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# Screen-Reading Habits and Use of e-Resources of Faculty of Economics and Management Sciences' students: A study of Postgraduate Students

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## Introduction

'*Reading is the best policy*' echoes from our childhood memories. All religions, civilizations and cultures support the 'reading'. Onovughe (2012) stated that every nation prides itself in the reading culture of its literate population. Reading helps individuals to find their identity, belonging to culture and helps them to explore new concepts for personal growth (Liu, 2005). A good reading culture in any nation is, therefore, an enviable virtue. 'Reading' word brings the concept of books in our minds. However, now reading has become a combination of multiple activities. Brown (2001) stated that the reading is not a univocal act. Our reading materials, contents and purpose differ from print-on-paper or e-text of newspapers, magazines, manuals, maps, professional journals, textbooks, scholarly monographs, novels, plays, and poems etc. Reading from printed documents tend to be comprehend the reader with brain activation, the contextual environment, cognitive focus and reading speed (Chen & Chen, 2014). It deepen the readers' understanding of the text, extracting a sense of its structure, plan for writing, cross-refer to other documents, and interweave reading and writing (Chou, 2012).

Reading habits over past centuries has modified due to nature and amount of communication resources and has also changed us. However, regardless of the medium, reading is still most efficient method of acquiring knowledge and communication in ICT age (Liu, 2005). 'Reading from screens tends to be significantly different from reading printed text in text-saturated world of www' (Cull, 2011). In the 18<sup>th</sup> century, the reading reached to common people due to massive printing production. The 19<sup>th</sup> century witnessed the extensive reading of books, newspaper, and periodicals. Early 20<sup>th</sup> century was of '*dedicated readers*' doing page to page reading. Late 20<sup>th</sup> century viewed '*flapping readers*' with enormous availability of printed books, printed marketing materials, microforms, digital resources, and web pages. These flipping readers swiftly shift, title to title without in-depth reading. The 21<sup>st</sup> century generation also known as generation Z, multimedia generation and the digital generation is of '*glancing readers*', who go through highlights in multiple formats and devices (Guzmán, 2012). Cull (2011) stated that a typical screen-based reading behavior emerged with 'browsing and scanning, keyword spotting, one-time reading, non-linear reading, and reading more selectively rather than in-depth reading, and concentrated reading'.

The growing amount of time spent on reading electronic media has begun to affect people's reading behaviors as well as organizational, personal and professional lives. Reading helps individuals to find their identity, belonging to culture and helps them to explore new concepts for personal growth. However, regardless of the medium, reading is still most efficient method of acquiring knowledge and communication in ICT age (Liu, 2005). Though changing reading habits not only influence the publishing and technology market but also the educational methods and libraries. The societal, economic and educational shift to screen from paper, leads to a growing amount of research on screen reading habits. For example e-books market has been emerged a lot since last decade due to business models, portable and interactive technologies, advanced systems and content formats surfaced (Hwang, Kim, Lee & Hwan Kim 2014).

## Review of literature

Review of literature shows different reasons of book reading and non-book reading habits ranging from the age, gender, education level, social backgrounds e.g. home environment, family habits, expectations & standards of the surrounding society, individual's interests, personality, aptitude etc. Although habits may change in adult age but mostly remain same once developed in childhood (Johnsson- Smaragdi & Jönsson, 2006). The '*digital native*' generation is very different than their parents and teachers, the '*digital immigrants*', spending hundreds of thousands of hours on

digitally connected screens from learning to working and to entrainment (Prensky, 2001a; Prensky 2001b). The information acquisition, processing, transformation and distribution have been rapidly changed (Frans 2000; Prensky, 2001a'; Chen, et al. 2014;). Leisure reading among young people has been affected a lot in last four decades. Javed (2011) stated that the internet has affected the reading habits in the present age because people no longer read the books and articles page by page but skim to required information. The 'reading' has become a daily routine but not the through reading! Reading evolve around emails, internet surfing, social networking, instant messages and so on. Simon (2001) stated that the spread of inexpensive, sophisticated devices, availability of e-books titles either for leisure reading or as textbooks and "technologically literate student population hungry for new media" has together altered the reading scenario.

