening of new market channels, and to increase the flow of information.

Access to information is a Key factor for the success and survival of enterprises in the global market (Rasmussen, 1997). In addition, ICTs enhance enterprise efficiency, reduce costs and broaden market reach, both locally and globally.

ICTs' adoption improves information and knowledge management in the firm, reduces transactions cost and increases the speed of transactions for both B2B and B2C transactions. In addition, ICTs are effective tools for improving external communications and quality of services for established and new customers (Lukacs, 2005, p. 4; Rosemary and Craig, 2004). ICTs enable SMEs to have access to robust business information that leads to organizational effectiveness (Irani, 2002, p. 12). Researchers note there are many contributing factors to a successful change initiative, including the use of technology (Holman, 2007; Kotter, 1995; Lewis et al., 2006).

4. Components of ICTs:

Chisenga quoted that ICT came about as a result of the digital convergence of computer technologies, telecommunication technologies and other media communication technologies (Chisenga2004)

Rahman (2003) stated that ICT is the fusion of important technologies: electronics and communications.

We can sum up the components of ICT based on the concept of Chisenga and Rahman as follows:

- Physical equipment: All physical components of computers and their tags used to input, process and extract data.
- Programmes: The means by which computers are run and information is controlled.
- Databases: a set of logical data connected by mathematical relationships, stored in a computer, to facilitate their use.
- Communications and networks: The basic structure of linkage between the various hardware and software, forming by that a network that facilitates communication and information transfer.

  ICTs include the following, among others: television, radio, telephones (fixed and mobile), fax, computers and the internet (Mbuyisa; Awie 2017).

II. Organizational Change:

Organizational change is a highly researched and comprehensive concept (Burke, 2008; Charan, 2001; Kotter, 1996).

1. Defining organizational change:

There are lot of definitions of the organizational change, it was defined by Daft as:" The adoption of a new idea or behavior by an organization" (R.Daft 2016)

Zorn et al. define change as referring "to any alteration or modification of organizational structures or processes" (1999, p. 10)

Gareth.J, defined it as:" Is a process by which organizations move from the present state to the desired future state to increase their effectiveness." (Gareth 2003)

So, we can conclude that change is a development process, occurring in organization structure or processes, strategies, and culture.

2. Literature review:

Research on organizational change began with Lewin (1947) in his force field analysis.

This research provided the foundation of change Lewin examined the forces that drive movement toward a goal, which he termed the driving forces and those factors that thwart the progress away from the goal or seek to maintain the status quo, which are termed the restraining forces.

Lewin (1947) believed that organizations are dynamic with a constant management of the forces working against one another. In order for change to occur, the driving forces must exceed the restraining forces, causing an imbalance of the equilibrium. This is a linear approach to change.

Hannan and Freeman (1984) believed in structural inertia, which included an examination of the external and internal forces that effect organizational change. The authors believed that an organization's existence relies on its performance reliability and rationality of its actions. They found that reliability and

accountability are high when organizational change goals are institutionalized and made routine.

In addition, Hannan and Freeman (1984) noted performance indicators for organizations, many times, are built on their reliability.

Bandura (1990) suggested that there are human factors associated with change. Social cognitive theory noted that there are many environmental and personal factors that influence change. According to Bandura, people have the capacity to learn and change by observing demonstration. Therefore, people change by observing others, and the environment, existing behaviors, all influence the success of the change.

The thought on change after that taken another approach, which is The systems approach who is based on the notion that change should not be focused on the individual or the team, but the organization as a whole (Burnes, 1996). organizations are complex systems that are interconnected and interdependent believed Senge (1990).

According to Holman et al. (2007), effective change management requires strategies that involve the whole system. The systems approach includes the people, systems, ideas, and functions that are impacted by the change

Following systems thinking, change literature expanded to include different types and impacts of change rather than just an episodic or linear change (McCann, 2004). Dunphy and Stace (1993) identified four types of change: fine-tuning, incremental adjustment, modular transformation, and corporate transformation

Another theory According to Cooperrider and Whitney (2007), appreciative inquiry is an organizational development and change process that engages employees in the process of renewal. This theory is based on the notion that organizations should use positive inquiry to deal with issues or difficult situations. Keeping the positive frame of mind will allow the organization to discover additional strengths and focus on them.

