

Computer and Internet use among Families: A Case of Botswana

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Abstract - During the past 20 years, novel communication technology devices have become familiar in African homes; among them are Personal Computers and the Internet. Social reviewers and other polemicists have debated whether these devices influence the lives of families in a productive or a destructive way. The authors examined the literature about family use of Computers and the Internet. Though home Internet access in Botswana is constantly increasing, there is diminutive information available about actual usage patterns in homes. The present study was carried out across Botswana on 570 Batswana family units with children. It measured computer and Internet use of each family member across 4 weeks. Data on actual computer and Internet usage were collected with the help of local leaders and teachers. They also played a key role in providing information on a number of variables for several age groups separately, including children, adolescents, and adult men and women. Averages were revealed for the amount of time spent on computers and the Web, the percentage of each age group online, and the types of Web sites viewed. Overall, about 9% of children ages 4 to 12, 40% of adolescents, 45% of adult women and 70% of adult men access the Internet each week. Children spend an average of 9 hours/week on the computer, 38 hours/week for adolescents. Adult women (non-working) spend only about 2 hours per week, yet in general, women were found to be spending long hours (25 hours) on computers corresponding with adult men who also spend 25 hours/week. The types of Web sites visited are accounted, including the top five for each age group. In general, search engines and Web portals are the most commonly visited sites, regardless of age group. These data provide a baseline for comparisons across time and cultures.

Index Terms - Computer, Information Technology; Internet, Web, Search Engines

1. INTRODUCTION

Botswana has been among the best-performing economies over the past 35 years. During this period, Botswana has evolved from one of the poorest countries in the world to a middle-income country with the highest sovereign credit rating in Africa.

Botswana's Population (2005) was 1,765,000 with a literacy rate of 78.9% (2000-2004). According to a survey (2004), there connections out of 80,000 (75%) as against countries with very high user rates e.g. Norway (88%), Netherlands (87.8%), U.S.A (69.7%), Japan (67.1%), 57.7% (EU).

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Business leaders and scholars alike predicted that computer literacy will be as important in the 21st century as reading, writing, and arithmetic were in the 20th century (Anderson, Bikson, Law, & Mitchell, 1995; Peterson, 1995). As Slater (1994) among others suggests, information "will be the new wealth of the 21st century" (p. 96).

It is impossible to deny the tremendous effect rapid technological growth has had on our society. This explosion of new technologies has changed the way we live—from the way we do business and, to the way we communicate with each other. Technological advancements are also affecting the way we teach and learn. The business world demands that our schools prepare educated workers who can use technology effectively in the global market. (Technology and the New Professional Teacher, 1997)

Technology has undoubtedly entered the houses of Batswana families through the education system and government/non government offices. Hence people find themselves in a position where they do not have much choice but to learn it. The computer and internet have become so vital to business, education, communication, and entertainment that they no longer can be viewed as a luxury of the few and the rich; they are a crucial resource for all. The consequences of the use of computer and Internet on society are multifaceted and long term, and as a result, appreciating how families use them is important. The present study provides baseline information on how Batswana families use computers at home. Technology controls behaviour; even the simplest form of technology can influence individuals by restricting certain behaviours through enforcing rules. Latour's description illustrated how technology is engineered to limit or impose behaviours. However, much remains to be learned about "digital behaviours." The impact of Information Technology (IT) on individuals and society has only recently begun to be studied systematically. For example, there is a growing body of research on

1. the effects of violent video games on aggressive thoughts, feelings, and behaviours.
2. the effects of video games on visual attention
3. video game play and surgical skills
4. the uses of information technology to create digital archives of health and social information
5. the potential for pathological use of the Internet, computers, and video games.

These and other demonstrated potential effects of digital media demonstrate the importance of having some statistical data about the distribution and use of computer and Internet inside individuals' homes in Botswana. Parents are often the ones who pay for computers and Internet connections, and usually they are the ones who decide where to place them in the home. Interestingly, it has been found parents place the computer either in family rooms or in children's bedrooms. In addition, parents rarely set boundaries for the use of video games and

computer/Internet. Despite the stereotypical view of older adults as resistant to new technologies, a growing number of national surveys report that the number of elderly who use computers has greatly increased since the early 1990s (Adler, 1996; Furlong, 1989; Hendrix, 2000; Lustbader, 1997; McKeely, 1991; Post, 1996; SeniorNet, 1998a, 1998b).