Though still cognitive reading requires different levels of skill sets for various available types of documents and reading materials (Chen & Chen, 2014; Ismail & Zainab 2005). Along with individual's reading behaviors, organizational and professional reading behaviors has also been affected. E-reading habits also has influenced the publishing and technology market, educational methods and libraries. E-books market has been emerged a lot since last decade due to business models, portable and interactive technologies, advanced systems and content formats surfaced (Hwang, Kim, Lee & Hwan Kim 2014).

The societal, economic, technological and educational shift to screen from paper, leads to a growing amount of research on screen reading habits.

### **Screen Reading**

Research on university students' screen reading habits and attitudes has gained enormous growth in recent decades due to increased publishing of e-contents as websites, e-books and other multimedia contents. Screen reading means the ability to read and annotate online or digital materials. This behavior is based on the time spans spent on browsing, scanning, linear and non-linear reading. On the other hand, in-depth and concentrated reading and reading as a leisure activity is diminishing in favor of computer-based media and visual entertainment. Book reading acquires full attention of the readers while visual and electronic medias e.g. TV, Radio, online channels facilitate users with multitasking in cost effective modes. Radical increase in reading and writing technologies not only has changed the modes of official works but also influence the common man life at domestic levels (Margaryan, Littlejohn, & Vojt, 2011; Johnsson- Smaragdi & Jönsson, 2006; Summers, 2013). Today, a person without digital reading and writing skills is considered illiterate (Jadhav, 2010). E-contents for higher education mainly include e-books and e-journals. Buzzetto-More, Guy & Elobaid (2007) stated that e-books are a type of e-content based learning object whose benefits may include: hyper linking, nonlinearity, data density, customizability, greater distribution, low costs, search ability, and audio features and sometimes supported with web based tutorials and workshops. E-journals also possess these qualities. It is also obvious that regardless the reading conveniences offered by e-resources, the reader requires to selects, interprets, evaluates, and adopts a critical attitude while reading through intense flow of media in today's information society (Karadeniz & Can, 2015).

**Screen Reading Shortcoming:** There are some shortcoming of screen reading faced by readers with different aptitude and personalities. Some face navigational problems while reading e-books since the scanning specific portion, section, leafing through pages, setting down to read at any point significantly to mind and eye, randomly coursing through footnotes and bibliography citation is not same as printed books. "They spatially map the text as they browse, flipping through pages

... they recall the location of headings, photographs or significant text – upper right-hand page, left side middle of the and bottom of the page ...” (Brown, 2001, p-393). Readers faced low retention while reading through screens and mostly do skimming rather than reading. Their reading spans also short lived (Prensky, 2001b; Spencer, 2006). Some readers express limited options to highlight, writing in margins, tabbing pages and so on (Simon, 2001). Other issues with electronic materials are high prices, copyrights, license of use and distribution, purchase verses subscription, ownership, academic access, intellectual forgery and distribution rights preventing re-selling or lending (Liu & Huang, 2008; Kol & Scholnik, 2000; Manes, 1999). Screen-based reading leads to shallow reading, skimming, screen-shifting, online distractions, shorter attention spans, and poor comprehension than intensively reading (Chen & Chen, 2014; Chou, 2012; Rose, 2011). Screen reading needs to be done at rather darker places, cause eye fatigue, irritations and sometimes vision problems also affecting in-depth reading and learning (Chen & Chen 2014; Chou, 2012; Liu & Huang, 2008; Spencer 2006; Kol & Scholnik, 2000, Manes, 1999). The reader faces ‘temporal rather than a spatial construct while pursuing text on-screen’, falling-out as haphazard, unfocused nature of reading and should not be considered as academic reading (Rose, 2011).