3. Areas of organization change:

Change can involve any part of an organization. In general, however, most change interventions involve organization structure and design, technology and operations, or people. (Grifiin 2016)

Changing Organization Structure and Design

Organization change might be focused on the organization's overall design or on any components of organization structure. Thus, the organization might change the way it designs its jobs or its bases of departmentalization. Likewise, it might change the distribution of authority. Coordination mechanisms also are subject to change. Changes in culture usually involve the structure and design of the organization. Finally, the organization might change any part of its human resource management system.

Changing Technology and Operations

Technology is the conversion process used by an organization to transform inputs into outputs. technological changes are becoming increasingly important to many organizations. Because the pace of the technological innovation became rapid,

One important area of change today revolves around information technology. The adoption and of information technology innovations are almost constant in most firms.

Another important form of technological change involves equipment, which lead to a change in work processes or work activities. At the end, many businesses have been working to implement technological and operations change by installing and using a new software, or information systems.

Changing People, Attitudes, and Behaviors

A third area of organization change related to the human resources. A change in technology pushes the organization to change the skill level of its workforce, which lead to a training programs and new selection criteria might be needed.

The organization might also decide to improve its workers' performance level. In this instance, a new incentive system or performance-based training might be in order.

In many organizations today, managers are trying to adopt a more collaborative relationship with workers. In many ways, changing attitudes and values is perhaps the hardest thing to do.(Bohner and Dickel 2011)

Changing Business Processes

Many organizations today have also gone through massive and comprehensive change programs involving all aspects of organization design, technology, and people. This process is called Reengineering, which is the radical redesign of all aspects of a business to achieve major gains in cost, service, or time.

III. Methodology:

1. Research model:

Qualitative research. Qualitative research is the study of a research problem that relates to human nature or social issues and commonly utilizes a conceptual framework (Creswell, 2007). According to Creswell (2007), a qualitative study includes the collection of data, analysis and establishing themes, and the presentation and description of the problem.

Due to the nature of the study which targeted researching on the impact of the use of information and communication technology on organizational change, has been used descriptive analytical method, being the most appropriate platform to study the phenomenon in question. This is an exploratory study that uses qualitative methods and seeks to reveal the real and direct impact of the use of ict components on organizational change within the enterprise under consideration

According to Creswell (2007), a qualitative study includes the collection of data, analysis and establishing themes, and the presentation and description of the problem.

Sources of Data

The population of this study was a mobile operator company Mobilis who experienced a change and utilize information and communication technology in its daily work. The participants in this study were selected from this population in order to create a qualifying sample. So, the sample consisted of all the staff 21 employees (executives, managers, and workers), of the local telecommunication company Mobilis Tlemcen, which is one of the branches of the main company, And its two sub-agencies, the sub-agency of Remchi, and Maghnia.

2. Research Steps:

To determine the impact of the study variables among them, the questionnaire was built basically and developed on the theoretical framework of the study, in the light of a review of the literature that addressed the topic, three main categories constitute our questionnaire:

1- Demographic information.
2- Information and Communication Technology.
3- Organizational change.

After designing the questionnaire, a pilot study was conducted, in order to ensure absence from potential mistakes or misunderstanding of the questionnaire's paragraphs. After that, 21 questionnaires were distributed to the target sample, which is all the staff of of Mobilis Tlemcen, and its sub-agencies of Remchi, and Maghnia, in 2020.

after recovering 17 of the distributed questionnaires, we started entering the data obtained from the sample into the statistical program spss25, for the purpose of processing and analyzing the data gathered.

Validity and Reliability of the questionnaire

The study tool has been validated, through presenting the questionnaire to specialized professors, to make sure that the questions serves our topic of research.

