

# Enabling Collaborative Organizational Learning (OL) Through Email System: The Socio-Technical Approach – A Case Study

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## ABSTRACT

*Organizational Learning (OL) is about managing knowledge related to the implementation of information system or information and communication technology (IS/ICT) applications for creating such knowledge-based management operation. One of the IS/ICT applications is an electronic mail (email). Email is a communication tool for enabling supportive platform for networked organizational knowledge and intelligence. However, there are still gaps resulted from the email activities such as lack of focus, information overload and spamming, misused and even, abused. Email has failed to provide evidence for promoting OL. A multi perspective of socio-technical approach was adopted to explore the antecedent, behavior and consequences (ABC) of the email users. A survey was done at Universiti Teknikal Melaka (UTEM) and Kolej Yayasan Melaka (KYM) respectively. The results indicate that first, the email users were found to use email effectively for job related purposes, however it was informally shaped by organizational social process. Second, the push nature of the job-related email content has less significance, yet the email threading is still a significant managerial-pulled of job-related connectivity especially between peers. Third, email supports the collaborative working environment but it is not intentionally tailored to OL.*

### Keywords:

*Organizational Learning, collaborative, socio-technical, computer-mediated communication, email system, push-pull threading.*

## 1.0 INTRODUCTION

Organizational Learning (OL) environment can be strategically linked to the computerization age of information and communication technology or information system (IS/ICT) as the organizational infrastructure (Malhotra, 2005). The evolution of IS/ICT have made many innovations (McLeod and Schell, 2004) that eventually enabled many organizational management processes in a form of organizational relationship and

networking (Broendsted and Elkjaer 2001). Rockkard (1979) and Mintzberg (1980) emphasized that communication tools are so important to support management activities and to seize opportunities for creating knowledge-based management (Agazzi, 1998; Boswell, 1986; Lucas, 2003; Rao et. al., 1996). The most widespread internet-based application for communication is an electronic mail – the email is an important revolution in organizational performance (Chauhan and Bontis, 2003). Email is a uniqueness asynchronous communication tool in written form (Balter, 1998). Email provides viable platform for networked intelligence as it promises three aspects: first; the 3Cs-communication, collaboration and coordination (Chauhan and Bontis, 2003), second; the primacy socio-technical aspect (Lucas, 1998) and facilitation of human-computer interaction (HCI) - (Balter, 1998) and third; promoting information and knowledge management principles as part of Organizational Learning (OL) - (Allen *et.al*, 2002). Therefore, an email implies socio-behavioral connectivity that is important to define what roles played by email content and context in the process of knowledge sharing for supporting organizational operation and promoting the collaborative OL.

## 2.0 RELATED RESEARCH PROBLEMS AND QUESTIONS

An email usage has not been optimized in the context of OL and yet has failed to provide evidence for promoting OL. There is still lack of systematic measures for email usability. Email users are unaware what they had learned through email usage. The main issue, what email system characteristics are and how the characteristics are significant for promoting OL. Thus, the concern is to get insight on how email usage can be optimized. Listed are questions to be researched:

1. How should an email system threading be viewed whether as a ‘managerial-pulled’ or ‘technology-pushed’ to facilitate OL?
2. What and how could the actions be measured accordingly upon the “knowledge” disseminating and receiving from email transactions as the outcomes?

### 3.0 RESEARCH HYPOTHESIS

If the concern is on OL “has not been facilitated”, there is a proposition as an hypothesis can be made upon the email content and threading nature. It says that “categorization of the job-related email content and its transactional traffic flows within organizational network into its socio-technical usefulness and importance can provide better indications of email throughput for promoting the Organizational Learning (OL).” This signifies a few significant email antecedent characteristics of job-relatedness, importance, usefulness, activity and the retention mechanism as well as the threading of email transaction could be the measures to facilitate OL.

