Jurnal Komunikasi
Jilid 13 & 14, 1997
m.s.: 51-65

HASMAH ZANUDDIN OMAR

Women and the New Media Technologies: Approaching the New Millennium

Introduction

Historically, broadcasting and telecommunication services were offered on distinct infrastructures, by different organizations, that supplied different kinds of messages (Cuilenburg & Verhoest). They were also regulated by different regulatory regimes. Due to technological covergence, the boundaries between broadcasting and telecommunications are blurring. Technological convergence in communications finds its complement in economic convergence: telecommunications operators are entering the business of cable television, publishing houses merge with video entertainment compaines and computer software companies take an interest in television networks.

With convergence, media become confused (Cuilenburg & Verhoest) and the historical separation of legal and regulatory regimes is worn out. Hence, policymakers look for new policy models to cope with the increasing confusion of media. Broadly speaking, there are two approaches. The holistic approach stresses the growing inter-relations and complementary between different media. Consequently, the defenders of this approach plead for a generic policy that would encompass the whole field of communicatios. The more pragmatic view points to tha already existing variety of services and their specificity. Proponents of this view argue that the difficulty to treat this 'complexity' in a uniform manner still calls for media-specific solutions. Of course, the difference of opinions raises the question which perspectives Malaysian preferred.

The preferences might not be so easy to guest but the most logical paradigm will certainly be historically and culturally interrelated basis. At present, the Ministry of Energy, Telecommunications and Posts (METP) is responsible for policy formulation and enforcement of regulation in the telecommunications industry. The telecommunications regulator, Jabatan Telekomunikasi Malaysia (JTM) is the body through which the METP enforces regulation. The Director General of the JTM reports directly to the Minister of Energy, Telecommunications and Posts.

The respective responsibilities of the METP and the Director General (JTM) mainly that METP is responsible for formulating government policy for the sector and stipulating licence conditions, whilst the Director General (JTM) is responsible for ensuring compliance with these licence conditions and ensuring that Government policy is implemented. There is some overlap of, for example, the METP is responsible for regulating tariffs and conditions of supply, whilst the Director General is responsible for promotion of the interests of consumers with respect to prices.

Other Ministries have a role in the sector and related areas. The Ministry of Finance, through a holding company, owns more than 70% of the shares of Telekom Malaysia. The Ministry of Information is responsible for regulation of the broadcast media, including all issues surrounding content. The Ministry of Home Affairs is responsible for the print media. In addition, Telekom Malaysia's Board of Directors contains representatives from both the Ministry of Finance and the METP and Government is responsible for appointing the Chairman of Telekom Malaysia.

The Convergence Act that to be tabled soon should be able to address pertinence matters such as institutional reform, legislative reform, effectiveness of the regulator, competition in infrastructure and services, licensing policy, tariff policy, interconnection, universal service obligation, training, frequency management, international dimensions, research and development, multimedia services and the implementation.

The National Telecommunications Plan (NTP) published in 1994 sets the objectives for the government that telecommunications services delivered to both residential and business customers in Malaysia should be on par with the rest of the world - both in terms of the availability and quality of

basic and advanced services and in terms of the tariffs charged. The policies lies at the centre of the Vision 2020 and taking into account recent development, in particular of the issues of multiple fixed and cellular licences and the government's commintment to the Multimedia Super Corridor initiative.

The importance of this objective in Malaysia's future economic development and the role which telecommunications will play in the achievement of the government's wider 2020 Vision for the development of the Malaysian economy cannot be over stated. Telecommunication services not only have an increasing impact on the lives of residential consumers, but are also vitally important as an intermediate input into other industries.

Telecommunications also lies at the heart of developments in multimedia services which are central to the Government's Multimedia Super Corridor (MSC) initiative has already placed Malaysia at the centre of multimedia developments in the region. In terms of connectivity, the government's overall policy objective, which is central to the Vision 2020 for the telecommunications market as the prime vehicle of the Information Rich Society.

Penetration Target

The government's target for basic telephony penetration is to have a phone (fixed and/or mobile) in every house by the year 2020. Current penetration rate and total access line per 100 population is 18.4 percent. This is consistent with aggregate demand projections for the sector, which suggests that total penetration for the population will exceed 27% by the year 2006 and that total hosehold penetration will exceed 85%.

This definition takes into account the likely future impact of fixed mobile convergence which implies that in increasingly in the future individuals and households may choose to have just a mobile phone rather than both a fixed and a mobile phone. The significance of this effect will depend on the rate at which the quality of mobile service improves and on the relative tariffs. The majority of household will have either a fixed phone or a fixed phone and a mobile phone.