**Screen Reading Benefits:** There are also numerous benefits of the e-resources and screen reading. Gradually, they are becoming more reader-friendly offering self-directed navigation and technological control. E-contents are easy to circulate worldwide, swiftly than the print on paper editions. Multivolume books can be downloaded and searched conveniently as digital version than printed ones (Kol & Scholnik, 2000). E-resources are ready to be use without any processing or shelving (Ismail & Zainab, 2005). Their usage is access based rather than ownership. Readers can use the scan, search, tag, copy, paste, highlight, notes, glossary lookups, bookmarking, cross-reference text and much more. Readers create their personal digital library or access through cloud services (Biancarosa & Griffiths, 2012; Ismail & Zainab, 2005; Kol & Scholnik, 2000). These technological support increases cognitive flexibility of e-contents (Rose, 2011). E-books and e-contents support readers with visual impairments or language-based disabilities, phonological awareness, word-reading skills, and vocabulary (Biancarosa & Griffiths, 2012; Brown, 2001; Simon, 2001).

### **Use of Digital Resources in Universities**

Higher Education requires critical reading and scientific writings from students. As much as one read, develops the ability to understand and to critically apprehend ideas. Electronic media (E-Media) is largely introduced in HEIs, is adaptive to the way faculties teach and students learn. It’s considered as an economical mode of providing mass education also opening up new horizons of learning (Jadhav, 2010). Chen et al. (2014) stated that computers and tables have greatly influenced portability, usability, and interactivity for learning and reading. Yong & Gates (2014) studied a pre-university student experience in use of technology. He stated that integral part of their lives is technology. They prefer to get the e-presentations, snapshots or audio recording rather than taking notes on paper. Instead of having face-to-face conversation, they use social media where both students and faculty are present in most cases, instead of using the library they surf the internet or access digital resources provided by the library. Onovughe (2012) studied the internet use and reading habits of different university students in Nigeria and concluded that there is a great influence of the internet on reading habits of university students followed by watching TV and playing online video games. It was also revealed that they do read web pages for academic purposes and social purposes. Shabani, Naderikharaji, & Abedi (2011) studied digital reading

behaviors of Iranian university students and of view that there is no significant difference in reading habits of different faculties, degrees programs and gender. But noticed difference in online readings and printing habits of different degrees programs and gender groups. Annamalai & Muniandy (2013) explored the reading habits of Malaysian Polytechnic students and found that they considered reading as boring and less appealing as compared to the other internet based activities, notably social networking. Vandenhoeck (2013) studied the screen reading habits of the students in Ireland and of view that screen reading is offering many opportunities and challenges to educators and students. He stated that there are high preferences of printed on electronic resources for reading, annotation, highlighting and printing of electronic resources. Bankole & Oludayo (2012) stated that universities worldwide now invest a lot on internet access because it reduces the time between the production and utilization of knowledge; improves co-operation and exchange of ideas with fellow researchers in other institutions, regions or countries, furthers the sharing of information; and promotes multidisciplinary research.

### **Internet and academic digital resources in Pakistan**

Internet in Pakistan is not new. The computers come to Pakistan during the 1980's. The internet adoption in Pakistan was slow at start as, during 1991 only national airline, IBM-Karachi, BrainNet, SDNP were using the internet systems. However, by 1995, there was a massive investment in IT business sectors. Among the higher education sector, Lahore University of Management Sciences (LUMS) was the first university to launch its ISP during 1995 (Kundi, Shah, & Nawaz, 2008; Saeed et al., 2000). After 20 years, the state of the internet provision to Higher Education institutions and e-resources is much better. Ameen, & Gorman (2009) stated that throughout Asia the information and communication technology (ICT) sector is undergoing tremendous growth with governmental policies to nurture the digital paradigm. In 2004, Higher Education Commission (HEC) launched a digital library access program PERN, to all Pakistani public sector universities, non-profit research and development organizations. The resources contained 30 international scholarly databases and over 20,000 full-text peer-reviewed journals as well as access to over 45,000 e-books (Khan & Ahmad, 2013; Ameen & Gorman, 2009). Today there is no university in Pakistan without the internet access and all HEC registered universities have access to e-resources provided by National Digital Library Project (NDLP) website. All the major university libraries have their websites and few are also library portals providing access and support to digital resources usage (Qutab & Mahmood, 2009). Access to 4G internet in Pakistan since April 2014, is taking the internet usage to the next level. Government of the Punjab has also started the distribution of free laptops among 100 thousand brilliant students currently studying at public sector colleges and universities since 2008 (Youth-Punjab, 2017).