Through the results given after analyzing the collected data using spss25, we extracted the value of Alpha Cronbach, estimated at 0.821, In other words, 82.1% of the study sample will be consistent if we ask them again, in the same circumstances, it shows the high credibility and the validity of the study tool that can be deduced, which allows us to continue the analysis of our data, and verifying the impact between the variables.

3. Statistical tools used:

In order to answer the research question, we used a set of statistical tools offering the possibility to analyze the relationship between our study variables, and testing hypothesis. Usign the spss program v25, we come up with the following calculations and equations: the means of the variables, the standard deviations, correlation coefficient, and the Simple regression analysis to estimate the relationship between the ICT's which is the independent variable, and the dependent variable represented by organizational change.

IV. Results:

Testing the Main hypothesis: to see the impact of ICT on the process of organizational change at the Mobilis Tlemcen enterprise. To test the main hypothesis, we used a simple linear regression model. Where information and Communication Technology is the independent variable and organizational change as the dependent variable at significance Level 5%.

From the obtained results, the correlation coefficient estimated at 0.651, with the significance level equals 0.005 which is less than 0.05, we conclude that there is a positive and strong relationship between the two variables.

The general model of simple linear regression is $y=\alpha+\beta*x_1+ e\varepsilon$. Where:
y= dependent variable, x= independent variable**,** α: constant, β: Regression coefficient, **eε=**residuals

The following equation explain the relationship between ICT and organizational change **y= 0.69+0.5*x+ eε**. Moreover, considering the coefficient of determination which indicate that the use of information and

communication technologies affect organizational Change within the organization under study by 42.4%.

So, the alternative hypothesis was accepted, there is a statistically significant impact of the use of ICT on organizational change at Mobilis Tlemcen.

To test the first hypothesis, we used a simple linear regression model. where the networks are an independent variable and organizational change is a dependent variable at level 5.%.

The significance level equal to 0.019 which is less than 0.05, and the correlation coefficient estimated by 0.507, therefore we can say that there is a positive medium correlation between the use of networks and organizational change. The coefficient of determination found indicates that the use of networks affects organizational change by 25.7%.

So, there is a statistically positive impact of the use of networks on organizational change within Mobilis tlemcen enterprise. And the next linear equation illustrates the relationship between two variables. $Y = 1.01 + 0.31\ x_1 + e\varepsilon$. From the model provided, we note that the higher the value of using networks by one unit, the higher the value of organizational change management by 0.31 units.

Testing the second hypothesis: to see if there is an effect of databases use within Mobilis tlemcen on the organizational change. A simple linear regression model was used to test the second hypothesis. With the consideration of databases as the independent variable and the management of organizational change as a dependent at level 5%.

the significance level obtained equal to 0.039 is less than 0.05 and therefore we can deduce that there is a relationship between the variables.

After calculating the correlation coefficient, who demonstrates that there is a medium positive correlation by: 0.505, between the use of databases and organizational change. The coefficient of determination shows that the impact ratio of databases on organizational change is by 25.5%,

The following linear equation illustrates the relationship between the two variables:

$Y = 0.85 + 0.38\ x2 + e\varepsilon$. We note from the previous equation that the higher the value of databases by one unit, the higher value of organizational change by 0.38 units.

There is a statistically significant impact of using databases on organizational change in the Mobilis tlemcen enterprise.

Testing hypothesis three: There is no statistically significant impact of software on organizational change at Mobilis Tlemcen.

Results obtained after the analysis, demonstrates that the significance level equal to 0.006 and it is less than 0.05, therefore the null hypothesis was rejected, and we accepted the alternative hypothesis saying that (There is no statistically significant impact of software on organizational change at Mobilis Tlemcen). The correlation coefficient equal 0.637, confirms the presence of a strong positive correlation between the two variables. Based on the coefficient of determination we found that software use impact organizational change by 40.6%.

The following linear equation illustrates the relationship between the two variables:

$Y = 0.87 + 0.37\ x3 + e\varepsilon$

We note from the equation that, the higher the value of software by one unit, the higher the value of organizational change by 0.37 units.