### 4.0 THE INTENDED INQUIRY SOCIO-TECHNICAL FRAMEWORK OF ABC FOR EMAIL USAGE

The concern of this research is on the socio-technical behavioral elements. The researcher has decided to have different angles in looking the applicability of email usage in the organizational context. This model will be used to observe the theories and motivation for email usage to frame the patterns of email users’ behaviors and practices of preparing, sending, receiving and replying as well as some value-adding activities and lesson learned accordingly in order to determine some form of perceptive evidences about the impact of email usage in the context of OL. The researcher has adopted the Organizational Change Model (Leavit, 1965) elements of people, task, technology and structure, and the Integrated Framework Of Managing Information (Laudon and Laudon, 2006) that signifies management, organization, technology and systems in order to explain the impacts respectively. It emphasizes on the antecedent-behavior-consequence (ABC) model as illustrated to signify the research framework:

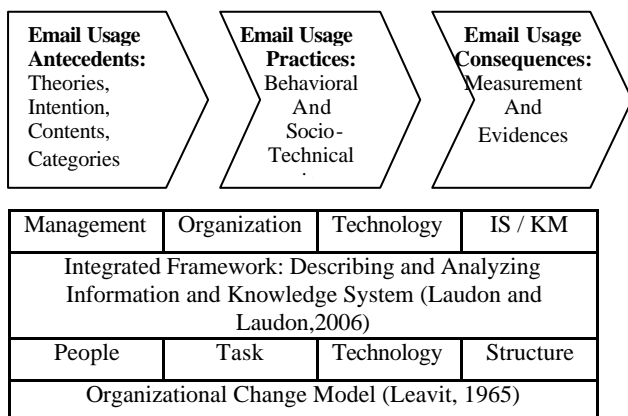


Figure 1: The Intended Inquiry Socio-technical Framework of ABC for Email Usage

### 5.0 RESEARCH OBJECTIVES

While exploring the email usage in the context of Malaysian organizations, there are a number of objectives of this research as follow:

- To understand the antecedents and behaviors of the people (individuals) and to measure course of actions and decision that signify how email could fit into collaborative organizational working environment.
- To analyze the socio-technical modes of email users’ practices and related characteristics of norms, transactional flows, rules of retention and deletion as factors with respect to facilitating OL environment.

### 6.0 THE DATA COLLECTION AND ANALYSIS

For this research, there are two academics institutions chosen as the research subjects; Universiti Teknikal Melaka (UTEM) and Kolej Yayasan Melaka (KYM). As for KYM, there are 95 out of 325 questionnaires has been returned. For UTEM, the researcher has distributed questionnaires for 300 respondents of the UTEM staffs. There are 72 out of those 300 questionnaires has been returned. Therefore, this report writing will be based on the 95 responses for KYM and 72 responses for UTEM respectively. The analyses are illustrated with the frequencies and the mean values accordingly. The results about the responses are given as follows.

#### 6.1. The Email Antecedents And Practices In The Organization.

Typically, on the next analysis, the researcher has decided to signify the antecedent aspects of the email usage. So, the following results illustrate the antecedents (intentions) and ‘right’ thinking of the email users. The results are shown as follows:

#### R1. The Antecedents of Email Usage

Table 1: The Antecedents of Email Usage

| Organizational Task perspective | KYM              |               |               | UTEM             |               |               |
|---------------------------------|------------------|---------------|---------------|------------------|---------------|---------------|
|                                 | Disagree (1 & 2) | Uncertain (3) | Agree (4 & 5) | Disagree (1 & 2) | Uncertain (3) | Agree (4 & 5) |
| Having-econ-eficiency           | 4.2              | 3.2           | 82.7          | 0                | 16.7          | 83.3          |
| Having-system-advantages        | 5.3              | 23.2          | 71.6          | 1.4              | 34.7          | 63.8          |
| Having-job-relatedness          | 4.2              | 16.8          | 78.9          | 2.8              | 20.8          | 76.4          |