Bashir, Mahmood & Shafique (2008) studied the internet use behavior of students of the University of Punjab. They concluded that the student use internet for reading and research related needs but the percentage of use is quite less than the students of the developed world countries. They also found that students are not seeking librarian's assistance for internet searching or resources indication. Safdar, Mahmood & Qutab (2010) studied the internet use behavior of college students and concluded that although the students are new internet users but they use many of internet services. However, lacking in training of internet usage and consult their friends and relatives for the help. Khan & Ahmad (2013) studied the use of HEC digital library by the scholar at universities of KPK Province of Pakistan. They were of view that the digital resources are underused by the scholars due to the lack of training, awareness, power failure, inadequate IT infrastructure and interface design issues. Khan & Qutab (2016) studied the student's preference to use the digital library by HEC and are of the view that the individuals' behavior significantly affects digital

library and e-resources usage. The respondents indicate the usefulness of the digital resources and ease of usage.

According to the Global Information Technology Report (2015), Pakistan's assessment is 3.3 on Network Readiness Index (NRI) ranking it 112<sup>th</sup> among 143 countries. Main components of NRI assessment are based on the performance of ICT regulatory and business environment, country's digital infrastructure's affordability and quality; population preparedness to use of technology, level of technology diffusion among individuals, business and government and socio-economic impacts of ICT on given country.

### **Reading habits' studies in Pakistan**

A very limited number of studies have been undertaken by researchers to address the reading habits and screen reading habits of university students in Pakistan. Bajwa, Gujjar, Shaheen and Ramzan (2011) compared the reading attitude of students from selected Pakistani universities and found that non-formal Education Systems (ES) students read more text-books than formal ES students while formal ES students take more notes than later. Iqbal and Shehzadi's (2002) studied female students of one university. Awais & Ameen (2013) studied the reading habits of primary school students and found TV, video games and use of the internet as most preferred leisure pastime. Dilshad, Adnan & Akram (2013) studies the gender based difference of the reading habits of the university students of three universities of Punjab province of Pakistan. Malik & Parveen (2013) conclude that students lack insight, proper reading habits, attitude and effective learning strategies. Due to lack of screen-reading habits of Pakistani university students, this study is highly significant.

### **University of the Punjab**

Established in 1882 at Lahore, the University of the Punjab is the largest and the oldest seat of higher learning in Pakistan. It was the first to be established in the sub-continent in Muslim majority area. The University comprises of 5 Campuses in 4 different cities, 13 Faculties, 10 Constituent Colleges, over 73 Departments, Centers, Institutes, and 614 affiliated colleges. It has over 818 permanent faculty members involved in teaching/research and over 36,000 on campus students (University of the Punjab, 2017). Punjab University was first public sector university of Pakistan providing internet access through Optic Cable Network in 2001. Currently, it provides computers and internet access through its network of computer labs, libraries. PERN 2 with 480 mb internet speed is provided with the assistance of HEC through fiber optics. IBA and IBIT are respectively providing access to 6mb CRC and 2mb CRC internet packages from Pakistan's cellular company Mobilink. The Faculty of Economics and Management Sciences offer 10 graduate programs to 1300 enrolled students in five different departments and institutes. All the department and institutes are equipped with departmental libraries, 10 computer labs with 800 computers and internet connections.

### **Research Questions**

This study has following research questions:

RQ 1. What are the preferred reading materials of graduate students in Faculty of Economics and Management Sciences, University of the Punjab?

RQ 2. What type of digital reading materials graduate students read?

RQ 3. How do they read/access the digital reading materials?

RQ 4. What techniques they use for digital reading, scanning, and annotation?

RQ 5. What problems they face during screen reading?

