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Owning and using new media technology as predictors of quality of life☆

Ran Wei*, Louis Leung

Department of Journalism and Communication, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong

Abstract

The proliferation of new media technologies has made them an indispensable part of people's lives. Moreover, they are an important force influencing the ways people work, learn and play. One of the most fundamental issues that needs to be addressed in new media research is how does new media technology affect people's quality of life? Using a randomly drawn probability sample of 714 respondents aged 18 or above in Hong Kong that leads in the penetration of new media technology in the Asia–Pacific region, this study found that respondents who were younger, better educated, single or having fewer children tend to have a higher evaluation of life quality. This demographic profile seems to suggest a rising self-centered lifestyle. Furthermore, the higher evaluation of their life quality was also found significantly correlated with the number of new media technologies owned. Owning and using new media technology seem to become a part in defining this lifestyle that emphasizes enjoying oneself and enjoying life. Finally, the use of both traditional and new media, with the exception of TV watching, was found complementary in improving people's living quality. Specifically, personalized entertaining and interactive cable TV viewing were significant predictors of subjectively perceived quality of life. © 1999 Elsevier Science Ltd. All rights reserved.

1. Introduction

The proliferation and widespread use of new media technologies such as cable TV, direct broadcast satellite (DBS), the Internet, worldwide web (WWW) and high-tech

*Corresponding author. Tel: +852-2609-7691; fax: +852-2603-5007; e-mail: B791732@mailserv.cuhk.edu.hk

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home entertainment appliances such as DVD, VCD and the karaoke sing-along system have made them an indispensable part of people's everyday lives (Brody, 1990; Pavlik, 1996; Rice et al., 1984, Rogers, 1986; Williams, 1988). Interactive TV, PCS (personal communication system), VOD (video-on-demand) and MOD (music on demand) are the latest additions to the evolving landscape of new media technology. With characteristics of digitalization, convergence and interactivity, new media technologies offer an unprecedented number of choices and diversity of media content for consumption. More importantly, they are changing the way people work, learn and play, among other things (Compaine, 1988; Dizard, 1989; Gill, 1996; Turow, 1997; Woods, 1993). To understand the consequence of the proliferation of new media technology, one the most fundamental issues that needs to be addressed is: How does the use of new media affect people's quality of life?

Previous research on the impact of technology in general and new media technologies in particular on life quality is inconclusive. Two opposing perspectives exist: optimistic and pessimistic views (McPheat, 1996; Pacey, 1983; Roszak, 1986). This study seeks to extend past research in an empirical setting by investigating the influence of owning and using new media technologies on perceived quality of life. The goal is to fill in the dire need for empirical evidence on the role of the new media technologies in affecting people's living quality.

2. Literature review

The relationship between technological innovation and society can be characterized as dynamic. They seem to mutually influence each other. Technological innovations provide a driving force for social change, which in turn affects the process of technological innovation (Bijker et al., 1987; Edge, 1995; MacKenzie and Wajcman, 1985; Pacey, 1983; Pool, 1977; Powell, 1987).

The tradition of social research on technology has focused on the impact or consequences of technological change on individuals, organizations and society (Bell, 1976; Rice et al., 1984; Rogers, 1986). The tradition was built upon the base of audience research and media effect studies. Two major kinds of impact or consequence are conceptualized (Pavlik, 1996, p. 5; Williams, 1988). The first refers to the intended positive consequence of technological advance, which brings about economic benefit to society and empowers people with freedom (Bell, 1976; Pool, 1983, 1990; Wilson, 1990). The second refers to the unintended or unexpected consequence of technological breakthrough. That is, changes in technology may bring about problems and negative side effects along benefits for individuals and society (Rogers, 1986). For instance, certain social groups may do better than others in coping with the fast pace of technological change. Thus technological change can be an engine for social fragmentation or information inequality.

As an integral part of the society at large, technology has undoubtedly a profound influence on social change and lives of individuals, no matter the impact is positive as intended or negative as unintended. It is actually "an important determinant"

of people's quality of life (McPheat, 1996, p. 281) that deserves scholars' serious attention.