There is a favourable policy environment in Botswana. There has been a high level of interest in small, medium and micro-enterprise (SMME) development in Botswana since the approval of a new SMME policy in December 1998 (Ministry of Commerce and Industry, 1999). The policy's prime aim is to encourage further expansion of the SMME sector. In addition, Botswana's Vision 2016 document (Presidential Task Group, 1997) makes a strong commitment to the development of competitive enterprises through use of modern technology, including the implementation of IT across all manufacturing and service sectors. Similarly in schools also a number of computers have been installed for the use of students. The 'computerized surrounding' at work place and schools also builds the right environment to have this modern machine at home. Botswana had a tele density of 4.83 main lines per 100 inhabitants, compared to a low-income country average of 2.48. It had 33.42 Internet users per 10,000 inhabitants, compared to a low-income country average of 0.89 (ITU, 1998).

Richard Kassissieh, Director of Information Services at Catlin Gabel School in Portland, Oregon, U.S.A. reported in his report on Maru-a-Pula survey statistics that 81% of Form 1 students have a computer at home. 15% have broadband Internet access, 55% dial-up, and 30% no Internet access. These figures are in sharp contrast to American private schools, in which all students have a home computer connected to the Internet, and the majority has high-speed access. 75% of Form 1 students share their home computer with three or more users. Yet 49% still complete most of their computer-based schoolwork at home.

2. METHOD

2.1 Participants

Data were collected April through May 2008. The sample was a representative panel of Botswana families, including individuals from age 4 to over 60. The sample size was 570 individuals of whom 318 were male and 252 were female. In each district about 0.03% of the total population was selected to be part of the panel. Data were collected across a 4 week period for enhanced generalizability. The sample was initially contacted by random-digit dialling, which generated an equal probability sample of residential phone numbers. Families were interviewed during the initial enlistment call to identify households eligible to be in the panel (i.e., they have a computer and Internet access at home). At least 7 contact attempts were made to ensure that all eligible families were identified and recruited. Families that agreed to participate in the panel were mailed a documentation packet including the questionnaire and instructions.

2.2 Measurement of Independent Variables

Indexes were developed to measure certain independent variables like Age, Family Education Status and Monthly Income.

2.3 Measurement of Internet Activity

Measurement of Internet activity was designed to be in form of a 'schedule'. After completion of a demographic profile, panel member families with multiple computer users were asked to enter the details of particular active member and time of using computer/internet in two separate sections. All data were recorded by the active members who gave their detailed schedules of their computer and internet use. The data reported here were completely based on self-reports on actual measurements of computer activity by each participating person.

2.4 Population Reporting Method

The data were generalized to the general Botswana population from the panel. To provide population statistics, each panellist's data were categorised on the basis of gender, age, household income, education level, and region of the country. Data were grouped in six categories: children aged 4–11, adolescents 12–20, males 21–44, males 45+, females 21–44, and females 45+.

3. RESULTS

3.1 Demographic Details

Data presented in table 3.1 depicts that more than one third of the sample were adolescents (38%) and 56 per cent were males. Majority of the families had high educational status and monthly income of more than P7, 000. Majority of them were from Central, South east and Southern regions as these were the most densely populated regions of Botswana.

3.2 Average Weekly Time Spent on Computer and Internet

Table 3.2 illustrates the average hours spent on computers and the Internet for the total population and each age group. Surprisingly, even young children accessed the computer on average thrice in two days for a total of 9 hours per week, and adolescents' averaged more than five sessions in two days for an average of 38 hours per week spent on the computer. Adolescents' computer use was found to be much higher than the two groups of adult males. Adolescents, men and working women were found to be heavier computer users than the non-working two days for a total of 9 hours per week, and adolescents' averaged more than five sessions in two days for an average of 38 hours per week spent on the computer. Adolescents' computer use was found to be much higher than the two groups of adult males. Adolescents, men and working women were found to be heavier computer users than the non-working (housewives) adult females. This pattern is comparable when examining the amount of computer time specifically spent on the Internet. Young children spend an average of 32 hours per month on the Internet, whilst

adolescents almost quadrupled that time (128 h/mo). It was interesting that use of the Internet as a percentage of total computer time increased as the total amount of computer time increased. It was heartening to note that the average use of home computer by users in Botswana was 24.5 hr/week.

3.3 Average Time Spent on Web Site Categories

The Web sites visited were categorized as by Nielsen into 15 types. Table 3.3 displays the percentages of total time spent by each age group and gender (averaged across April-May 2008). It showed a pattern of adolescents aged 4 to 12 spending maximum time for entertainment (42%) whereas adolescents gave one fourth of their total computer time on Telecom and Internet services. Web pages related to search Engines, Entertainment and Telecom/. Internet services in general were found to be most popular amongst all the users (22%, 17% and 25% respectively). It was interesting to note that some websites were seldom browsed e.g. Multi-category commerce (2%) Government & non-profit (2%), Special occasions (2%), Travel (3%), Finance/ insurance/ investment (2%), corporate information (2%), Home & fashion (3%), Automotive (3%). Websites related to Education & careers (6%), News & information (5%), Family & lifestyles (5%) and Computers/consumer electronics (4%) were not very popular amongst the internet users.

