

Effectiveness of Teleworking Using Internet Facilities (E-Teleworking)

M Khalid Awang, Hasni Hassan, Maizan Mat Amin,
W Faranaquiah W A Halim

Information Technology Center, Sultan Zainal Abidin Religious College (KUSZA) Gong Badak 21300 Kuala Terengganu,
Terengganu, Malaysia

E-mail: {khalid, hasni, maizan, wahfara} @kusza.edu.my

ABSTRACT

Teleworking offers alternatives for people to work without concerning their geographical boundary or time zone. Work can be performed anywhere and anytime without restriction. Teleworking tends to be the trend in the world of business. However, in spite of its popularity, Malaysia is still lagging behind in its implementation. Telecommunication technology is the key factor in contributing to the successful implementation of teleworking. In order to carry out the task of teleworking, a variety of telecommunication facilities are available. However, nowadays, only one approach is considered effective that is using the Internet facilities (e-teleworking). The main objective of the research is to evaluate the effectiveness of e-teleworking. In depth literature review had been done in recognizing the traits of teleworking that can be implemented using Internet facilities. A prototype of e-teleworking had been developed as a tool in the evaluation phase. The findings had proven that Internet facilities are indeed one of the most effective alternatives in performing teleworking.

Keywords: Teleworking, E-Teleworking, Internet

1.0 INTRODUCTION

Teleworking can be described as working at a distance from your office, either at your home or in your car. Teleworking is suitable for both employee and employer. Teleworking is not a job, but it is a way to perform a job. Telework is based on the belief that mature; responsible adults; do not need constant close supervision in order to perform their work [1]. It may seem that telework is the new innovation of the information age, however it has been practiced for several decades in occupation such as sales, accounting and journalism using either telegraph, telephone, mail, or faxes.

Internet emerges when computers are networked globally and creates a public place without geographic boundaries. Internet provides computing and communication capabilities that add values to businesses. The emergence of the Internet had in fact led to a new era of teleworking since it provides facilities that are suitable for teleworking such as e-mail, file transfer and video teleconferencing.

2.0 TELEWORKING

“Teleworking is any form of substitution of information technologies (such as telecommunications and related travel that brings the work to the workers instead of moving the workers to

the work”.[2] The terms telecommuting and teleworking describe the same thing. The only difference is that telecommuting is more frequently used in the United States whereas teleworking is used in Great Britain and Europe.[3]

There are many definitions of teleworking that may sound different but convey the same meaning. Teleworking and telecommuting in the context of this paper means the substitution of traditional commuting by telecommunications services. "Telework occurs when information and communications technologies (ICTs) are applied to enable work to be done at a distance from the place where the work results are needed or where the work would conventionally have been done".[3]

2.1 HISTORY OF TELEWORKING

In 1970s and 1980s in Europe, telework was often termed “electronic homework”, which means unskilled, low paid office work from the home, either based on a full time contract or on a freelance relationship with the employer.[4] The housewife with the child-care responsibilities who in isolation from the working office community performed monotonous word processing for a remote employer exemplified the typical teleworker. [5]

In the US in 1985, telework was simply defined as “people working at home with computers connected to the offices many mile away”.[6] Only with minor modifications in 1986 that this definition was confirmed : “Telecommuting means performing job-related work at a site away from the office, then electronically transferring the results to the office or other location”.[7]

The concept of telework was first conceived in the U.S during the oil crisis of the early 1970s. The first systematic analysis of the pros and cons of telework at a societal level was published in 1976 by Jack Nilles, who are known as “telework prophet” in Europe. In the analysis, the economic costs and benefits of the physical travel to and from work are compared with the costs and benefits of staying at home and using communication link to communicate with the employer.

Currently, with the expansion of electronic network accessibility and the growing availability of portable computers, work may be performed almost “everywhere”; either at the office, at home, or during a travel.

2.2 EVOLUTION IN COMMUNICATION TECHNOLOGIES FOR TELEWORKING

This historical pattern has been repeated in the development of every new communications network technology [8]:

1870's: telephone. 'Telecommuting first began in 1877. A bank president situated in Boston made plans to communicate with his family in Somerville, Massachusetts by suspending a phone line from his place of work to his home residence.' [9]

1890's: radio telegraphy or "wireless". In Wireless Telegraphy Act 1949, "wireless telegraphy license" already existed in European government. The license was purported for business and individual. [10]

1990's: Internet and mobile communications. The continuing spread of Personal Computers and the use of the Internet has supported telecommuting. It also facilitates teleshopping, teletrade and other home business activities. People are being able to carry out more and more tasks from their home when corporate networks are expanded and customers are participating online.