Conceptually defined as "an evaluation of the subjective state that is experienced by individuals as they seek to satisfy perceived needs by pursuing appropriate goals using chosen means" (McPheat, 1996, p. 285), quality of life (hereafter QOL) was found to be linked with demographic differences such as age, gender, education and income. Although a minimum of material wealth is an important aspect of QOL, previous studies found the effect of income declining (Argyle, 1987), and simple possession of goods is not equivalent to QOL (Baldwin et al., 1990). Other studies (Najman and Levine, 1981) show that positive and close social relationships such as friendship affected the evaluation of QOL significantly.

However, previous research on the social impact of technology has paid little attention to technologies such as new media that are used for communication, information and leisure. The notion of new media refers to applications of communication technologies that offer new services such as cellular phone or enhance existing ones such as high-definition TV (Williams et al., 1994, p. 463). New media differ from traditional media in several important aspects, including converged functions, modes of transmission, diversified content, and level of user involvement from passive to active (Brody, 1990; Rice et al., 1984; Rogers, 1986; Webster, 1989). For instance, a cellular phone is different from a regular phone in that it is not land-based but mobile, thus cutting across physical barriers. Moreover, it is a multi-service, not just calls but also a personal communication system (e.g. voice, text and video display). Broadcasting television requires less effort from audience and is categorically passive. But cable TV and interactive TV providing services such as PPV, VOD (video-on-demand), MOD (music-on-demand) and home shopping options require active involvement of viewers. The viewing experience is participatory, a critical difference that makes the difference between passive TV watching and interactive cable TV viewing.

People's use of the media is conceptualized as intended action to satisfy their personal needs through communication (Katz et al., 1974). Thus, people are aware of different types of media or media channels, and make conscious selection of media or media channels that provide them with the benefits or expected values (Babrow and Swanson, 1988; Perse and Courtright, 1993). Previous research (Palmgree and Rayburn, 1982, 1985; Rayburn and Palmgreen, 1984) indicates that expectation of media characteristics are an important factor influencing potential users to seek anticipated benefits, which in turn lead to more media utilization. The concept of expected values or benefits of new media technologies has been proved useful in understanding what motivates people to choose from an increasing large number of choices from a growing array of new media technologies and use them.

Although the research literature on the social impact of new media technology is growing, there is a dearth of studies, especially empirical ones, which examine new media's consequence on individuals and society. The purpose of this study is to fill in the gap by investigating how the use of new media technology affects people's evaluation of their quality of life. Specifically, the present study addresses the following two research questions:

RQ1: What is the relative influence of demographics, use of traditional media, perceived benefits of new media technology and ownership of new media on the use of new media?

RQ2: What is the relative influence of new media ownership and usage on quality of life when other influences such as use of traditional media, demographics are considered simultaneously?

3. Methodology

3.1. Site chosen for the present study

Data for this study were collected in Hong Kong. As a leader in adopting media, both new and old, and a major telecommunication hub in the Asia–Pacific region (Karp, 1994), Hong Kong is a desirable site to study the social impact of new media technologies. Nearly 100% of its 1.8 million households owned one TV set, while 34% of them owned two or more sets in 1995 (A&M, 1996, p. 10). Cable TV was introduced in 1993 offering 20 channels plus interactive PPV options. The penetration rate of cable TV was approximately 30% (Leung and Wei, 1997) in 1997. About 81% of the households owned a VCR player. The penetration rate of laser disk player was 44%; and that of LD player with karaoke option was 34% in the same year (A&M, 1997, p. 16). In 1997, nearly two million of its 6.3 million residents had adopted a cellular phone, 23% owned a personal computer (A&M, 1997, p. 16) and 33.1% owned a pager (Leung and Wei, 1997).