| Technology or technical perspective | Disagree (1 & 2)      | Uncertain (3) | Agree (4 & 5) | Disagree (1 & 2) | Uncertain (3) | Agree (4 & 5) |
|-------------------------------------|-----------------------|---------------|---------------|------------------|---------------|---------------|
|                                     | Having-tech-advantage | 6.3           | 5.3           | 88.4             | 2.8           | 6.9           |
| Email-avail-24X7                    | 10.5                  | 25.3          | 64.2          | 5.6              | 30.6          | 63.9          |
| Email-failure-recovery              | 15.8                  | 28.4          | 55.8          | 5.6              | 30.6          | 63.9          |

| Organizational Structure perspective | Disagree (1 & 2) | Uncertain (3) | Agree (4 & 5) | Disagree (1 & 2) | Uncertain (3) | Agree (4 & 5) |
|--------------------------------------|------------------|---------------|---------------|------------------|---------------|---------------|
|                                      |                  |               |               |                  |               |               |

|                        |     |      |      |     |      |      |
|------------------------|-----|------|------|-----|------|------|
| Having-org-significant | 4.2 | 17.9 | 77.9 | 2.8 | 15.3 | 84.9 |
| Having-org-identity    | 7.4 | 20.0 | 72.6 | 1.4 | 23.6 | 75.0 |

| People or socio-managerial perspective | Disagree (1 & 2) | Uncertain (3) | Agree (4 & 5) | Disagree (1 & 2) | Uncertain (3) | Agree (4 & 5) |
|--|------------------|---------------|---------------|------------------|---------------|---------------|
| Email-objectives-defined               | 7.4              | 23.2          | 69.4          | 5.6              | 22.2          | 72.2          |
| Email-use-encouraged                   | 7.4              | 16.8          | 75.8          | 5.6              | 20.8          | 73.6          |
| Email-literacy-training                | 23.2             | 26.3          | 50.5          | 12.5             | 27.8          | 59.8          |

The above results indicate such positive (right) ‘thinking’ towards the email usage as the percentages respectively scaled at more than 60% on each of the antecedent statements particularly on the technical and economical advantages, job-relatedness and organizational significances. Interestingly, for the technical factors, the scores went lower and were not exceeding 70%. The socio-managerial (motivation) aspects show that the email objectives, policy implementation and encouragement for using email were well defined as the responses scaled at more than 60%, however, 50% of the users did not agree that they were given or having proper email training.

## 6.2. The Email Usage And Accessibility.

For the next analysis, the researcher has emphasized upon the behaviors and principles of email sending and its content in the context of email usage within the organization. The results are shown as the following:

R2: Number of email sending per day

Table 2: Number of email sending per day

|                |          | Less than 5 emails | 5 – 6 emails | More than 6 emails | Mean |
|----------------|----------|--------------------|--------------|--------------------|------|
| Email Sent     | KYM (%)  | 77.9               | 16.8         | 5.3                | 3.78 |
|                | UTEM (%) | 55.5               | 23.6         | 20.8               | 4.60 |
| Email Received | KYM (%)  | 38.9               | 21.1         | 40.0               | 5.54 |
|                | UTEM (%) | 11.1               | 23.6         | 65.3               | 7.15 |

The number of email sending per day was less than 5 emails as the responses accumulated at 77.9% for KYM and 55.5% for UTEM respectively. Perhaps, the means of number of email sent are about 4 and 5 emails respectively and yet, these indicate the respondents had sent less emails. Typically, 40.0% (KYM) and 65.3% (UTEM) of the respondents stated they received *more than 6 emails* a day, on average about 22.3% did receive *5 to 6 emails* and yet the means are 5.54 and 7.15 respectively. Obviously, 70.5% (KYM) and 65.3% (UTEM) of the respondents stated that they would reply *less than 5 emails* per day.