Women were found to be the heaviest users (26%) of Telecom/Internet services beaten only by men of the same age group (27.5%). Search engines/portals, Entertainment and Telecom/Internet services constituted about thirty nine percent of the total time spent on Internet. Rest of the categories were browsed rarely by all the age groups.

4. DISCUSSION

The purpose of this study was to explore how Batswana families use the Internet from home. The study revealed that female were the heaviest users (26%) of Telecom/Internet services comparable with males of the same age group (27.5%). Search engines/portals, Entertainment and Telecom/Internet services constituted about thirty nine percent of the total time spent on Internet. Rest of the categories were browsed rarely by all the age groups.

Point to be noted is that children aged 4 to 12 spend 89% of computer time on the internet. An average child was found to be spending 11 hours a week on the computer, with an average of 7 Web sessions totalling 8 hours online. Children, like all age groups included in this study, were found to be accessing search engines and Web portals most frequently, but they were also accessing game and entertainment sites at a high rate. Adolescents aged 13 to 20 on the other hand accessed the Internet for 84% of net computing time. It was also evident that an average adolescent was spending 38 hours a week on the computer, with an average of 15 Web sessions totalling 32 hours online. Adolescents were accessing informational Web sites at a much higher rate than younger children, including a higher rate of accessing commercial Web sites each month.

Data were collected on two age groups of adult men in this study: 21 to 44 and 45 above. The two groups were quite comparable, with almost 8 out of 10 (79% and 86%, respectively) spending their computing time on the Internet. An average adult male was spending over 25 hours a week on the computer (29 and 21) for the two age groups respectively, with an average of about 19 Web sessions per month totalling to approximately 20 hours (23 and 18 respectively). Adult men were following the trend seen in adolescents: a high percentage of men accessing informational Web sites each month.

S.N	Attributes	Categories	Frequency (%), N=570
1	Age	4-12	126 (22.10)
		13-20	217 (38.07)
		21-44	142 (24.91)
		45 and above	85 (14.91)
2	Gender	Male	318 (55.78)
		Female	252 (44.21)
3	Family Education Status	Low	28 (4.91)
		Medium	142 (24.91)
		High	399 (70.00)
4	Monthly Income	< P3,500	0 (0)
		P 3,501-P 7,000	0 (0)
		>P 7000	570(100.00)
5	Region of the Country	Central	169 (29.6)
		Ghanzi	11 (1.92)
		Kgalagadi	6 (1.05)
		Kgatleng	12 (2.10)
		Kweneng	45 (7.89)
		North-East	68 (11.93)
		North-West	56 (9.82)
		South-East	102 (17.89)
Southern	101(17.71)		

Table 3: 1 Demographic Details

Similarly, we gathered data on two age groups of adult women in this study: 21 to 44 and 45 above. Adult women tended to access the computer less than men, and although the two groups of women were similar, they do not appear to be as similar as the adult men. In general, the younger group was more likely to spend time on the computer and the Internet than the older group. Women spent about 25 hours a week on the computer (32 and 18 hours for the two age groups respectively), with about 20 Web sessions per month (25 and 15 respectively), totalling 20 and 14 hours online per month respectively. The most exciting fact emerging from the study was a meagre time spent on computers and internet by non working (housewives). This also indicated that working women were having very long hours spent on computers which helped to maintain the average number of hours on computers still so high.

Adult women accessed Web site categories in a pattern similar to adult men, although at a lower rate than men and with a

smaller percentage of women 45 above accessing each category of Web site compared to women 21 to 44. When examining the percentage of people accessing the Internet by day, it was striking how little variation there is across days. This suggests that perhaps the Internet is so integrated into people's lives that it is a daily habit, which is also indicated by the average number of Internet sessions per week being at least 15 for people over 11 years old.

5. CONCLUSION

The study revealed that women were the heaviest users of Telecom/Internet services beaten only by men of the same age group. Search engines/portals, Entertainment and Telecom/Internet services amounted to about two-third of the total time spent on Internet. In a nutshell an average child was found to be spending 11 hours a week on the computer, with an average of 7 Web sessions totalling 8 hours online. Children, like all age groups included in this study, were found to be accessing search engines and Web portals most frequently, but they were also accessing game and entertainment sites at a high rate. Adolescents accessed the Internet for 84% of net computing time. It was also apparent that an average adolescent was spending 38 hours a week on the computer, with an average of 15 Web sessions totalling to 32 hours online.