Multimedia Super Corridor

The personal computer (PC) industry generates close to $ 100 billion (USD) in sales each year (Shaffer, 1995). There are replacing mainframe computers in business, and staking claim as a necessary appliance in offices and home. It seems that PCs are everywhere, and the peripheral markets they have spawned-networking, multmedia, virtual reality, and others - have becomew and integral part of the world's economy and culture.

Recent development in Malaysia is the rapid growth of development in communication industries and information technologies (IT). The Multimedia Super Corridor (MSC) was mooted by the Prime Minister and had its first International Advisory Panel meeting on January 1997 (Utusan malaysia, 16 Jan., 1997). The computer and internet are becoming not only a common term in offices and technologically oriented organisations but are also increasingly becoming a regular household vocabulary. This wave of the new technology sweeping across the region is also encouraging citizens to seen the new need to prepare themselves and their children for computer-based communication and education.

As of March 1997, Malaysia has only 80,925 Internet subscribers, made up of 55,470 with Jaring and 25,455 with Tmnet.

Information Society and Computer Technology: Impact of Regulations

This paper assesses the barriers and incentives in accessibility and penetration rate of computer technology among urban and rural residents in Malaysia within the framework of development and communications strategies and the formations Multimedia Super Corridor. Computer technology is signifiying the term 'digitl technologies' which covers the range of input and output devices which allow users to generate, manipulate, send and receive data in digital form (eg: modems and CD_ROMs).

The substantial changes foreseen in technology are shifting then pendulum swing form inaccessibility and limited availability to a firm and stable position of accessibility of technological facilities at different levels. Innovations in

technology may increase the dependency on hardware but there is no denying the fact that the percolation of media to all level of economic status will certainly occur. There can be misgivings about its potential and the fears that it will be essentially pro-rich and only carry forward the urbanised sensibilities and many alienate or create unsatisfied aspirations and discontent.

One issue related to parctical implications with new policy and the communications act is an issue related to the entire process of adopting and participation in implementation. An introduction of any form of new media into a society has various social impact (Choi, 1988). First, the development of new media technologies changes the role of traditional media; the introduction of new media into newspaper field changed the roles of newspapers from purely print jounalism to a form of electronic information. Second, while it can bring changes in the nature of education; it can solve difficult educational problems through remote distance education; it may also bring new emotional problems between teachers and students. Third, it can bring changes in various industries; because high value-added characteristics of new media increase the size of markets and existing markets will be recognised by new media technology (Rhee, Dongshin, 1996).

According to Rogers (1983), new media have three characteristics; interactivity, demassification and asynchronicity. New media are defined as communication technologies "that allow or facilitate interactivity among users or between users and information (Salvaggio, 1989). The new communications and the complementary computer and information technologies have profoundly affected our social structure. There is growing interdependence between technology, information and society.

Methodology

A survey was conducted with 500 urban and rural women in various locations in Malaysia. 250 urban residents were selected from Klang Valley (Kuala Lumpur, Kelang and Shah Alam) and 250 rural residents were selected from several locations from the East Coast (Kelantan & Terengganu), Northern Peninsula (Perak & Kedah) and Southern Peninsula

(Johor). An instrument of structured questionnaire was constructed and the respondents were interviewed face-to-face using the questionnaire. The questionnaire included questions and attitudinal statements regarding their reasons in buying computers, experiences with computers and barriers and impediments to own and use computer.

An A10 scale developed by Well and Tigert was used to examine respondents' personal interest in one's environment and social and individual opinion (Wells and Tigert, 1971). Factiorial analysis was done to find out high loading factors that can explained attitude and opinion of respondents. The scree plot is used to aid decision about the number of factors to select. It consists of aplot of the eigenvalues on the vertical axis against the factors to select. It consists of a plot of the eigenvalues on the vertical axis against the factor number on the horizontal axis. Four dimension of attitudinal opinion responses were utilised i.e; reasons you buy computer, reasons you learn to use computer, economic barriers to computer usage and cultural barriers and impediment to buy and use computer. Fifty-two attitudinal opinion items were used to measure respones. A 7-point was used, from 'I strongly agree' to 'I strongly disagree'.

Results

A total of 36 percent of respondents own computer. In all, 34 percent of respondents who owns computer are from the urban location.

In terms of education, 68 percent who owns computers earned at least a bachelor degree and 52 percent of them earned an income between RM 1000 - RM 3000. Seventy-two percent who can use computer were in the age group of 21-30 years old.