R3: The purposes of email messages:

Table 3: The purposes of email messages

| Purposes of email messages (KYM) | Less than 40% (1 & 2) | 40-59% (3) | More than 60% (4 & 5) | Mean  |
|----------------------------------|-----------------------|------------|-----------------------|-------|
| General-info-emails              | 55.7                  | 25.3       | 19.0                  | 38.13 |
| Job-assignment-task              | 57.9                  | 26.3       | 15.8                  | 37.55 |
| PC-Prob-Situation                | 81.0                  | 13.7       | 5.3                   | 24.03 |
| Personel-Socialization           | 67.4                  | 20.0       | 12.6                  | 32.53 |
| Others-purposes (UTEM)           | 89.4                  | 7.4        | 3.2                   | 20.03 |
| General-info-emails              | 22.2                  | 34.7       | 43.1                  | 56.94 |
| Job-assignment-task              | 16.7                  | 45.8       | 37.5                  | 55.14 |
| PC-Prob-Situation                | 52.8                  | 33.3       | 13.9                  | 38.26 |
| Personel-Socialization           | 56.9                  | 25.0       | 18.1                  | 40.87 |
| Others-purposes                  | 79.1                  | 9.7        | 11.1                  | 26.98 |

As shown, 81.0%(KYM) and 56.9 (UTEM) of the respondents stated that *less than 60%* of their sent email are for distributing general information. The results showed the assumption of significant sharing and delegating job assignment through an email accumulated at 84.2% (KYM) saying that *less than 60%* of their sent email. There is that about 94.7% of the KYM respondents sent *less than 60%* email for discussing sensitive issues. The results obtained from the above indicated that 87.3% (KYM) and 81.9% (UTEM) of the respondents admitted sending *less than 60%* leisure and socialization email and other purposes.

R4: Email Sending Thread

Table 4: Email Sending Thread

| Email Sending Thread (KYM) | Less than 25% (1 & 2) | 25-50% (3) | More than 50% (4 & 5) | Mean  |
|----------------------------|-----------------------|------------|-----------------------|-------|
| Email-to-superiors         | 76.8                  | 11.6       | 11.6                  | 15.54 |
| Email-to-sub-ordinates     | 62.2                  | 22.1       | 15.7                  | 22.28 |
| Email-to-peer-workers      | 60.0                  | 22.1       | 17.9                  | 23.77 |
| (UTEM)                     |                       |            |                       |       |
| Email-to-superiors         | 48.6                  | 36.1       | 15.3                  | 28.75 |
| Email-to-sub-ordinates     | 27.8                  | 37.5       | 34.8                  | 39.72 |
| Email-to-peer-workers      | 13.9                  | 40.3       | 45.8                  | 48.78 |

Obviously, the patterns of email sending thread for both KYM and UTEM have shown that all transacted emails to respective parties are low as the means scaled not more than 50.0%. In overall, the email received from superior, subordinate and peers have shown low degree of such nature of the email content.

R5: Email-retained-content

Table 5: Email-retained-content

| Email-retained-content | Job-related | Important | Useful | Active | Vital |     |
|------------------------|-------------|-----------|--------|--------|-------|-----|
| KYM                    | Frequency   | 46        | 42     | 58     | 9     | 21  |
|                        | %           | 52%       | 48%    | 66%    | 10%   | 24% |
| UTEM                   | Frequency   | 19        | 28     | 47     | 9     | 14  |
|                        | %           | 26%       | 39%    | 65%    | 13%   | 19% |

In case of KYM, the most type of retained emails are considered useful as the percentage went to 66%. Yet, also the UTEM respondents stated that the most type of retained emails are considered useful as the percentage went to 65%.

### 6.3. The Implication Of Email Usage – In The Context Of OL

In this section, the researcher illustrated the results of the consequences of email usage as perceived by the respondents and yet it is based upon the scale as follows.