Among the Internet facilities used to support teleworkers are: [11]

Data transmission to and from the remote workers:

- Technology Internet (Internet Protocol)
- Integrated Services Digital Network (ISDN), including multimedia
- Mobile data networks

Keeping in touch:

- Audio-conferencing, video-conferencing, video-telephony, voice mail, SMS, paging, e-mail, internet conference (net-meeting), facsimile etc
- Voice over Internet Protocol

Sharing information:

- Electronic 'bulletin boards'
- Fax 'broadcast'
- Mailing List
- Electronic 'whiteboard'
- Net-meeting & chatting

Teleworking has the potential to be a popular form of work practice in the future with the widespread use of personal computers and the Internet. The enabling technology is now available with a wide choice of solutions. Reduction in costs combined with increasing functionalities have also contributed to its popularity among users.

These are the top ten tasks for teleworking as described by Mike Johnson in 'Teleworking in Brief' [12]:

1. Creating, writing and editing reports and proposals.
2. Preparing budgets.
3. Maintaining personal databases.

4. Preparing and developing contracts.
5. Developing sales and business plans.
6. Finalizing staff reviews and bonus plans.
7. Thinking, reading and reflecting.
8. Catching up with business correspondence.
9. Project management and task force assignment planning.
10. Desk researches by telephone, fax and e-mail.

2.3 THE INTERNET AND TELEWORKING

The Internet acts as a communication vehicle that is used by teleworkers to communicate with their corporate offices. Many teleworkers are already using the internet for exchanging files between home and their corporate office using the standard attachment option available with many of today's e-mail products or by using groupware.

This era of new technology provides new methods for income and human production, both in the services and goods sectors. New technology has provided effective telecommunication tools available to the end-users, through the use of personal computers and modems, without geographical restrictions.

Teleworking has become a new way of working in the society. The society today is based on the rapid pace of development in new technologies. The evolution in internet and telecommunications will influence and direct the evolution methods used in the workplace.

3.0 RESEARCH METHODOLOGY

The research was done by analyzing secondary sources related to the topic followed by the development of the prototype.

3.1 THEORETICAL INVESTIGATION

Literature review on the two subject matters was carried out. A number of publications were studied, including books, journals, articles and magazines. Most of the documents used for the research were available on the Internet.

3.2 PROJECT IMPLEMENTATION

A prototype of teleworking application was developed based on the domain analysis, knowledge capture, and interface design. The prototype fully utilized the facilities that are available on the Internet in performing teleworking. After the completion of the prototype, an evaluation testing was done by requiring responses from selected respondents.

3.2.1 OVERVIEW ON THE DEVELOPMENT OF THE PROTOTYPE

The research done in the literature review gave some insights into the development of the prototype. The prototype was an online application due to the availabilities of Internet facilities in implementing teleworking.

Home page of an accountant company was designed as the entrance to the *Virtual office* and it will enable users to access the application on-line regardless of their whereabouts. The prototype also employed the approach of multilevel security in accessing the *Virtual office* where there were three levels of users with different authorization to use the facilities. A range of Internet facilities have been implemented in the prototype to provide effective teleworking application. Those facilities are:

- 1) **News** that act as the workplace notice board.
- 2) **Calendar** to assist users to coordinate their schedule.
- 3) **File manager** to enable downloading, uploading, viewing and sharing files.
- 4) **E-mail** to provide communication in teleworking.
- 5) **Project Status** to enable work monitoring.
- 6) **Task list** to enable task assignment.



Figure 1: Internet facilities provided by the prototype.

3.2.2 EVALUATION OF THE PROTOTYPE

The respondents were given two sets of questionnaires. The first set was answered before using the prototype and the second set of the questionnaire was answered after they have used the prototype.

The questionnaires covered their opinions on general telecommunication technologies, the effectiveness of the prototype in performing teleworking and the fulfillment of its specifications. Responses from the respondents were recorded and tabulated and analysed.

4.0 ANALYSIS AND FINDINGS

During the first phase, the respondents were required to answer the first set of questionnaires in order to find out their opinions on internet facilities compared to the conventional telecommunication facilities in performing teleworking.