3.2. Sampling and sample profile

A probability sample of 1256 adult respondents was drawn in a territory-wide survey in Hong Kong in late 1997. They were selected randomly in a two-step sampling procedure. First, the three main areas (e.g. Hong Kong island, Kowloon and the New Territories) were used as the base to build a sampling frame using the latest telephone directories. Then, a telephone number was selected randomly from a computerized pool. Selection of respondents in every household was governed by gender. Respondents were restricted to 18 years old or above. Interviewers were trained undergraduate students enrolled in a large local university. All of the calls were made from a central location during the evening hours with close supervision. The completion rate was 56% with a total of 709 complete interviews.

The sample had a median age of 33 years old. Males comprised 51.6%, and females were 49.4% of the sample. The median monthly household income was in the category of HK$20,000–25,000 (approximately US$2,570–3,210). In terms of education, only 14% of respondents did not complete high school, and 50.8% finished high school. About 9.3% of respondents had some college, and 24.8% had obtained a college degree. Less than 1% had a post-graduate degree. Comparing these results with the recent census data in Hong Kong, the sample did not differ significantly from that of the overall demographic characteristics of residents in the territory.

3.3. Measures of key variables

3.3.1. Quality of life

As one of the key variables included in the study, quality of life is defined as the subjective perception of the satisfaction with family life, leisure and friendship. Such a conceptual definition reflects the general evaluation of one's living quality.

Operationally, both objective and subjective indicators were used to provide direct measures of QOL. The objective indicators included the extent of leisure activities, and the subjective indicators were satisfaction with family and social life. Although there is a wide range of indicators measuring the concept of QOL such as external social and environmental situations, these two are most relevant and essential to be included in studying new media technology and its relationship with QOL. As Shin and Johnson (1978) argue, QOL should consist of having the resources necessary for the satisfaction of an individual's needs, wants and desires. The focus on leisure activities, which can provide resources for improving QOL, should be justifiable.

A total of eight items were used to measure the extent of leisure activities. They included artistic appreciation (e.g. going to a concert or listening to music and visiting the art museum), self-improvement (e.g. studying, reading and participating in sports games) and entertainment (e.g. partying and playing video games). Specifically, respondents were asked to indicate how often they had done each of the above activities in the past year on a 1–5 point scale where "1" was never, and "5" was always. The Cronbach's alpha of these eight items was 0.70, indicating relatively high internal consistency.

To measure the second dimension of subjective appraisal of one's well-being in life in general, two questions were added to the questionnaire. Respondents were asked to indicate how satisfied they were with their family lives (e.g. "the time you spend at home, and how often you do things together with members of your family") and with ties with friends (e.g. "how often you see them, and do things together"). The scale was 1–5 point, where "1" was "very dissatisfied" and "5" was "very satisfied". The reliability of these two items was tested first by strength of correlation, and then by Cronbach's alpha. Results indicated that they were reliable enough (Pearson's $r = 0.46$, $p < 0.001$; alpha $= 0.63$).

The two dimensions of life quality, namely the extent of leisure activity and satisfaction with family life and friendship, were combined to yield a composite quality of life index (QOLI). To do so, all the individual items were converted into a standard z score before merging. The composite index was treated as a dependent variable in subsequent regression analysis.

3.3.2. Ownership of new media

The concept of new media covers a wide range of emerging outlets or channels for mass communication. They include such technologies as cable TV, satellite broadcasting, the Internet, cellular phone, the pager, VCRs and DVD players, among others (Pavlik, 1996; Woods, 1993). Given the increasing importance of these new media technologies as a source of news and information, as a form of entertainment, and as a means of maintaining social relations, it is essential to include their

ownership and usage. In the present study, the ownership of new media technology included a wide range of outlets or appliances.

Specifically, it was measured by how many of the following 12 new media technologies a respondent owned at the time of the survey. These technologies were: voice mail/answering machine, the cellular phone, pagers, cable TV subscription, PPV (pay-per-view), reception of satellite TV, laser disc players, VCRs, Discman/Walkman, Karaoke system, personal computer and subscription to Internet service. Then, these 12 new media technologies owned were combined into a composite scale by adding them up. That is, owning one particular technology was counted as "1", otherwise "0." The minimum was zero, meaning having owned none of them; while the maximum was 12, meaning having owned all of the 12 new media technologies (the mean = 5.59; SD = 2.49, $N = 574$).