### Methodology

**Design of Study:** This is a quantitative study conducted by using survey research technique. The survey instrument was a questionnaire designed considering the review of related literature and similar studies conducted in the past e.g. Liu (2005), Abdul Karim & Hasan (2007), Shabani, Naderikharaji & Abedi (2011). The questionnaire was consisted of 14 questions. Data collection was done through online survey (QuestionPro) and printed survey form from. The need for developing survey in both formats was considered due to consistent electricity failure in Pakistan since 2006. 200 forms were filled online and 300 on paper. The data was analyzed with SPSS 21.

**Study population & sample:** The population for the study consists of graduate students from five departments of Faculty of Economics and Management Sciences of the University of the Punjab, Lahore, Pakistan. These departments holds a total 1321 graduate students at the time of survey: Institute of Business Administration (IBA = 226), Department of Economics (225), Institute of Business & Information Technology (IBIT = 495), Department of Information Management (DoIM = 115) and Institute of Administrative Sciences (IAS = 260). The graduate students are selected because they are expected to be e-resources' users for study and research purposes, thus possess the knowledge of screen-reading technologies and allied limitations.

Convenience sampling was employed to get the survey filled from 100 graduate students (50 males and 50 females) from each department' first year and second-year academic groups. The age groups of the respondents ranges from Younger than 18 (11 = 2%); from 18 – 24 (426 = 85%); from 25 – 34 (44 = 9%); from 35 – 44 (10 = 2%); from 45 – 54 (7 = 1%) and 55 and above (2 = 0%).

### Results and Discussion

#### General information about digital reading habits

**The Internet use experience:** It was revealed from the analysis that most of the respondents were internet user from past 1 to 5 years (47%) followed by 6 to 10-year experience (27%). Chou (2012) observed students spending increased amounts of time on internet for electronically based academic reading.

*Table 1. General information about digital reading habits*

|                                    | Items              | F   | %  |
|------------------------------------|--------------------|-----|----|
| Internet use experience            | less than 1 year   | 70  | 14 |
|                                    | 1-5 years          | 233 | 47 |
|                                    | 6-10 years         | 136 | 27 |
|                                    | 11-15 years        | 37  | 7  |
|                                    | more than 15 years | 12  | 2  |
| Language Preference                | Urdu               | 384 | 77 |
|                                    | English            | 446 | 89 |
|                                    | Punjabi            | 158 | 32 |
| Devices in use for digital reading | Personal Computer  | 211 | 42 |
|                                    | Library Computer   | 85  | 17 |
|                                    | Dept. Computer Lab | 92  | 18 |
|                                    | Mobile             | 102 | 20 |
|                                    | Laptop             | 376 | 75 |

**Language preferences:** Language preference of the respondents for selecting digital reading resources are analyzed. English is found as most preferred language for digital readings (89%) followed by Urdu (77%) and Punjabi (32%). Urdu is the national language of Pakistan while Punjabi is the regional language of Lahore, Punjab. The reasons of English literature reading preferences are rarity of scholarly and professional information resource in local languages. Summers (2013) and Tveit (2012) concluded that university students preferred English language academic reading materials.

**Devices used for digital reading:** Highest used device was laptop (75%) followed by personal computers (42%). However, the use of smart devices is not common, mobiles (20%) and tablets are in use by only (3%). The reasons for increased use of laptops are: it's being effective alternative during electricity failures and that the laptops are free of cost provided to graduate students across all disciplines, by Govt. of the Punjab since 2008. Buzzetto-More, Guy & Elobaid (2007) pointed out that a high average of owning computers, access to reasonably speedy internet, visiting online almost daily enables students to read on-screen. Saaid & Wahab (2014) stated that Malaysian student preferred desktops or laptops for reading online material than the smart devices.

**Usage preferences:** Respondents are asked to rate their preference for the usage of printed or electronic resources on Likert scale of always, often, sometimes, rarely and never. It is discovered that respondents prefer to use printed resources (M=3.95), followed by use of electronic resources (M=3.72). They also prefer to take printouts for reading electronic resources (M=3.38s) rather than screen reading. Pinto, Pouliot & Antonio Cordón-García (2014) observed trends of reading online multimedia materials but preferences to the printed materials in Spanish university while Malaysian students showed preferences for digital materials than printed materials (Saaid & Wahab 2014).