Legend:  
Strongly disagree ①    Disagree ②    Uncertain ③    Agree ④    Strongly Agree ⑤

#### R6. Impacts to Organizational Management (People)

Table 6: Impacts to Organizational People and Management

| Impacts to Organizational Management (People) | KYM             |             |                 | UTEM            |             |                 |
|---|-----------------|-------------|-----------------|-----------------|-------------|-----------------|
|   | Score 1 & 2 (%) | Score 3 (%) | Score 4 & 5 (%) | Score 1 & 2 (%) | Score 3 (%) | Score 4 & 5 (%) |
| email-hi-satisfactory                         | 4.2             | 25.3        | 70.5            | 2.8             | 31.9        | 68.0            |
| email-manageability                           | 6.3             | 18.9        | 74.7            | 2.8             | 27.8        | 72.2            |
| email-personel-boost                          | 11.6            | 21.1        | 67.3            | 11.1            | 30.6        | 58.3            |
| email-info-overload                           | 53.7            | 21.1        | 25.3            | 38.9            | 30.6        | 30.6            |
| email-distract-spam                           | 34.7            | 24.2        | 41.1            | 20.8            | 37.5        | 41.7            |
| email-accord-policy                           | 5.3             | 35.8        | 58.9            | 5.6             | 34.7        | 59.8            |

As for the impact of behavioral factors to email job-relatedness, interestingly stated that the respondents did not agree that the email has become problem due to information overload and spamming activities – perhaps, the assumption should say they had managed the email properly.

#### R7. Impacts to Organizational Task

Table 7: Impacts to Organizational Task

| Impacts to Organizational Task        | KYM             |             |                 | UTEM            |             |                 |
|---------------------------------------|-----------------|-------------|-----------------|-----------------|-------------|-----------------|
|                                       | Score 1 & 2 (%) | Score 3 (%) | Score 4 & 5 (%) | Score 1 & 2 (%) | Score 3 (%) | Score 4 & 5 (%) |
| email-practicality and cost effective | 4.2             | 7.4         | 88.4            | 2.8             | 15.3        | 81.9            |
| email-simple-vs-complex task          | 7.4             | 15.8        | 76.9            | 2.8             | 20.8        | 76.4            |

The above results show that the impacts of organizational task is high as the percentages of agreement of the related issues (as stated above) scored more than 75% in all (4 & 5) cases.

#### R8. Impacts to Organizational Technical aspects

Table 8: Impacts to Organizational Technical Aspects

| Impacts to Organizational Technical Aspects | KYM             |             |                 | UTEM            |             |                 |
|---|-----------------|-------------|-----------------|-----------------|-------------|-----------------|
|   | Score 1 & 2 (%) | Score 3 (%) | Score 4 & 5 (%) | Score 1 & 2 (%) | Score 3 (%) | Score 4 & 5 (%) |
| email-user-friendly-interfaces              | 6.3             | 10.5        | 83.1            | 4.2             | 16.7        | 79.1            |
| email-communication                         | 1.1             | 18.9        | 80.0            | 1.4             | 19.4        | 70.6            |
| email-team-tool                             | 5.3             | 16.8        | 77.9            | 2.8             | 26.4        | 70.9            |

|                                |     |      |      |     |      |      |
|--------------------------------|-----|------|------|-----|------|------|
| email-user-friendly-interfaces | 6.3 | 10.5 | 83.1 | 4.2 | 16.7 | 79.1 |
| email-communication            | 1.1 | 18.9 | 80.0 | 1.4 | 19.4 | 70.6 |
| email-team-tool                | 5.3 | 16.8 | 77.9 | 2.8 | 26.4 | 70.9 |

Obviously, the impact on technical factors is very high as almost all of the scores marked at 70% and above.

#### R9. Impact to Organizational Structure

Table 9: Impact to Organizational Structure

| Impact to Organizational Structure | KYM             |             |                 | UTEM            |             |                 |
|------------------------------------|-----------------|-------------|-----------------|-----------------|-------------|-----------------|
|                                    | Score 1 & 2 (%) | Score 3 (%) | Score 4 & 5 (%) | Score 1 & 2 (%) | Score 3 (%) | Score 4 & 5 (%) |
| email-info-sharing                 | 4.2             | 15.8        | 80.0            | 4.2             | 27.8        | 68.0            |
| email-useful-remref                | 3.2             | 10.5        | 76.3            | 2.8             | 22.2        | 75.0            |
| email-KM-system                    | 0               | 23.2        | 76.8            | 1.4             | 27.8        | 70.8            |
| email-profes-entivity              | 3.2             | 20.0        | 76.9            | 0               | 31.9        | 68.1            |
| email-new-OLearning                | 4.2             | 8.4         | 87.3            | 2.8             | 27.8        | 69.4            |

As for the impact of behavioral factors to organizational structure, interestingly stated that most the respondents did agree that the email has significant roles for enhancing organizational value especially for the emergent of new OL.