3.3.3. Use of new media

Respondents were further asked to indicate on a 1–5 point scale how "often" they used any of the 12 new media technologies they owned. The responses were used to measure new media usage. To facilitate subsequent analysis and seek a better understanding of the use of different new media technologies, a factor analysis was performed, yielding potential groupings of using the 12 technologies. Four factors emerged with each having an eigenvalue greater than 1. Varimax rotation was used. The four-factor solution accounted for 54% of the variance (see Table 1). The solution was clean after dropping one item, watching satellite TV that cross loaded.

Table 1
Factor analysis of new media technology usage

	Factor 1	Factor 2	Factor 3	Factor 4
Personalized entertaining				
Laser disc/VCD/DVD player	0.71	0.22	0.08	0.03
Discman/walkman/MD	0.70	−0.19	0.13	0.17
VCR	0.68	0.09	0.11	−0.11
Karaoke stereo system	0.65	0.12	−0.06	0.11
Interactive cable TV viewing				
Pay-per-view (PPV)	0.13	0.78	−0.01	−0.08
Cable TV subscription	0.06	0.74	0.12	0.08
Mobile telephoning				
Pager	−0.07	0.18	0.72	0.14
Answering machine/voicemail	0.07	−0.21	0.65	−0.03
Cellular phone	0.21	0.18	0.58	0.04
Computing				
Internet subscription	−0.04	0.03	0.06	0.79
Personal computer	0.18	−0.03	0.06	0.77
Eigenvalue	2.34	1.34	1.27	1.07
% of variance explained	21.3	12.2	11.5	9.7
Alpha	0.76	0.59	0.71	0.71
N	708	707	706	708

The first factor included uses of four new media technologies. They were laser disc/VCD/DVD players, discman/walkman/MDs, VCRs and Karaoke systems. Since their uses were concerned with personalized entertainment either at home or on the go, this factor was labeled "personalized entertaining" (Cronbach's alpha $=0.76$), meaning the users enjoy a tremendous amount of control over diversified media content to suit their personal entertainment wants and needs. The second factor consisted of using two technologies including watching PPV (pay per view) and cable TV. It was named "interactive cable TV viewing" (Cronbach's alpha $=0.59$). The third factor was made up of the utilization of three new communication technologies, including pagers, answering machines/voicemail and the cellular phone. It was given the label of "mobile telephoning" (Cronbach's alpha $=0.71$). The last factor had two technologies for utilization, Internet subscription and use of personal computer. It was called "computing" (Cronbach's alpha $=0.71$). The relative internal consistency of these four factors, except the second factor indicated the logic of new media consumption. These four factors were then treated as clusters of new media usage after saving as variables in the factor analysis procedure.

3.3.4. Perceived benefits of using new media

To help understand motivations influencing how people choose from an increasing large number of choices from the growing new media technologies and use them, perceived benefits of new media technologies were included in this study.

To measure perceived benefits deriving from using a new media technology, respondents were asked to rate 11 items concerning the motivations for using new media in general. It is undoubtedly that there are other motivations in the literature in using new media technologies. However, it is beyond the scope of this exploratory study to cover all of them. As a result, only those related to new media usage were selected. The items were then subjected to a factor analysis. Three factors emerged with eigenvalues greater than 1 using the varimax rotation. The three-factor solution explained 42.5% of the variance (see Table 2). The first factor consisted of five items that reflected the use of new media technologies for relaxing, getting away from worries, relieving boredom, passing the time and forgetting about work. It was labeled "escape" (Cronbach's alpha $=0.81$). The second factor had three items that marked using new media for looking fashionable and stylish. Thus, it was named "fashion" (Cronbach's alpha $=0.79$). The third factor also included three items. They indicated the benefit of new media usage for keeping informed about what's going on both locally and elsewhere. It was given a label "surveillance" (Cronbach's alpha $=0.80$).