4.1 DEMOGRAPHICS OF THE RESPONDENTS

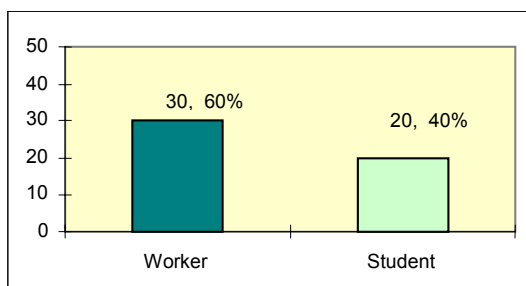


Figure 2: Demographics of respondents

A total of 50 respondents with basic knowledge in accounting were selected in this research. Majority of the respondents (60%) were from selected government agencies and private companies. Another 20 respondents (40%) were students who are currently undertaking Bachelor of Science in Business Accounting and Finance course in Kolej Ugama Sultan Zainal Abidin (KUSZA), a

collaboration program with the University of East London.

4.2 FIRST EVALUATION PHASE

During this stage, the respondents were required to give responses on which type of telecommunication facilities that they prefer to be used at their worksites and their opinions on the usage of the Internet for teleworking.

4.2.1 PREFERRED TELECOMMUNICATION FACILITIES AT WORKSITES

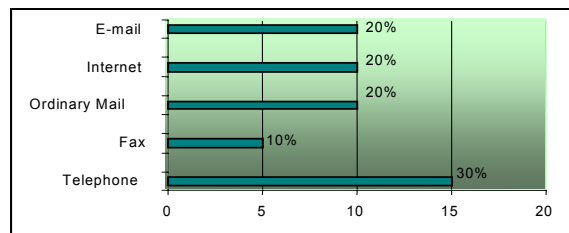


Figure 3: Type of telecommunication preferred at worksites

Telephone was the most popular telecommunication facility (used by 30% of the respondents), followed by e-mail, Internet and mail (20% each) whereas facsimile was the least preferred (10% only).

4.2.2 OPINIONS ON THE USAGE OF INTERNET FACILITIES IN TELEWORKING

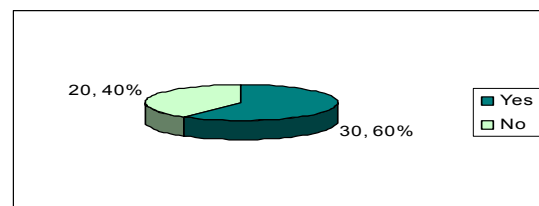


Figure 4: Respondents' opinions on the usage of Internet in teleworking

Even though Internet was not the preferred telecommunication tool for the majority of the

respondents, most of them (60%) however agreed that Internet is the best medium of communication in performing teleworking.

4.4 SECOND EVALUATION PHASE

In the second phase, the respondents were given the opportunity to use and explore the prototype and consequently answer the second set of questionnaires.

4.4.1 THE USAGE OF INTERNET FACILITIES IN TELEWORKING

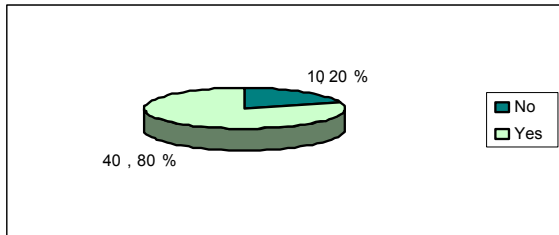


Figure 5: The usage of Internet facilities in teleworking

From the prototype, the respondents had the opportunity to explore on the usage of Internet for teleworking. In this second phase, the turnover of the opinions was very high. The number of respondents who were in favor of the Internet had increased from 60% to 80% (by 20%).

4.4.2 INTERNET AS THE MOST EFFECTIVE WAY IN PERFORMING TELEWORKING

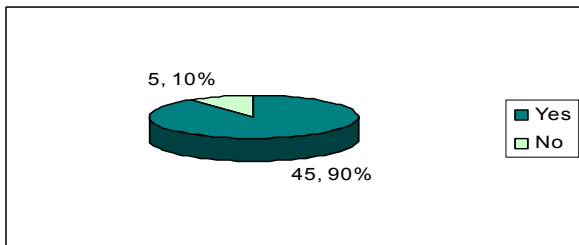


Figure 6: Effectiveness of the Internet for teleworking

Almost all respondents (90%) agreed that the Internet is the most effective way in performing teleworking compared to other telecommunication facilities such as mail or telephone.

