

Impact of Computers and Internet on the Social and Economic Welfare of Low Income People: The Case of SmartRiverside Digital Inclusion Program

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ABSTRACT

The impact of computers, Internet and information technology in businesses around the world has been manifested through widening the scope of business applications, improving productivity, helping businesses reduce cost and operating effectively and efficiently. However, there are enormous challenges and opportunities in assessing the impact of Internet and computer usage on the individual's well being. This research study was designed to assess the impact of computers and Internet on the economic and social wellbeing of low-income households. The City of Riverside, and under the management of SmartRiverside: The Digital Inclusion program, provided 2,600 low-income households in the City of Riverside a free computer, free access to the city WiFi Internet, and 8-hour training classes on the basics of computer usage and accessing the Internet. A systemic random sample of 120 households was selected from the above households. A survey research was conducted, data analyzed, and findings reported. Results showed a positive and encouraging impact on learning, social interaction, and personal development of these families; and thus achieving the objectives of the Digital Inclusion program. The paper concludes with some recommendations for policy makers and interested groups.

Keywords: Computer, Internet, Economic Welfare, Social Wellbeing.

INTRODUCTION

The benefit of business concerns around the world, in relation to the usage of computers, Internet and information technology, is a proof of the dramatic impact the Internet is having on the scope of business applications, improving productivity, helping businesses reduce cost, and operating effectively and efficiently. However, it is more challenging to assess the impact of Internet and computer usage on the individual's wellbeing. Although research on such impact show mixed results, theoretically, the benefits mentioned in the literature include: facilitating social interaction and communication; improving entertainment and learning; supporting autonomy by providing access to information services; facilitating routine tasks; improving access to health services; and finally, improving general well-being and quality of life by providing mental stimulation and

challenge. This study was designed to assess the impact of computers and Internet usage on the economic and social wellbeing of low-income households in the city of Riverside, Southern California. Its practical purposes are to determine the viability of and to improve the Digital Inclusion program; and theoretically to shed some light on the above hypothesized benefits to the individual's well being.

Recognizing the enormous benefits of computers, the Internet and information technology, the City of Riverside, as part of its community development programs, provided about 2600 low-income households each with a free computer, free access to city WiFi Internet, and free 8-hour training classes on the basics of computer usage and accessing the Internet. The program is called SmartRiverside Digital Inclusion Program. City management is interested in learning about the impact of the above program for the sake of improving it and introducing changes as needed. The program is an ongoing project.

A sample of 120 households was selected from the above households using systematic random sampling. A survey research was conducted using an extensive questionnaire. The paper presents a glance at related literature to the topic, the research methodology, and discussion of the results, and concludes with limitations of the study and recommendations for policy makers and interested groups.

LITERATURE REVIEW

The Internet, computers and information technology are increasingly becoming a part of life for millions of people around the world, and considered integral tools of business practice, communication, popularity culture, and life style. They have altered the way businesses conduct operations to the extent that effective utilization of these tools is a must-have key success factor for any modern organization. However, research on the impact of computers and the Internet on the individual life reveals controversial results.

Some researchers agree that the Internet has revolutionized social interaction, allowed opportunities for economic welfare, made it possible for many to do certain activities which cannot be done otherwise, opened doors for learning and acquiring information, and overall

enhanced quality of life and wellbeing. On the other hand, the detractors argue that the Internet has led to negative impacts such as loss of privacy, impersonal communications and isolation, confusion between the real and virtual worlds, and overall questionable impact on the individual's cognitive and psychological development. This brief review will focus on selected studies pertaining to the above arguments.

Morgan and Cotten [11] conducted a survey of college freshmen to determine the impact of Internet activities on social support and wellbeing. Results indicated that increased e-mail and chat room/instant messaging hours are associated with decreased depressive symptoms, while increased Internet hours for shopping, playing games, or research is associated with increased depressive symptoms. Also, Internet use and psychological wellbeing in adults has been studied by Kraut and colleagues [10]. They found greater Internet use to be associated with reduced psychological wellbeing, reduced social support, increased loneliness and depression [9]. Similarly, Brenner [1] surveyed young Internet users who spent an average of 19 hours per week on-line and found that they reported feeling more isolated from society at the point of testing than before using the Internet. Furthermore, these individuals reported reduced personal interactions with family members and friends.