3.3.5. Use of traditional media

Traditional media refer to those established channels or outlets for mass communication (Perse and Courtright, 1993). They include such mass medium as newspapers, magazines, books, radio, television, movies, recorded music and the telephone (Rogers, 1986; Stempel and Hargrove, 1996). As new media such as cable TV, VCD, mobile phone and pagers are potentially functional alternatives to traditional media,

Table 2
Factor analysis of perceived benefits of new media technologies

I like to use new media technologies because:	Factor 1	Factor 2	Factor 3
Escape			
It helps me relax	0.77	0.09	0.20
It helps me to get away from everyday worries	0.72	0.09	0.06
It helps to relieve boredom	0.70	0.28	0.18
It helps pass the time	0.68	0.27	0.16
It helps me forget about work or school	0.68	0.34	0.10
Fashion			
It helps me not look old-fashioned	0.19	0.82	0.13
It helps me look fashionable	0.20	0.82	0.23
It helps me look stylish	0.29	0.72	0.09
Surveillance			
I can learn what is going on in the world	0.10	0.07	0.88
It shows me what Hong Kong society is like nowadays	0.15	0.13	0.84
I can find out things I need to know about daily life	0.29	0.29	0.70
Eigenvalue	4.67	1.43	1.10
% of variance explained	42.5	13.0	10.0
Alpha	0.81	0.79	0.80
N	708	707	706

the inclusion of traditional media usage made it possible to compare its role in contributing to quality of life with that of new media.

The use of traditional media was measured by using commonly accepted questions in media studies. This battery of questions asked respondents to report the number of minutes they watched television and news on television in a typical day, the number of days they read a newspaper, a magazine, rented video tapes in a regular week, and the number of movies seen in a theater in a month.

3.3.6. Demographics

People of different social and economic status may adopt and use new media technology differently (Rogers, 1986). Differences may affect the quality of their lives unevenly. Accordingly, demographic variables were included in the questionnaire and used as control variables in subsequent multivariate analysis. They were measured by using traditional items. Specifically, respondents were asked to report their age, gender (men = 1; women = 0), education level, marital status (married = 1, others = 0), family size, number of children under 18 at home, occupation (professionals = 1, others = 0) and monthly household income.

4. Findings

Before analyzing the relative influence of new media usage on quality of life, it was of great interest to examine factors that affected the utilization of new media

technologies (the concern of the first research question). To do so, simple multiple regression analysis was conducted first to identify significant predictors of new media usage. The four clusters of new media usage, namely personalized entertaining, interactive cable TV viewing, mobile telephoning and computing, were treated as dependent variables.

First, results show that videotape rentals (Beta = 0.29, $p < 0.001$), age (Beta = −0.24, $p < 0.001$) and movie going (Beta = 0.15, $p < 0.001$) were the three significant predictors of personalized entertaining (see Table 3). Younger respondents who rented videotapes more, saw more movies in theater and read newspapers more seemed to entertain themselves more at home or on the go using new media technologies such as laser disc/VCD/DVD players, discman/walkman/MDs, VCRs or the karaoke systems. Given the one-shot design of the study, it is difficult to ascertain the causal direction. But the complementary relationship between video rentals,

Table 3
Regression of demographics, perceived benefits of new media technologies, use of traditional media and ownership of new media on new media use