The two groups of adult men displayed quite a similar pattern with almost 8 out of 10, spending their computing time on the Internet. An average adult male was spending over 25 hours a week on the computer, with an average of about 19 Web sessions per month totalling to approximately 20 hours. Adult men were following the trend seen in adolescents: a high percentage of men accessing informational Web sites each month. Correspondingly, two age groups of adult women in this study tended to access the computer less than men, and although the two groups of women were similar, they do not appear to be as similar as the adult men. In general, the younger group was more likely to spend time on the computer and the Internet than the older group. Women spent about 25 hours a week on the computer with about 20 Web sessions per month. The most exciting fact emerging from the study was a meagre time spent on computers and internet by non working (housewives) which pointed to the fact that working women were having very long hours spent on computers which helped to maintain the average number of hours on computers still so high.

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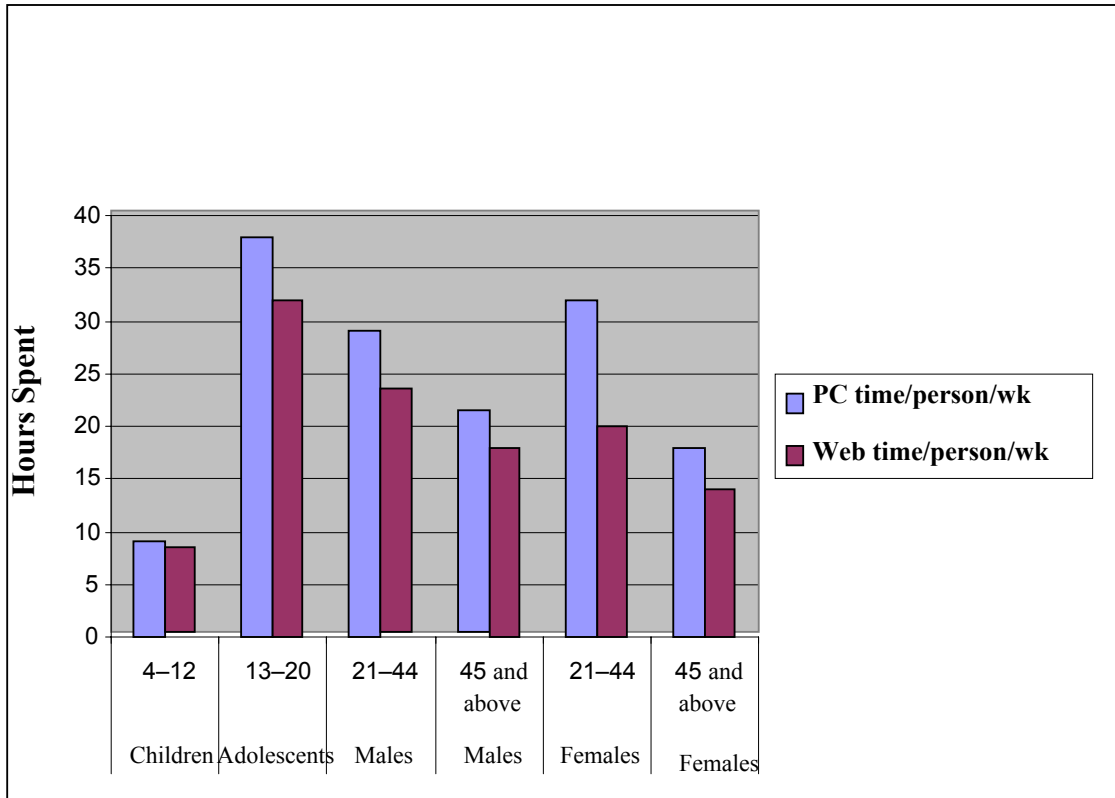


Figure 3.1: Time spent on Computers and Internet

	Children 4-12	Adolescents 13-20	Males 21-44	Males 45 and above	Females 21-44	Females 45 and above	Average
PC sessions/person/wk	11	18	23	21	28	18	19.83
PC time/person/wk(Hrs)	9	38	29	21	32	18	24.50
Web sessions/person/wk	7	15	19	18	25	15	16.50
Web time/person/wk(Hrs)	8	32	23	18	20	14	19.17
Web pages/person/wk	102	826	375	296	520	231	391.67
Percent Web time	89	84	79	86	63	78	79.83

Table 3.2: Average Use of Home Computers and the Web use, Split by Groups

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