In contrast, some research suggests that the Internet increases social connectedness and results in many positive relationships [8]. Research on online interaction and education use of the Internet reveals that in the United States a significant portion of youths are actively using the Internet as an important form of social interaction [2]. The only concern is that the extraordinary growth of Internet use among youth as a primary social interaction may influence their development of their interaction ritual skills.

Moreover, in their study of the E-Rate program, Goolsbee and Guryan concluded that E-Rate was very successful as a policy to close the digital divide. The E-Rate subsidy led to substantial increases in Internet investment in California public schools and helped every school in the U.S. to hook up to the Internet, but as a means of improving performance, however, the E-Rate has shown little success on any testable measure [6].

In the Fall/Winter 2000 issue of the online journal, *The Future of Children*, researchers examined the effect computer technology has on development and learning in typical children and adolescents. It addressed physical, cognitive, and psychological effects of technology, and the digital divide, among other related issues. According to the review, while computers hold promise for positive outcomes in learning and development, they also have a negative impact on the health and social development of learners who spend large amounts of time in front of the

screen and are at increasing risk for obesity, repetitive strain injuries, stunted social development, and clinical depression [4].

Contrary to the findings of the negative impact of Internet use on psychological wellbeing of young adults, literature on Internet use among older adults suggests positive effects on psychological wellbeing [12, 14, 15]. As per the results, older adults reported less loneliness, positive feeling toward learning how to use the Internet, developing relationships within online communities and chat rooms, and improved outlook on life. This evidence, combined with other findings that elderly Internet users reported greater levels of both purpose in life and personal growth, indicates clearly that older adults could benefit from access to computers and the Internet, as well as computer training. Older adults who are confined to their homes may be the ones who could benefit the most from having access to the Internet and the opportunities for research, communications, holiday shopping, banking, etc. [3].

At the same time, computer technology can play a critical role in promoting the education of the millions of children with specific learning and psychological disorders, and those with severe disabilities. For example, students with mild learning disorders find that word processing and word prediction software significantly improve their written language skills and allow them to function academically in regular classroom settings [7]. Stern and Messer [13] in their study of core family networks and how the family stays in touch, concluded that in addition to face-to-face visits, use of landline telephones or cellular telephones, e-mail has become an important tool in maintaining core familial social networks, especially when these family members live outside the local area.

DiMaggio and Bonikowski [5] reported that most research on the digital divide presumes that adults who do not use the Internet are economically disadvantaged; however, little research has tested this premise. Their analyses reveal robustly significant positive associations between web use and earnings growth, indicating that some skills and behaviors associated with Internet use were rewarded by the labor market. Workers who used the Internet only at home also did better, suggesting that users may have benefited from superior access to job information or from signaling effects of using a fashionable technology. However, they stated that the positive association between computer use and earnings appears to reflect the effect of Internet use, rather than use of computers for offline tasks.

The debate is going on regarding the effects of computers, the Internet and information technology on many aspects of the individual's life – economic welfare, social interaction, psychology, learning, entertainment, empowerment, autonomy, and quality of life in general.

Researchers and policy makers should not be discouraged by the controversial results of previous research, but continue the research efforts to avoid ill effects and utilize this resource in the most beneficial manner.

METHODOLOGY

Although the core of this study was the survey research, some exploratory research was conducted. Previous related studies were examined to learn about measures used to assess the impact of computer usage and Internet on the individual's economic and social welfare. Also an in-depth interview was conducted with management of SmartRiverside Digital Inclusion Program to learn more about the program. The exploratory research was very helpful in structuring the questionnaire for the survey.

The survey research used a structured questionnaire to collect primary data from a systemic random sample of the households under study. The sample frame consisted of the 2,140 individuals who were each provided a free computer and free Internet access; completed an 8-hour training class about how to use the computer and access the Internet; and had had the computer and the Internet access for more than ten months. The assumption here is that a ten-month period is adequate usage time to realize a change and recognize benefits. Based on specific assumptions regarding the distributional characteristics of the target population, a sample of 120 households randomly selected was determined as a statistically adequate representative sample.