Predictor variables	Personalized entertaining	Interactive cable TV watching	Mobile telephoning	Computing
Demographics				
Gender (men)	−0.06	0.05	0.12**	0.03
Age	−0.24***	0.06	−0.08	−0.00
Monthly income	−0.08	−0.00	−0.03	0.02
Education	−0.01	0.04	0.21***	0.10*
Profession (professionals)	−0.00	−0.06	−0.03	−0.01
Marital status (married)	0.00	0.05	−0.04	−0.01
Family size	0.03	0.01	0.03	0.02
Number of children at home	−0.02	0.07	0.03	−0.03
Use of traditional media				
Newspaper reading	0.08*	0.07	−0.02	0.05
Magazine reading	−0.00	−0.05	0.06	0.07
TV watching	0.02	−0.04	−0.00	−0.00
TV news watching	0.01	0.08#	−0.02	−0.01
Videotape rentals	0.29***	0.08#	0.00	0.03
Going out for a movie	0.15***	0.05	0.07	−0.02
Perceived benefits of new media				
Escape	0.04	0.04	0.03	0.08
Fashion	0.07	0.02	−0.00	0.04
Surveillance	−0.00	0.08*	−0.06	−0.02
Ownership of new media				
Number of new media technologies owned	−0.01	0.11*	0.02	0.04
Adjusted R^2	0.18	0.03	0.06	0.01

Note: Beta weights from final regression equation with all blocks of variables included for the entire sample.
*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; # $p < 0.1$; $N = 499$.

movie going and personalized entertaining is clear. Those new media technologies added more opportunities for entertainment at home or on the go.

Ownership of new media (Beta = 0.11, $p < 0.05$), surveillance (Beta = 0.08, $p < 0.05$), TV watching and videotape rentals (Beta = 0.08, $p < 0.10$ for both) were significant in predicting interactive cable TV viewing. These findings show that the more respondents owned new media technologies, the more benefit of cable TV viewing in keeping them updated with what was going on in Hong Kong and elsewhere, the more terrestrial TV they watched and more video tapes they rented, the more likely they viewed cable TV interactively. None of the demographics was significant. The number of new media technologies owned was the strongest predictor for interactively viewing cable TV. This was understandable in Hong Kong where cable was still lowly penetrated at 30%. Only subscribers were able to use this new media technology. Moreover, watching regular TV seemed to spill over to interactive cable TV viewing. And the perceived benefit of cable TV viewing for surveillance also contributed to the amount of interactive cable TV viewing.

In contrast, two of the demographics held predictive power over mobile telephoning. Education (Beta = 0.21, $p < 0.001$) and gender (Beta = 0.12, $p < 0.01$) were able to explain the variance of making calls using the pager or the cellular phone. This particular finding shows that better-educated and male respondents had the tendency to use more pager and wireless phone. Education (Beta = 0.10, $p < 0.05$) was also a significant predictor of computing. In fact, it was the only one. These findings indicate that the use of new media technologies, particularly computers and wireless communication, was affected by the level of education attainment. Better-educated respondents were able to utilize more of these new media technologies.

Because of the varying number of significant predictors, the variance explained for the four separate equations predicting the use of different new media clusters ranged from 1 to 18%. No more than 1% was accounted for computing. About 3 and 6% were accounted for interactive cable TV viewing and mobile telephoning respectively. More variance was accounted for personalized entertaining, 18%.

The second research question was concerned with the relative influence of new media usage on the evaluation of quality of life when demographics and use of traditional media were considered simultaneously. To isolate the contribution of new media uses, hierarchical regression was conducted. That is, demographics, use of traditional media, new media ownership and use of new media were entered into the equation as separate blocks.

A total of eight demographic variables were entered as the first block, out of which four were significant predictors of quality of life. Specifically, age was negatively linked with quality of life index (Beta = −0.16, $p < 0.001$), indicating that younger respondents tended to evaluate their quality of life higher. This finding may be due to the fact that young people were able to engage in more activities for leisure. The number of children at home also showed a negative linkage with QOLI (Beta = −0.11, $p < 0.01$). So was being married (Beta = −0.11, $p < 0.05$). These findings suggest that marital status and having the right number of children had a significant impact on the evaluation of one's living quality. The finding that fewer children, the higher the quality of life fits the trend of nuclear family on the rise. But

education (Bete = 0.13, $p < 0.001$) turned out to be a positive predictor, meaning the higher the level of education respondents attained, the higher they tended to evaluate their quality of life. Such findings show that the better-educated young generation pursues a self-centered, not family centered, lifestyle as compared to the old generation. Consistent with previous research, income did not have any predictive power over quality of life. The first block alone accounted for 17% of the variance (see Table 4).