Table 2. Usage preferences

|                          | N   | Minimum | Maximum | Mean | Std. Dev |
|--------------------------|-----|---------|---------|------|----------|
| Use of printed resources | 471 | 1       | 5       | 3.95 | 0.947    |
| Use e-resources          | 471 | 1       | 5       | 3.95 | 0.945    |
| Reading from screen      | 438 | 1       | 5       | 3.28 | 0.958    |
| Reading after printing   | 449 | 1       | 5       | 3.38 | 1.114    |

**Printing habits:** It is revealed that 30 to 50 percent students take printout of the e-resources for reading. The major reasons for taking printouts are using for assignments or examinations. While printing cost is the main reason to avoid printing by some students (see table 4). Spencer (2006), Rho & Gedeon (2000) and Buzzetto-More, Guy & Elobaid (2007) reported that the students preferred reading notes on printed materials but feel more comfortable reading articles on screen. Printing tendencies are higher for the longer and complex articles, reading during exams, preparing notes and while working concurrently on other documents. Hwang, Kim, Lee & Hwan Kim (2014) students show preferences of using printed materials due to easy of technical handling, usage and comfortability.

Table 3: Printing habits



|   |   | F   | %  |
|---|---|-----|----|
| Average of taking Printout electronic resources | Never                                       | 16  | 3  |
|   | Less than 10%                               | 69  | 13 |
|   | 10% - 30%                                   | 98  | 20 |
|   | 30% - 50%                                   | 186 | 37 |
|   | 50% - 70%                                   | 62  | 12 |
|   | 70% - 100%                                  | 46  | 9  |
| Reasons of taking Printouts                     | The resource is interesting                 | 113 | 23 |
|   | The resource is important for an assignment | 388 | 75 |
|   | To use the article to study for an exam     | 294 | 59 |
|   | It for future research tasks                | 178 | 36 |
| Reasons of not taking printouts                 | Printing cost                               | 395 | 79 |
|   | Environmental concern                       | 69  | 14 |
|   | Preference to read on-screen                | 154 | 31 |

**Types of digital reading materials:** The subject types of digital resources read by respondents are ranging from Muslims' holy book 'Quran' to fitness information. It is analyzed that males' online reading preferences are websites, academic or text books, newspapers and presentations. While females' reading preferences are academic books, websites, references and magazines. However, there is a significant difference among the percentage of these preferences. Vandenhoeck (2013) stated a dramatic change in the area of reading, a cornerstone of education at any level. A major change from past is that now once consider the distribution and access of reading material rather than the type or quality of materials. Chou (2012) found the students' on-screen reading behaviors influenced by their reading purposes, access to screen-based texts, applications of reading strategies and second-language proficiency. Hwang, Kim, Lee & Hwan Kim (2014) observed a good number of Korean university students using e-books for academic purposes though they prefer to read literature followed by academic subject books. Summers (2013) observed students inclined to religious materials reading. Hwang, Kim, Lee & Hwan Kim (2014) reports that a high average of students faced unavailability or lack of desired titles.

*Table 4. Types of digital materials for reading & use*

| Types of reading materials | M*  |      | F** |      | Types of reading materials | M*  |      | F** |      |
|----------------------------|-----|------|-----|------|----------------------------|-----|------|-----|------|
|                            | N   | %    | N   | %    |                            | N   | %    | N   | %    |
| Academic book              | 212 | 42.4 | 169 | 34   | Fitness                    | 50  | 10   | 52  | 10.4 |
| Govt. doc                  | 106 | 21.2 | 30  | 6    | Leisure                    | 60  | 12   | 48  | 10   |
| Magazines                  | 120 | 24   | 87  | 17.4 | Journals                   | 126 | 25.2 | 71  | 14.2 |
| Recipes                    | 56  | 11.2 | 70  | 14   | Newspapers                 | 212 | 42.4 | 94  | 19   |
| Literature                 | 118 | 24   | 74  | 14.8 | Textbooks                  | 186 | 37.2 | 92  | 18.4 |
| Thesis                     | 108 | 22   | 42  | 8.4  | Reference                  | 112 | 22.4 | 101 | 20.2 |
| Quran                      | 144 | 29   | 79  | 16   | Conference                 | 30  | 6    | 23  | 5    |
| Islamic book               | 152 | 30.4 | 83  | 17   | Legal cases                | 22  | 4.4  | 15  | 3    |
| Maps                       | 104 | 21   | 29  | 6    | Presentations              | 168 | 34   | 134 | 27   |