For a comprehensive evaluation of respondents feelings, knowledge and behaviour toward computer usage a set of statements were constructed, such as;

1) I am comfortable with computer.
2) I can switch on and off computer easilyt.
3) I do not like the software.
4) Computer is useful as may washing machine.
5) My computer can give information as my television does.

Almost 90% of respondents gave a low response to statements number one (1). For most of them, computer is too technical that they need the knowledge and technical-know-how to make them confident to even sit in front of computer. There are differences in feeling and behaviour toward computer comparatively between age group. The elder group of ladies was almost impossible to ask them to even touch the keypad/board. However, the younger generations especially teenagers were very eager to try and use them and it's a heart-wrenching situation when they weren't any computers at home for them to use. The middle-aged group was mostly working women and almost 87% of them agree that computer is important for today's life and most of them were pro-active toward computer usage. They are supporting the ideas of computer usage for their family members too.

	Urban	Rural
Owns computer	34%	2%
Telephone line	42%	9.1%
Modem	1.4%	0.2%
CD ROMs	1.9%	0.2%
Electronic mail	5.7%	0.1%
Internet	5.7%	0.1%
World Wide Web	5.7%	0.1%
File Transfer Protocal	0.2%	0.0%
Telnet and Gopher	0.2%	0.0%
Mailing Lists and newsgroups	0.3%	0/2%
Video	0.7%	0.2%
Video Conferencing	0%	0%
Games	2.2%	1%

TABLE 1. Computer Technology Penetration/ Acceptance Rate

TABLE 2. Respondents Technology Levels

Technology mix	Functional capabilities	Urban	Rural
Telephone Unconnected (no. telephone, no computer	No telecommunication	66%	90.1%
Telephone Connected Telephone, no computer	Voice communication	42%	9.1%
Digital Unconnected Computer, no modem	Voice communication and stand-alone computing	34%	2%
Digital Connected Computer, modem	Voice/data communication and networked computing	14%	0.2%

4 factors were selected and they collectively account about 67 percent of the variance of the 40 variables. The four factors also found to have Eigenvalue, more than 1.0 (table 3), and to have more than 3 variables as in table 4. The factors loading of each variable was more than 0.39. Each factor group was named after its characteristics. The four factors are: reasons you buy computer, reasons you learn to use computer, economic barriers to computer usage and cultural barriers and impediment.

TABLE 3. Eigenvalue and variances of each factor

Factor	Eigenvalue	Variance rate	Cummulative explanatory power
1	7.88245	20.4	20.4
2	6.45761	18.1	38.5
3	2.45783	6.9	45.4
4	8.26574	21.6	67.0

TABLE 4. Factorial loadings for four factors

Factor 1. Incentives reasons you buy computer

	Factorial loading
Computer is a new technology	.82554
Computer is important for my children education	.78952
Computer is important for myself	.68753
Computer is a must today's life	.50722

Factor 1 and 2 are considered as Incentives to Computer Technology. Four variables constitute the greatest loadings on Factor 1. Computer is a new technology, computer is important for my children education, computer is important for myself and computer is a must for today's life are most associated with Factor 1 - reasons you buy computer.

Factor 2. Incentives Reasons Your Learn To Use Computer

	Factorial Loading
I don't know much about computer	.82593
This is a self-development for myself	.72356
There is so much information on the Internet	.68932
Computer is important for my children education	.58832
It is a modern lifestyle	.47724

The second factor (reasons you learn to use computer) is most strongly related to the set of variables, I don't know much about computer, this is a self-development for myself, there is so much information on the internet, computer is important for my children education and it is a modern lifestyle.

Factor 3. Economic barrier

	Factorial Loading
Computer is expensive to buy	.72844
Computer programs are expensive	.71533
Computer services are expensive	.68972
Computer classes are expensive	.55674
Computer loan is not attractive enough	.43424

The third factor (economic barrier) has high loadings on computer is expensive to buy, computer programs are expensive, computer services are expensive, computer classes are expensive and computer loan is not attractive enough.

factors. Computer users had high scores on incentives factors, reasons they buy and use computer and had lower economic barriers and cultural barriers and impediment scores, so they tended to be more economically stronger, higher edocated, English educated, read and writes well and more social liberal.

On the other hand, non-computer users scores highly on economic barriers and cultural barriers and impediment, so they had more traditional values. They were more dutiful to their parents and families, they thought families are more important than their own lives and they wanted to live with their parents and family. They had more family visitors and most of their financial activities accounted to family. They were less educated, less financial stability; non-English educated, read and writes less and more conservatives. Traditional values relate to being dutiful to parents and family and this group believes that it is more meaningful if they spent their time attending to their parents and family rather than computers. Since they were not financially stabile, most of their time was also devoted to earning more salaries to the family. Hence, lesser time for other activities.