## 7.0 RESEARCH ANALYSIS

Generally, the antecedent and technical perspectives of email usage is positive in both constituency. This says that the email users had understood the managerial reasons and technical advantages as well as the organizational benefits of using an email system as more than 75) of the respondents had stated strong agreement on the respective task, technical, structure and people perspectives (Leavitt, 1965). This signifies the importance of email technology and how it will affect the management, organization, systems and solutions (Laudon and Laudon, 2002) in the context of organizational change. This can be initially signified by long experiences in using email (the mean is about 6 years). Yet, an email system is seemed to be preferable as the mean is 67.21% (KYM) and 69.03 (UTEM). This is due to mostly of the respondents are operational people and some are the intermediate managers. However, the email system is not significant organization practices as there is low email dependency – as less than 60.0% of the respondents stated they might have problem if the email was interrupted. The content of email messages are very much general information (less than 60.0%) so it could be not significant in its usefulness. It happens to be significant if those email messages come with some attachments (now email behaves as courier) because basically those attachments consist of ‘richer’ information- yet about 65.0% of the attachments are job-related word documents. An email is not supporting the collaboration purposes as the job assignment and sharing workgroup information needs scored at less 50.0%!

However, this phenomena is reasonable to indicate a formation of such informal 'organizational community' instead a team!. The basic email threading of the organizational is low and still very much hierarchical as the mean of messages sending to superior, subordinate and peer are about 22.14%, 31.0% and 36.27% respectively-refer Figure 2. However, this indicates the managerial-pull phenomena between peers-peers and the superior-subordinate relationships.

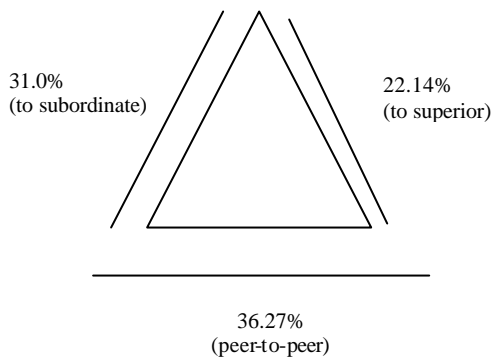


Figure 2: Email Organizational Threading

In addition, it shows that the information content of job-relatedness, usefulness and vitality from these three groups are not significant as the means are about 45% or less than 65% only. Again, these show that the nature of email messages may have less significant in formality or semi-official. Typically, when looking at the impacts of email usage, perhaps most the respondents (about 75.0%) agreed that email is meant for facilitating the communication but not much on collaboration. They seemed to be satisfied with the scenario as 82.2% of the respondent agreed on focus and satisfactory issues (about 65.0%). Furthermore, more than 70.0% of them stated their manageability on email usage as surprisingly 53.0% and 34.7% had disagreed on the issues of distraction of information overload and spamming invasion respectively. Significantly, most of them (more than 75.0%) used the email messages for reminder or references but the duration is short or temporarily retained. Finally, more than 75.0% agreed that the email could be viewed as a form of KM but it is not meant and is not engineered to be so. About 80.0% agreed that the scenario of email usage may facilitate the OL but not much can do to improve it as the features of the email as communication tool seemed to be matured.