|                |     |      |     |    |           |    |     |    |     |
|----------------|-----|------|-----|----|-----------|----|-----|----|-----|
| Religious book | 102 | 20.4 | 55  | 11 | Standards | 42 | 8.4 | 26 | 5.2 |
| Websites       | 231 | 46.2 | 153 | 31 | Reports   | 24 | 4.8 | 12 | 2.4 |

\*M = Male; \*\*F = Female

**Techniques for digital reading:** Reading strategy i.e. resourcing: access, supplies, translation, inference, help assistance greatly diverts the reader’s preference to the screen or printed reading habits (Ismail & Zainab, 2005; Chou, 2012). Respondents are asked to share the techniques and activities they performed while reading or using the digital resources. The survey results showed a good understanding of these functions among respondents. Especially the text highlighting functions in PDF and MS Word documents, searching words within documents and looking for word’s meanings with glossary. However, most of the students still prefer to take notes on the papers rather than using electronic tools. Keeping the track of changes within document and compare functions are least used by the respondents. Cull (2011) stated that university students prefer convenience of online digital text i.e. multitasking, searching speed and skimming. On the other hand for *comprehension, speed* reading, learning, *critical thinking* they prefer printed materials. Guzmán (2012) studied the text-screen interaction among university students in Australia and concluded that students prefer the e-resource usage as it opens up the ‘new forms of knowledge circulation, and the surface of the text as an entity of scholarly register that is not exclusive to the pages of the hardcopy book’.

*Table 5: Techniques for digital reading, scanning and annotation*

| Techniques for digital reading                       | N   | Mean | Std. D |
|--|-----|------|--------|
| Highlight functions in PDF documents                 | 479 | 1.37 | 0.62   |
| Highlight / Underline functions in MS Word documents | 464 | 1.46 | 0.612  |
| Taking notes on separate paper                       | 480 | 1.46 | 0.619  |
| Taking notes on computer                             | 469 | 1.51 | 0.612  |
| Bookmarking  | 466 | 1.64 | 0.698  |
| Using review function                                | 453 | 1.76 | 0.7    |
| Glossary / Dictionary lookups                        | 457 | 1.64 | 0.73   |
| Search/find function in PDF documents                | 458 | 1.63 | 0.702  |
| “Track Change” function in MS Word documents         | 454 | 1.92 | 0.709  |
| “Compare” function in MS Word documents              | 457 | 1.88 | 0.74   |

**Problems with electronic reading:** IT infrastructure in Pakistan has been grown a lot during past decades. All the universities have computer labs attached to either library or with teaching departments. The Internet and Wi-Fi are available within the campuses. At the same time, Pakistan is suffering from electricity energy crisis that is the main hurdle in the rapid usage of technology. Survey respondents are asked about the problems they faced during screen reading. Electricity failure was a major problem faced by the users. They also indicate the lack of remote access to the HEC e-resources and knowledge of advanced internet searching techniques as other major problems.

In answer to the open ended question, respondent’s indicated many reasons for the poor screen reading habits. These reasons can be divided into the social, economic, infrastructural and technological causes. The computers in departmental libraries and labs are present in all