Conclusions

This study's findings suggest that the introduction of computer as a new media technology face barriers and impediments. Economic and cultural possess the stongest barriers and impediments factors among the urban and rural residents in Malaysia. This relates to the price of personal computer. Though in the recent past the prices of the personal computers have fallen to a great extent, they are still beyond the means of an ordinary citizen. Average price of a PC in Malaysia (Intel Pentium, 4 MB RAM) is RM5,000 (US$2,000) and with internet and multimedia facilities the price rocketing to RM5,000-RM7,000 (US$2,000-US$3,000). This price is obviously higher than the average montly per capita income of the citizens.

Total excess line per 100 population (Telekom, 1996) in 1996 is 18.4 and the penetration rate of telephone in Malaysia is only 2.74 millions. Prior to 1996, nominal tariff policy had remained constant for over 10 years. Line rentals had remained unchanged since 1982 and basic telaphony tariffs had remained unchanged since 1985. In 1996 the tariff rebalacing began with the introduction of local call timing and

reductions in international call rates while national call rates were held constant. This brought tariffs more in line with costs but more rebalacing is required to eliminate cross subsidy from international and long distance domestic calls to access line rentals.

Malaysia's local tariffs (Jabatan Telekom malaysia, 1996) are low by international and regional standards, whilst its long distance tariffs are relatively high compared with the equivalent tariffs charged elsewhere in the region and by operators in various countries. Although Malaysia's international tariffs compare favourably with those of Thailand, Indonesia and the Philippines, they are high compared to Singapore and Hong Kong.

Cultural barriers and impediments could also explain the constraints to accept the new technology as part of their daily lives. Computer literacy at the moment is still very low throughtout Asia, inclusive Malaysia. The prerequisite to computer literacy is the ability to read, write and understand English inspite of the fact that most computer softwares available today are extremely user friendly and they do not require any knowledge of computer hardware and software. In the case of attending computer classes, agin the question of financial burden and affordability arises.

The basic requirement for computer technology as a new media technology is computer literacy and affordability. Whether we realised it or not the word Multimedia has become the 'catch phrase' in Malaysia lately. The most common fact given were that the internet era in the 1980s and early 1990s were on two different texts dimension (e-mail) and static image with web page using Hypertext Markup Language (HTML). The new internet era in the 1990s and the 21 century will be using three dimensions, live, interactive and animated. In other words HTML will be replace with Virtual Reality Markup Language (VRML). VRML will be supported with Java programming and the applets. Hence, Multimedia would certainly be the incentives for computer users.

However it is not that simple. Most respondents have the least ideas using multimedia and the ties between analog and digital and the problems that associate with new revolution of technology. The best example is the video signals, which actually are continuos waves, which have length (frequency) and height (amplitude). By contrast, digital

signals are discontinuous - there are Os and Is. The ability to capture all the information in the analog wave depends on how often the wave is sampled (the sampling rate) and how many levels of quantization there are for each sample. In practice, video waves may be quantized to 256 or more levels. Here the amplitude, or height, of the wave is taken into account and given a discrete value. In the binary language of computers, this means adding places to the terms, so that the sixth quantization level may be represented as 010.

Digitizing cause some prlblems that don't exist with analog video (Luther, 1991): pixellation, contouring and aliasing. Contouring means that pixels in some areas of the image may be decoded as the same when, in the original picture, they were actually different. Aliasing describes "janggies" the jagged steps along diagonal edges caused by distortion in sampling.

The standards and practices of many video compression by International Telegraph and Telephone Consultative Committee (CCITT), International Telecommunication Union (ITU), Joint Photographic Experts Group under the (ISO) International Standards Organisation (JPEG) and the Moving Pictures Experts Group under ISO (MPEG) caused more confusion than adoption.

The three known international standards and formulated by the United States for compression which most respondents are unaware of discrete cosine transform (DCT), wavelet and fractal (Grant, 1996). DCT is a family of standards that has been adopted for stills photohographs, middle bit rate applications such as CD_ROM, and hight bit rate moving images like video. The MPEG-4 is the only standard that could compress video for extremely low bit rate applications, such as simulataneous voice and data over existing telephone lines compared with the earlier JPEG and Motion-JPEG, MPEG-1, MPEG-2 standards and practives (Grant, 1996) for a better movies/data/voices transportation on computer.