Discussion:

The main hypothesis was accepted, proving that there is a strong impact of ICT on the process of organizational change at the enterprise under study Mobilis Tlemcen.

A positive impact of information and Communication Technology (ICT) with its various components on the process of organizational change, in the considered enterprise. However, what helps the process of organizational change is the software used and adopted by the enterprise. As for the impact of both used communications and networks, and databases compared to software remains less effective.

According to the results of compared means and the standard deviations analysis, we conclude that, the commonly used network in the enterprise are internet, and there was no diversification of the means of communication between staff and their officials within the organization.

The most frequently used software are product development and design, and human resources management software.

The main cause that trigger change within the concerned organization is the existence of internal dysfunction.

Consensus has been found about facilitating the circulation of information about change using information and communications technology and that's before, during and after the organizational change process.

Conclusion:

This study investigates the influence of ICT adoption on organizational change. Our findings indicate that ICT adoption has a significant positive relationship with organizational change.

Software had the most impact. The most frequently used programs within the organization was product development and design, and human resources management software.

About the databases, the enterprise care to store information in its databases, and depends on the specialized online magazines in gathering information about its competitors. All information collected within the organization under study is regularly distributed

we conclude that, the commonly used network in the enterprise is internet, and there was no diversification of the means of communication between staff and their officials within the organization. Despite, diversity of ICT channels usage gives employees feeling of being involved in change.

In addition, ICT adoption provides a rapid response to solving problems during the change process.

The limitation of this paper is that it is a local study that needs to be enlarged to more organizations.

References:

Burke, W. W, (2018), Organization Change Theory & Practice, 5th, Sage publications, Los Angeles.

Cooperrider, D. L., & Whitney, D. (2005), Appreciative inquiry: A positive revolution in change, 1st, Berrett-Koehler Publishers, San Francisco.

Creswell, J. W., Poth, C. N (2016). *Qualitative inquiry and research design: Choosing among five approaches, 4 th*, Sage publications, California.

Holman, P., Devane, T., & Cady, S. (2007). The Change Handbook: The Definitive Resource on Today's Best Methods for Engaging Whole Systems, 2nd, Berrett-Koehler, San Francisco.

Kotter, J. P. (2012), *Leading change, 2 nd*, Harvard Business School Press, Boston.

Richard L. Daft. (2010), Organization theory and design, tenth edition, Cengage learning

Ricky W. Griffin.2016, Fundamentals of Management, Eighth Edition, Cengage learning.

Journal articles :

Abrahamson, E. (2000). Change without pain. In *Harvard Business Review* (Ed.), *Harvard Business Review on leading through change* (pp. 127–140). Boston, MA: Harvard Business School Press.

Balthazard, P. A., & Cooke, R. A. (2004). Organizational culture and knowledge management success: Assessing the behavior-performance continuum. *Proceedings from the Hawaii International Conference on System Sciences* (pp. 1–10).

Bandura, A. (1990). Perceived self-efficacy in the exercise of personal agency. *Journal of Applied Sport Psychology, 2*(2), 128–163.

Burnes, B. (1996). No such thing as…a "one best way" to manage organizational change. *Management Decision, 34*(10), 11–18.

Busisiwe, m. Awie, l. (2016)," the role of ict use in smes towards poverty reduction: a systematic literature review", Journal of International Development, retrieved from Wiley Online Library

Charan, R. (2001). Conquering a culture of indecision. In *Harvard Business Review on leading through change* (pp. 63–84). Boston, MA: Harvard Business School.

Chisenga, J, (2004). ICT in Libraries: An overview and general introduction to ICT in libraries in Africa. Paper presented at INASP ICT workshop, held at Johannesburg, South Africa on 21-23 July 2004.

Duan, Y., Mullins, R., Hamblin, D., Stanek, S., Sroka, H., Machado, V. and Araujo, J. (2002), "Addressing ICTs skill challenges in SMEs: insights from three country investigations", *Journal of European Industrial Training*, Vol. 26 No. 9, pp. 430-441.