4.4.3 TELEWORKING AS THE FUTURE TREND OF WORKING

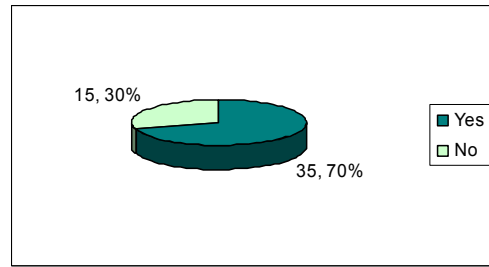


Figure 7: Views on the Teleworking as the future trend of working.

From the evaluation, only 15 respondents (30%) did not agree that teleworking would be the future trend of working. The objection would be due to lack of knowledge in teleworking as an alternative way in performing their jobs. In contrast, there were 35 respondents (70%) who agreed that teleworking will be a future trend of working. They believed that teleworking could be considered as an alternative way of working and it will become a popular form of work practice in the future as the use of personal computers and the Internet becomes more prevalent.

5.0 CONCLUSION

All the requirements and stages involved in the development, evaluation and testing stage were successful although there were some difficulties during the implementation of the process. However, it can be concluded that the main objective of this project, which is to evaluate the effectiveness of teleworking using Internet facilities had been achieved. Overall, it can be concluded that:

On-line based application as the key feature implemented in the prototype had proven to be the most prominent way in performing teleworking. Users were able to access the application without restriction to time or geographical boundary.

Email facilities were in fact the most efficient way of communication in teleworking since the users did not have any limitations on the size of attachment and the types of document that can be attached.

File manager provided the users with the facilities to share their folders with selected users. They also gained benefits from uploading and downloading facilities from the file manager.

The distinctive capabilities of the **calendar** had proven to be indispensable in teleworking. The calendar facilitated the users to coordinate their schedules for meeting or appointments. This function was possible since users were able to view the calendar of other users.

The **project status** was useful for the employers to monitor the progress of any projects that had been assigned.

The news had shown to be more effective than the workplace notice board where you can share information efficiently with others.

It is evident from the research that Internet facilities are the most effective and efficient way in implementing teleworking. With the rapid growth in telecommunication technology, accessing the Internet will be cheaper, faster and efficient. Hopefully, it would not be long until the implementation of teleworking would be adopted in our country.

6.0 RECOMMENDATIONS

The prototype could be improved by enhancing the available facilities such as progress report on the assigned task, where extensive monitoring could be implemented by automatically generating the status of any projects. Allowing users to lock and unlock the shared document could also enhance the capabilities of File Manager. In future, video teleconferencing could also be added to the system that will benefit the users in assisting online discussions or meetings.

REFERENCES

- [1] CANADA, Department of the Solicitor General (1997), Alternative Work Arrangements
- [2] Angelina P. (2004), 'Studying the role of ICT and gender in teleworking' [online] <http://www.startechcentral.com/tech/story.asp?file=/2004/4/15/itfeature/7708431&sec=itfeature>
- [3] Dulamday E (1998), The Socio-Economic Impact of Telework on Developing Countries. [online] <http://www.undp.org/info21/bg/b-dary.html> [online] http://www.forumforthefuture.org.uk/uploadstore/GeSI_social_summary.pdf
- [4] Guthrie R. and Pick J. (1999), 'Teleworking Ethics', University of Redlands, [online] <http://www.math.luc.edu/ethics97/papers/GuthriePick.html>
- [5] H.L. Capron. (1997), 'Computers, Tools for Information age', 6th Edition, Prentice Hall.
- [6] Kate A., 'Telework.', Internet Technologies International [online] <http://www.funet.fi/~kate/telec.htm>
- [7] Klinge C., 'Change in The Requirements Taking, Teleworking as an example.' [online] http://www.baua.de/english/info/tb00_01/tb102_107.pdf
- [8] KLR Consulting Inc., (January/February 1996) Article, Volume 4 no.1. [online] <http://www.klr.com/telework.htm>
- [9] Lechner C. (1997), 'Teleworking and Telecommuting', Institut für Englische Sprache. [online] <http://www.wuwien.ac.at/usr/h92/h9250403/publications/teleworking.html>
- [10] Lemesle, R.M. and Marot J.C. (1994) 'Favorable Target Groups and Application for Teleworking', Le teletravail, Paris [online] <http://www.ymca-cepiere.org/accueilan/publications/tw.html>
- [11] Robert A. L. (2000), 'Teleworking, Current and Future Issues' [online] <http://www.cyberworkers.com/rlewis>
- [12] Johnson M. (1997), 'Teleworking in Brief', Oxford : Butterworth-Heinemann