## 8.0 THE FINDINGS

In general, the email usage is not really 'glued' to the nature of work, as so it is not determined as significant (perhaps intended / good for simpler task) and as the requirement for email usage may have alternatives. The phenomenon is known as "The disguises for true functionality of an email system", yet to be indicated by the following statements:

1. There is positive (antecedent) thinking and right motivation of email functionality, however the email

usage presents a bit chaotic but seemingly managed behaviors.

2. The email message content will be very much general and less significance and yet, it is seemingly short in duration.
3. Managerial-pull will require the email users to 'actively' or 're-actively' expect and access, check (read) incoming email messages. This expectation will be very much on specific email messages with certain useful instruction.
4. The organizational perception realized the significances and yet the consequences are tend to indicate positive dimension toward OL

Perhaps, in conclusion, this study brings up two important implications. First, email system does help and support the OL. An email system has shown positive indication in supporting the OL by providing technical advantages as an effective media for communication and information transfer and yet represent only 20% processing mode and social platform for having broad connection (socialization) as an email is about 80% socializing. Second, however, email system does not yet improve the OL because the significance of the email messages is still considered low and the 'tacit knowledge' is still hard to be translated. The functionality of an email system is still lack of knowledge creation - it is occasionally performed however it is not meant to 'engineer' the knowledge because it is simply too little, not significant, short term and temporary in nature, semi - official or informal except being supported by attachments.

## REFERENCES

- Agazzi, E.(1998). "From Technique to Technology: The Role of Modern Science", Phil & Tech 4:2, University of Fribourg, Switzerland, Winter.
- Allen, J. , Blaylock, N. and Ferguson, G. (2002). A problem solving for Collaborative Agents, *AAMAS 02*, Bologna, Italy.
- Balter , O. (1998). *Electronic mail in a working context*, Doctoral Dissertation, Department of Numerical Analysis and Computing Science, Royal Institute of Technology, Stockholm
- Boswell, J.(1986). *The Life of Samuel Johnson*, London.
- Broendsted, J. and Elkjaer B. (2001). Information Technology As A Fellow Player In Organizational Learning.Global Co-operation in The New Millenium. *The 9th European Conference on Information Systems*. Bled, Slovenia.
- Chaunhan, N. and Bontis, N., (2003), Organization Learning Via Groupware: A Path to Discovery or Disaster, *International Journal of Innovation and Learning* .
- Leavitt, H.J., (1965). *Applied organization change in industry: Structural, technical, and human approaches; new perspectives in organizational research*, in March, J.G (ed.) *Handbook of Organizations*, Chicago, Rand McNally, p55-71.
- Laudon, K.C. and Laudon, J. P., (2006), *Management Information Systems: Managing Digital Firm*, Ninth Edition, Prentice Hall International Inc, Upper Saddle River, N.Y.

- Lucas, M. C. (2003), *Organizational Learning: Towards A Model for Canadian Forces*, Canadian Forces Leadership Institute, University of Calgary.
- Malhotra, Y.(2005), Integrating Knowledge Management technologies in organizational business processes : Getting Real Time Enterprises to deliver real business performance. *Journal of Information Management*, Vol 9, No. 1., 7 – 28.
- McLeod R, and Schell G, (2004), *Management Information Systems*, Ninth Edition, Prentice Hall, New Jersey.
- Mintzberg, H, (1980), *The Nature of Managerial Work*, Englewood Cliffs, N.J., Prentice Hall.
- Nijhof, A.H.J., Rietdijk, M.M. (1999), An ABC-analysis of ethical organizational behavior. *Journal of Business Ethics*, Vol. 20 No.1, pp.39-50.
- Rachlin, H. (1999). Philosophical Behaviorism: A Review of Things That Happen Because They Should: A Teleological Approach to Action, by Rowland Stout, *Journal of The experimental Analysis of Behavior*, Vol. 72, No. 2, September. pp 273 – 277.
- Rao, A., Carr, L. P. and Dambolena, I., (1996), *Total Quality Management*, John Wiley & Sons, Inc., USA.
- Rockkard, J.F, (1979), Chief Executives defines their own data needs, Havard Business Review, March – April.