Selected participants in the program who met the above criteria were contacted and asked if they would like to participate in the study. They were informed that the study required providing information regarding their usage of the computer and accessing the Internet, changes in their lives, and some information about themselves. They were informed also that it may last about 30 minutes, and that they would be given a new printer as an incentive for their time and efforts.

Questionnaires were self-administered with the presence of a research assistant in case of any questions or if explanations were required. The questionnaire incorporated mostly structured questions. A few open-ended questions were asked. The questions included, but were not limited to, the following: computer and Internet usage level, purpose of use (e.g., for entertainment, education, purchases, making payments, information search, and for connectivity with family, friends, and business associates; etc.), any changes in individual attitudes towards education and life in general after participation in the program, impact on children/family members' school performance, economic impact, impact on quality of life, and some classifying variables.

It is important to note that the results of the study were based on self-reporting of respondents to the questions, rather than actual documentation of any change, other than that the computer was working and Internet connection was in place as observed by the research assistant.

All the responses to the statements in the tables below were measured on a five-point Likert scale with five (5) being strongly agree and one (1) being strongly disagree.

DISCUSSION OF RESULTS

The analysis revealed that there was a major impact on the social and economic wellbeing of the sampled households, which was also sensed through their responses to some of the open-ended questions in the questionnaire. It is interesting to note that one of the major impacts in this case was the fact that this program opened a door for these families to invest time, effort, and money to upgrade their knowledge and facilities; thus creating sustainability for such impact and benefits of the program.

Sample Demographics

The following is an overview of the sample demographics as reported by the respondents. Gender: females 65 percent, males 34.2 percent. Age: 18-25 years old 22.5 percent, 36-55 years old 36 percent, and 50 years old or older 32.4 percent. Of respondents, 31.7 percent were married, and 25.8 percent were single-parent head of household. For those who were not single living alone, the average household size was four individuals.

The ethnic distribution of the sample was: White 25 percent, Black/African American 22.5 percent, Hispanic/Latino 40.8 percent, Asian 2.5 percent, and other multi-racial 9.1 percent. Respondents reported their primary language as: English 76.7 percent, Spanish 19.2 percent and other languages 4.2 percent.

The education level of the respondents was: completed or some elementary school 12.5 percent, completed or some high school 36.7 percent, some college education or technical degree 42.5 percent, completed college or higher 8.4 percent. Some respondents (24.2 percent) reported that they are currently enrolled in some educational program.

Current employment status of respondents was: retired 26.9 percent, full- or part-time employed 26.1 percent, homemakers 14.3 percent, self-employed 5.9 percent, students 23.5 percent.

Respondents reported annual household income of: under \$10,000 (29.2 percent), \$10,000-\$25,000 (40 percent), \$25,000-\$45,000 (24.1 percent), and over \$45,000 (6.7 percent).

Computer and Internet Usage

Regarding who uses the computer in the household, 79.2 percent reported that they themselves use the computer, 10.8 percent indicated their spouse also uses the computer, 37.5 percent reported that the computer was used by children, and 20 percent reported that others (family members, friends, visitors, etc.) also use the computer. It is important to note that 45 percent of the respondents started to use computers since they received the computer from SmartRiverside Digital Inclusion Program. As for time spent per week on the computer, 65 percent reported 10 hours or less (65 percent), the rest used it for more than 10 hours. Respondents also reported using the city WiFi free access to the Internet (32.5 percent), or accessing the Internet through other providers (50.8 percent). For time spent per week using the Internet, the distribution was as follows: more than 20 hours (11.7 percent), 16-20 hours (9.2 percent), 11-15 hours (11.7 percent), 6-10 hours (25 percent), and 5 hours or less (42.5 percent).