Six variables of traditional media usage were entered into the equation as the next block. They contributed significantly to the variance explained (changed in R

Table 4
Hierarchical regression of demographics, use of traditional media, ownership of new media and new media use on quality of life index (QOLI)

Predictor variables	Standardized beta	Simple r
Block 1: demographics		
Gender (men)	0.02	0.08*
Age	−0.16***	−0.34***
Monthly income	−0.05	0.13**
Education	0.13**	0.30***
Profession (professionals)	0.01	0.06
Marital status (married)	−0.11*	−0.28***
Family size	0.05	0.09*
Number of children at home	−0.11**	−0.13***
Incremental adjusted R^2	0.17	
Block 2: use of traditional media		
Newspaper reading	0.10*	0.13***
Magazine reading	0.08#	0.24***
TV watching	−0.09*	−0.05
TV news watching	−0.03	−0.02
Videotape rentals	−0.03	0.15***
Going out for a movie	0.09*	0.27***
Incremental Adjusted R^2	0.22	
Change in R^2	0.05	
Block 3: ownership of new media		
Number of new media technologies owned	0.08#	0.28***
Incremental adjusted R^2	0.23	
Change in R^2	0.01	
Block 4: use of new media		
Personalized entertaining	0.22***	0.32***
Interactive cable TV watching	0.09*	0.11**
Mobile telephoning	0.06	0.13**
Computing	0.04	0.13***
Incremental adjusted R^2	0.27	
Change in R^2	0.04	

Note: Beta weights from final regression equation with all blocks of variables included for the entire sample.
*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; # $p < .1$; $N = 502$.

square = 5%, $p < 0.001$). The contribution mainly came from newspaper reading (Beta = 0.10, $p < 0.05$), magazine reading (Beta = 0.08, $p < 0.10$) and movie going (Beta = 0.09, $p < 0.05$). TV watching was a significant predictor but in the negative direction (Beta = −0.09, $p < 0.05$), indicating the more respondents watched TV, the lower their evaluation of their quality of life. In sum, these findings suggest that the more respondents used traditional media, with the exception of watching TV, the higher their evaluation of living quality. The negative linkage between watching TV and subjectively perceived quality of life is consistent with the study done by Kubey and Csikszentmihalyi (1990). Reading plays a positive, while TV viewing plays a negative role in shaping people's daily living experience. Not surprisingly, television was described as a cultural "wasteland" (Freund, 1991, p. 24).

The third block, ownership of new media technologies, showed as a positively significant but a relatively weak predictor of QOLI (Beta = 0.08, $p < 0.10$). This particular finding suggests that ownership of new media technology is positively correlated with perceived living quality ($r = 0.28$, $p < 0.001$), but simply owning a wide range of new media technologies contributed a little to improve one's quality of life when other factors were considered simultaneously (1% change in R square, $p < 0.001$). Uses of new media technology showed more contribution when they were entered into the equation as the final block. Using laser disc/VOD/DVD players, discman/walkman/MDs, VCRs and Karaoke systems for personalized entertaining was found a significant predictor of QOLI. In fact, it was the strongest predictor (Beta = 0.22, $p < 0.001$) out of the equation, indicating that the more respondents used the above new media technologies to entertain themselves in a personalized fashion, the higher evaluations they had toward their quality of life.

Viewing cable TV interactively (Beta = 0.09, $p < 0.05$) was the other significant predictor. Although mobile telephoning and computing were found significantly correlated with the evaluation of living quality ($r = 0.13$, for both at $p < 0.001$ and $p < 0.01$ respectively), but they were non-significant predictors of QOLI in the multiple regression analysis. Cable TV offers more choices available to people, especially information and entertainment programming that can be obtained interactively through PPV. This interactive attribute of cable TV seems to offer users an empowering experience, which in turn helps improve their quality of life. The final block yielded an increase of R square of 4% at the $p < 0.001$ level. These findings show that the use of new media technology contributed significantly to the subjective evaluation of living quality when the influences of demographics and the use of traditional media were controlled. The total variance accounted for by the four blocks was 27%.