The disadvantage of motion-JPEG is that it does not achieve a high level of compression so the video isn't reduced enough to fit on a CD_ROM or to send over a network. The MPEG-1 possesses a very lossy ITU standard that calls for DCT to compress video in a lower quality manner for CD_ROM applications. The image quality of MPEG-1 is insufficient for broadcast quality purposes. The MPEG-2 uses

DCT to reduce the video information to about 20% of its original amount. While producers, licensees and consumers are very happy with the high quality of MPEG-2 images, many were unaware that it is still not suitable for editing because only a few key frames are retained with full information. The ITU is trying to create a new standard with MPEG-2+ that would quickly recover information from prior key frames and place it into the frame that must be edited.

So, to be able to know and chose the right standard is very important for consumers and it is always very expensive. In order for the Media/Communication Technology to reach 'Critical Mass" the consumers must be able to participate and buy the new media or communication. At the same time "Computer Literacy" means that consumers must be able to understand the technology in the new Standards and formulas. The governing bodies, policy maker, regulators and New Communication Act (will be tabled soon) hopefully will gives priority into the economic and cultural barriers seriously in order for Malaysian to participate proactively in the Multimedia Super Corridor (MSC) and be information rich.

Thus a heavily promoted of NCTs failed to reach critical mass if society do not reap full benefits of the new communication revolutions which is always dictated by economic necessities. This means that while access to satellite-fed information through internet, from say, Japan is available to Malaysian society or organisations, a similar item will have no meaning or impact if only a handful is utilising it. Those who use or utilise will be information-rich and for those who doesn't will be poorer and the gaps between them is getting bigger by the minutes. The sophistication of NCTs usage in our society and the decisions to use is often constrained by historical relationship, economy, education, and social structures.

Author

Hasmah Zanuddin Omar is a lecturer at Department of Media Studies,Faculty of Arts and Social Sciences, University of Malaya
E-mail: hasmah@pc.jaring.my
E-mail: f14asma@edumcsd.um.my

References

Ball-Rokeach, S.J., 1985. The Origins of Media System Dependency : A Sociological Perspective. *Communication Research*, 12(4), 485-510.

Bhatia, Brajesh, June 1996. *Internet as an Alternative Mass Medium for Development*, Journal of Development Communication, No. 1, Vol. 7.

Beniger, R. James, 1986. *The Control Revolution - Technology and Economic Origins of the Information Society*, Harvard University Press.

Benge, c. Ronald, 1972. *Communication and Identity*, Clive Bingley Ltd., London.

Bey, Arifin, 1985. "Communication Technology's Impact on Traditional Culture", pp. 49-54, in *International Institute of Communications Annual Conference Proceedings*, Tokyo, 1985, London : IIC, 1986.

Choi, Chang Sup, 1988. *New Technology and Media Policy*, Seoul; The Korean Press Institute.

Cuilenburg, JV and Verhoest, pascal, 1997, *Free and Equal Access to Communications : In Search of new Policy Models for Converging Communications*, IAMCR Conference, Oaxaca, Mexico.

Geisert, Paul, and Futrell, Mynga, 1989. *Teachers, Computers and Curriculum-Microcomputers in the Classroom*, Allyn and Bacon.

Goh, Jeffrey, 1995. *Information Superhighway : Implications for Asia*, Media Asia, Vol. 22(4).

Goonasekera, Anura, 1993. *Media Technology and Social Imperatives : an examination of communication policies in selected Asian Countries*, Media Asia, Vol. 20(4).

Grant, August E., 1996. *Communication Technology Update*, Fifth Edition, Focal Press.

Jamias JuanF., 1993. *The Impact of New Communication Technologies on Cultural Identity in Rural Asia*, Media Asia, Vol. 20(4).

Rogers, E.M., 1983. *Diffusion of Innovation*, New York, The Free Press.

Rogers, E.M., 1986. *Communication Technologies : The New Media in Society*, The Free Press.

Salvaggio Jerry L., 1989. *Media Use In The Information AgeI*, LEA Inc., New Jersey, LEA Inc.

Shields, Rob, (Edited), 1996. *Cultures of Internet - Virtual Spaces, Real Histories, Living Bodies*, Sage Publications.

Wells, WE and DJ Tigert, 1971. *Activities, Interest and Opinions*, Journal of Advertising Research.

Telekom Malaysia Berhad, 1996. *Annual Report.*

The Straits Times, Singapore, August 27, 1997.

Utusan Malaysia, January 16, 1997.

Interview, Jabatan Telekom Malaysia, August 20, 1997.

Laws of Malaysia, Telecommunications Act 1950 and Regulations and Broadcasting Act 1988 and Regulations.