Purposes for which respondents used their computer included: typing documents for work 35 percent, typing personal documents 62.5 percent, as a calculator 10 percent, financial/spreadsheets purposes 5 percent, on-line education 34.2 percent, video gaming 30 percent, surfing the Internet 65 percent, and doing school homework 35.8 percent. Of those who use the computer for the Internet connection, activities included: e-mailing 67.5 percent, chatting 23.3 percent, surfing web sites 51.7 percent, checking bank accounts 25 percent, online education 25.8 percent, research and information 60 percent, making purchases, 19.2 percent, paying credit card bills 10.8 percent, paying other bills 18.3 percent, enjoyment and fun 50.8 percent.

Of respondents who had children living at home (65 percent), a majority of these households (96 percent) reported that the children use the computer and the Internet. Of those children, 44.2 percent use it for school homework and many reported using it for other purposes, such as video gaming, online education and typing. Of the 19.2 percent who reported that their spouses uses the computer, the pattern of spouse usage was very similar to that of the respondents.

Time spent using the computer and the Internet can be used as an indicator of a positive attitude toward its benefit.

Social Interaction

The majority of the respondents (74.2 percent) use the Internet for e-mailing to stay in touch with their family (70.8 percent), friends (65.8 percent), business associates (12.5 percent), and others (9.2 percent). When asked about how they use the Internet to communicate with their social network, 33.3 percent use it for Instant Messaging, 15.8 percent use it communicate through Face Book, 30.8 percent use it to communicate through

My Space, only 1.7 percent use it for blogging, and 14.2 percent use it to reach other social networks.

When asked if the respondent's social networking changed after starting to using the Internet, 45.8 percent reported that their social networking increased, 29.2 percent about the same, and 2.5 percent said it decreased their social networking. As far as if the Internet affected their relationships with others, 41.7 percent mentioned that it improved the relationships, 55 percent reported that it kept the relationships the same, and only 3.3 percent indicated that it worsened the relationships.

Impact on Economic Welfare

Only 12.5 percent of the respondents do work from home; of those, the majority (87 percent) use the computer for work from home, and about 80 percent said they use the Internet for their work from home. Many respondents reported that the Internet has opened up exciting new possibilities for them 76.6 percent; helped them find a job 34.1 percent; and that Internet use increased their earning 14.2 percent. (Table 1)

At least one respondent reported in open-ended questions that the Internet helped them with their online business.

Table 1

Statement	Mean
Internet has opened up exciting new Possibilities for me	3.98
The Internet helped me find a job	2.97
Internet use increased my earnings	2.41

Impact on Family Educational Performance

As regards how helpful the Internet was in improving family members' performance at school, 62.5 percent reported it was helpful or extremely helpful. In addition, on the scaled questions, respondents expressed agreement or strong agreement to the statements: the Internet improved my learning at home 82.5 percent, the computer assisted my family's education 71.7 percent, and the Internet provided me with information from a huge variety of sources 88.4 percent. (Table 2)

Respondents reported in open-ended questions that it helped their children for school homework, and it helped themselves in their online education. It also helped respondents help their children do their homework. They further reported that they are finding lots of information on the Internet.

Table 2

Statement	Mean
The Internet improved my learning at home	4.01
The computer assisted my family's education	3.82
The Internet provided me with information from a huge variety of sources	4.22

Impact on Personal Entertainment

Respondents agreed or strongly agreed that they used the Internet for fun 72.4 percent, found it relaxing 64.2 percent, and that the Internet had an entertaining effect of their life 65.8 percent. (Table 3)

Respondents reported in the open-ended questions that they enjoyed their computer, and that the Internet access is wonderful.

Table 3

Statement	Mean
I use the Internet for fun	3.78
I find the Internet relaxing	3.65
The Internet has an entertaining effect on my life	3.62

Psychological Impact

Respondents were asked to rate their experience working with the Internet (accessing the Internet, using search engines, downloading files, creating a web page, and maintaining a web page); the overall Mean was 2.742 indicating preliminary experience, especially when it comes to creating and maintaining a web page.

Respondents agreed or strongly agreed that they felt that they could use the Internet confidently 85.9 percent, enhanced their independence 68.3 percent, decreased their feeling of being left out of modern society 28.4 percent, improved their self-esteem 45 percent, and the reduced their dependency on others 50.8 percent.