5. Discussion and conclusions

This study focused on empirically examining the relationship between owning and using new media technologies and quality of life. Such a relationship is important and worthy of investigation in the context of rapid proliferation of new media technology. Findings of this study show that respondents who were younger, better

educated, single or married with fewer children tended to have a higher evaluation of quality of life. They also used new media technology more often than others did. These findings suggest an emerging self-centered lifestyle. New media technology seems to become a part in defining this lifestyle that emphasizes enjoying oneself and enjoying life. Change in people's lifestyle will eventually change the characteristics of a society. This study found that new media technology plays an important role in the process of social change, an issue future research should further explore.

Furthermore, the use of new media and traditional media are found closely related. Using traditional outlets such as video-rentals and moving going led to more frequent use of new entertaining outlets or appliances such as laser disc/VCD/DVD players, discman/walkman/MD, VCR or karaoke system. In addition, the use of both traditional and new media, with the exception of TV watching, seems to be complementary. They enhanced, instead of replacing, each other in improving people's quality of life.

To conclude, the findings of this empirical study support an optimistic view of new media technologies in enriching people's living experience and improving their QOL. As we are moving into what Negroponte (1995) calls a "post-information society," new media technology has a central role to play in the new millennium. The empirical evidence of the present study has broad implications for theorizing the social impact of new media technology on individuals and society.

First, people take choice and diversity as promised and delivered in new media technologies like laser disc/VCD/DVD players, karaoke system and PPV on cable TV positively. More choices and diversified content help tremendously satisfy people's needs and wants for leisure and entertainment. Interactive viewing of cable TV for surveillance appears to be a specific benefit of using new media technology, which contributes to the evaluation of people's quality of life.

Second, similar to the decentralized effect of networked computing, personalized and home new media appliances together with interactive cable TV are liberating by putting the control in the hands of users. It can be concluded that new media technologies are a liberating force from the perspective of users. Seeking entertainment from mass media is increasingly shifting from public locations to the home and in a personalized way. Such new media technologies as laser disc/VCD/DVD, discman/walkman/MD, VCR and the karaoke system as well as PPV on cable TV offer time shifting, interactivity and convenience for personal and home use. All of these special attributes of new media technology translate into a sense of control for users, supporting the notion of new media as "technologies of control" (Wilson, 1990). Such a sense of control has a positive impact on QOL.

Finally and more importantly, entertainment is found leading the use of new media technology. The enriching experience of entertaining in a personalized way and at home as well as viewing cable TV interactively result in higher evaluation of living quality. The findings of this study provide empirical evidence to Bryant and Love's argument (1996) that active, selective, interactive and participatory entertainment drives the adoption and consumption of new media technology. Future research on new media technology should pay close attention to the factor of home entertainment.

Understanding the impact of new media technologies is both the most important and the most difficult task (Pavlik, 1996). It is most difficult because the new media landscape is constantly changing. The lines between traditional and new media technologies are continuously blurred. To examine the impact of evolving new media technologies is similar to study a moving target. That is a caveat of reading the findings of this study.

Moreover, the increasing adoption rate of new media technology such as personal computer and the Internet calls for follow-up studies to the present one. As the number of people using new media technologies increases, the dynamics of social-technologic interaction will change. This points to a new direction for future research on the impact of new media technology. Future studies can take the content of media use, both old and new, into consideration in assessing such impact. In addition, culture is another factor to be considered in studying the quality of life and new media use.

Finally, the variables of the perceived benefits of new media technologies turned up to be less effective in predicting the use of new media. This may be the result of poor measurement used in this study. Only 11 items were selected to measure the expected benefits related to new media technologies. This is yet another limitation of the present study. Future studies can refine the quality of these measures.

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