departments but the timing, space, quantity, quality of the computers, outdated operating systems and institutional restrictions on operating programs' installations does not support many students. Socially, females indicated dependent transportation arrangements that does not match with the computer lab timings or does not allow them to stay longer within campuses. Students, who are doing job also indicate that they face time lag and have rather less time to spend in the computer labs on university campus to access the e-resources. Although, the availability of the laptops and internet is much better than before but still everybody does not have access. Lack of remote access to the HEC's subscribed e-resources is the biggest reason for these constraints. Less options of trainings and orientation, low confidence, un-even ICT aptitude, teacher-student gap in technology communication also stated by respondents. They are of the view that the available orientation and trainings are of basic levels yet they required advanced training for searching, use of social media, annotation and evaluation of internet resources for effective screen readings. Electronic literacy is proliferating (Chou, 2012) while need reader advisor assistance (Tveit, 2012). Biancarosa & Griffiths (2012) is of the view that even if the policy makers and educators address the challenges of technology provision they still need to train and motivate students for maximum technology usage. Thus there is high need of awareness, trainings and promotion through printed and social media to proliferate use of e-books (Hwang, Kim, Lee & Hwan Kim 2014). Awareness through library websites, orientations and training programs helped student's awareness and usages of the e-resources (Ismail & Zainab, 2005).

*Table 6. Problems in Digital Reading and Expectations for Support*

|  | <b>Statements</b>   | <b>N</b> | <b>%</b> |
|--|---|----------|----------|
| <b>Problems during screen reading</b>          | Electricity failure problem   | 357      | 71.4     |
|  | Do not have a personal computer   | 46       | 9.2      |
|  | Do have a computer but do not have laptop to use during electricity failure | 48       | 9.6      |
|  | Poor internet speed and connectivity  | 231      | 46.2     |
|  | Unavailability of internet at home  | 116      | 23.2     |
|  | Don't know how to find free online full text resources                      | 190      | 38       |
|  | Difficulty in availability of computer labs and their inappropriate timings | 80       | 16       |
|  | Afraid of virus while copying materials from university computers           | 135      | 27       |
|  | Lack of remote access to HEC e-resources                                    | 409      | 82       |
|  | Lack of advance internet searching techniques                               | 387      | 77.4     |
| <b>Expectations for Support &amp; Training</b> | Lack of training for better use of e-resources and their management         | 375      | 75       |
|  | Training for searching e-resources from library                             | 306      | 61.2     |
|  | Training for use of MS word and PDF features                                | 288      | 58       |
|  | Remote access to HEC e-resources  | 421      | 84.2     |
|  | Suitable timings for computer labs  | 176      | 23.2     |

## **Discussion**

Societal, socio-economic and technological paradigms are shifting reading from the page to the screen (Rose 2011). Screen reading has been advanced from leisure reading to scholarly

communication and also has transformed the user's reading and writing behaviors. The higher or less screen-reading by university students is effected by factors like demographics, access to technology, social-economic conditions, cultural setups and personal cognitive skills (Biancarosa & Griffiths 2012; Rose 2011; Shafi & Loan 2010). In light of 'digital natives' definition, the Pakistani university postgraduate students are the one who born during this revolutionary era but are not absolute screen-readers. It is due to digital divide among developed and developing world, expensive technologies, poor ICT infrastructure and conventional educational systems. Though Pakistan has made sustained efforts to bring its IT sector up to par with the other leading players, if compared to other countries, there is still a long way to achieve the desired goals (Kundi, Shah, & Nawaz, 2008).

This study presented thought-provoking facts about the screen reading habits of the Pakistani university students. The results indicate that the Pakistani youth, currently enrolled in universities, are good user of e-resources and spent their time on finding relevant information online. However, if compared with the youth of developed world for screen reading habits, the results from Pakistan are below satisfaction. There notable challenges in the effective screen-habits e.g. awareness of e-resources, trainings, remote access to e-resources, limit time and space of computer lab and electricity failure. Consequently, causing delayed screen reading proficiencies. The results of the study are useful for the university administration, IT centers and especially the library to modify their services. For example, by providing remote access for subscribed e-resources, extending the timing of computer's labs, offering latest supporting operating programs like PDF writers, Information literacy programs by libraries, self-help tutorials and guides will reduce the social, economic and technological hurdles to the students' improved screen reading habits and as result will increase scholarly communication and research among students. However, there is a need for further studies on influence of screen reading habits on Pakistani student's achievements. It is expected that by the passage of time the students would be more comfortable with the screen reading and would require less orientation in countries like Pakistan.

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