Duncombe R, Heeks R. (2002). Enterprise Across the Digital Divide: Information Systems and Rural Microenterprise in Botswana. Journal of International Development 14: 61–74.

Dunphy, D., & Stace, D. (1993). " The strategic management of corporate change". *Human Relations, 46*(8), pp. 905–920.

Gester R, Zimmermann S. (2003). Information and Communication Technologies for Poverty Reduction. Discussion Paper, Swiss Agency for Development and Cooperation

Hannan, M. T., & Freeman, J. (1984). Structural inertia and organizational change. *American Sociological Review, 49*(2), 149–164.

Henry, O. Stephen, M. (2010),"Information and communication technologies adoption in SMEs:literature review", Journal of Chinese Entrepreneurship, Vol. 2 Iss 1 pp. 93 – 104.

Irani, Z. (2002), "Information systems evaluation: navigating through the problem domain", Journal of Information & Management, Vol. 40 No. 1, pp. 11-24.

Kotter, J. P. (1995). Why transformation efforts fail. *Harvard Business Review, 73*(2), 59–67.

Lewis, L., Schmisseur, A. M., Stephens, K. K., & Weir, K. E. (2006). Advice on communicating during organizational change. *Journal of Business Communication, 43*(2), 113–137.

Lukacs, E. (2005), "The economic role of SMEs in world economy, especially in Europe", European Integration Studies, Miscol, Vol. 4 No. 1, pp. 3-12.

Mbuyisa, B., & Leonard, A. (2017). The role of ICT use in SMEs towards poverty reduction: A systematic literature review. *Journal of International Development, 29*(2), 159-197.

McCann, J. (2004). Organizational effectiveness: Changing concepts for changing environments. *Human Resource Planning, Vol 27*(1), p 42-50.

Mengesha, N. T. (2010). The role of technological frames of key groups in open source software implementation in a developing country. *Electronic Journal on Information Systems in Developing Countries, 43(1)* ,1-19.

Philip Gillingham (2015) Electronic Information Systems and Human Service Organizations: The Unanticipated Consequences of Organizational Change. Human Service Organizations: Management, Leadership & Governance, 39(2), 89-100

Rahman,L.,(2003). Global Contet of ICT Development and Bangladesh, The Proceedings of the National Conference of Inter-university IT Professionals in Bangladesh, pp: 1-22.

Rao, S.S. (2004), "Role of ICTs in India rural community information systems", Journal of Information Systems, Vol. 6 No. 4, pp. 261-269.

Rasmussen, E.M. (1997), "Indexing images", Annual Review of Information Science and Technology, Vol. 32, pp. 169-196.

Robertson, M., Collins, A., Medeira, N., & Slater, J. (2003), "Barriers to start up and their effect on aspirant entrepreneurs. Education and training. Vol. 45 No. 6, pp. 308-316

Rosemary, S. and Craig, S. (2004), "Benefits and barriers of electronic marketplace participation: an SME perspective", Journal of Enterprise Information Management, Vol. 17 No. 4, pp. 301-311.

Seyal, A., Rahim, M. and Rahim, N. (2000), "An empirical investigation of the use of information technology among small and medium business organizations: a Bruneian scenario", The Electronic Journal of Information Systems in Developing Countries, Vol. 2 No. 7, pp. 1-17.

Shariful Islam, M. Nazmul Islam, M. (2006), "Information and Communication Technology (ICT) in Libraries: A new dimension in librarianship", Asian Journal of Information Technology, Vol 5 No8, pp 809-817.

Sharma, M.K. and Bhagwat, R. (2006), "Practice of information systems, an evidence from select Indian SMEs", Journal of Manufacturing Technology, Vol. 17 No. 2, pp. 199-223.

Sirkin, H. L., Keenan, P., & Jackson, A. (2005). The hard side of management. *Harvard Business Review, 83*(10), 108–118.