Respondents also agreed or strongly agreed that they are good at using the computer and Internet 61.5 percent, and using computers and the Internet is a frustrating experience 18.8 percent. (Table 4)

Table 4

Statement	Mean
I feel confident that I can use the Internet	4.05
The Internet enhanced myself independence	3.73
The Internet decreased my feeling of being left out of modern society	2.97
The Internet improved my self-esteem	3.20
The Internet has reduced my dependency on others	3.41
I am good at using the computer and Internet	3.54
I find using computers and the Internet frustrating	2.29

Impact on Life in General

Respondents reported that the Internet has been helpful or extremely helpful (68.4 percent) in doing everyday functions (e.g. banking, shopping, acquiring information). The mean of all responses on the 1-5 scale was 3.64.

Respondents agreed or strongly agreed to the statements: computers have opened up exciting new possibilities for

me 78.4 percent; and that the Internet: changed my life 50.7 percent, improved my life satisfaction 52.5 percent, improved the quality of my life 48.3 percent, gave me more control over my life 38.3 percent, is bringing us into a new bright era 82.5 percent, life is easier and faster with the Internet 78.3 percent, soon our lives will be controlled by the Internet 49.1 percent, people are becoming slaves to the Internet 43.3 percent, and the Internet enhanced my general health 27.5 percent. (Table 5)

Table 5

Statement	Mean
Computers have opened up exciting new possibilities for me	3.95
The Internet changed my life	3.35
The Internet Improved my life satisfaction	3.40
The Internet improved the quality of my life	3.32
The Internet gave me more control over my life	3.06
The Internet is bringing us into a new bright era	4.07
Life will be easier and faster with the Internet	3.98
Soon our lives will be controlled by the Internet	3.22
People are becoming slaves to the Internet	3.09
The Internet enhance my general health	2.85

Satisfaction with Program and Suggestions

Respondents were asked if they received additional training from other sources, 30 percent said yes; those who did received the additional training via general courses at a community college, did a course with vendors/consultants, or studied on their own with different number of hours spent. Respondents also agreed or strongly agreed that the program opened many doors for them 72.5 percent; and attested that the training they received from the program has been extremely helpful 79.2 percent. Most reported they were satisfied or very satisfied with the program 87.5 percent, while some were dissatisfied 7.5 percent, likely because the Internet was slow in their coverage area. The majority said the Digital Inclusion training program was effective or extremely effective 87.5 percent, while some reported it was ineffective 9.1 percent (likely because training classes were very intensive for them, hinted to in responses to the open-ended questions). (Table 5)

Following are responses to open-ended questions about satisfaction with the program: if it were not for the program, they would not have a computer or Internet access; the Internet was slow; the teacher was very informative; the class was very effective and the training was good; gave them an excellent start to continue in this area; the training program was intense and should be over a longer time, include more practice hours, or be extended to other cities around us; needs better coverage of the WiFi signal. At least one respondent was willing to volunteer to keep the program going.

Table 5

Statement	Mean
The DI program is useless	2.09
The DI program opened many doors for me	3.80
The training I received from DI has been extremely helpful	4.06

CONCLUSION

According to the results of this study, SmartRiverside Digital Inclusion program has a major impact on the lives of the respondents of the sample, and that can be generalized to all individuals who benefited from the program. However as for the support to the theoretically hypothesized positive effects of computer usage and the Internet, caution should be exerted in using these results due to limitations of the research study; such as the limited geographical scope; the ten-month usage period which could be considered short for showing effect experiencing the computer and the Internet; and finally that all individuals in the program are of low income, and were given a computer, Internet access, and training free of charge, and that by itself may bias their responses positively towards the program and its benefits.

Nevertheless, computers and the Internet are heavily integrated in our lives, and their impact is seen in how we live, communicate, and learn as individuals, as communities, and as societies. The Internet empowers individuals through the power of information; helps in developing relationships with others to share views and experiences; and open doors for learning, entertainment, economic benefits, and autonomy. The results of this study should encourage the management of the City of Riverside to continue their program, and to energize governments and industries to form partnerships, and act so that those most likely to be left behind by the digital revolution be given access, skills and motivation to embrace the new technologies and benefit from the opportunities that it provides.

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