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Use of digital books at academic level: Perceptions, attitudes and preferences of post-graduate students¹

Aras Bozkurt² Muhammet Recep Okur³ Abdulkadir Karadeniz⁴

Abstract

Though first appeared in 1971, digital book technology has evolved especially since 2000s and it is relatively a new research area. Therefore, to better understand this phenomenon, a quantitative survey research was conducted in 2015 spring term in a state university in Turkey. The objective of the study is to explain current state of digital books within post-graduate students' perspectives and to identify post-graduate student's perceptions, attitudes and preferences related to digital books. In this regard, this research presents results of the survey. A total of 135 post-graduate students responded the questionnaire. The data regarding use of digital books in addition to demographics was collected through an online questionnaire and the findings were analyzed through descriptive statistics. In this sense, post-graduate students' use of digital books, purposes to use, preferred devices, and most used features of digital books were examined. In addition to these questions, reasons not to use digital books and post-graduate students' future attitude whether to use digital books or not were further investigated. Additionally, research directions for future implications were provided.

Keywords: Digital books, e-books, interactive e-books, post-graduate students, e-reading experience.

1. Introduction

Books had an important role in the history of human kind. They have been used to store and disseminate the knowledge for centuries. 21st century faced with digital transformation and reflection of this transformation has been seen in many fields including book industry. From clay tablets to papyrus and then papers; from hand written versions to printed versions, books are evolved and the last cycle of the evolution is digital books.

As the mostly known form of digital books, e-books are the most important development in the world of literature since the Gutenberg press and it is destined to change the reading habits of many in coming future (Rao, 2003). Presently, e-books have reached mainstream adoption in the

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² Ph.D.c, Institute of Social Sciences, Distance Education Department. Anadolu University. <u>arasbozkurt@gmail.com</u>

³ Ph.D., Open Education faculty, Anadolu University. mrecepokur@anadolu.edu.tr

⁴ Ph.D.c, Open Education Faculty, Anadolu University. abdulkadirkaradeniz@anadolu.edu.tr

consumer sector as the technology underlying electronic readers has improved and as more titles have become available, electronic books are quickly reaching the point where their advantages over the printed book are compelling to almost any observer (Johnson, Levine, Smith and Stone, 2010).

2. Defining Digital Books

The genesis of digital books began with Gutenberg Project in 1971 (Hart, 2004) when *Declaration of Independence* was created as the first electronic book in history (Hart, 1992). By 2015, the first e-book in ASCII format has evolved and transformed into highly sophisticated, improved digital materials (Figure 1).

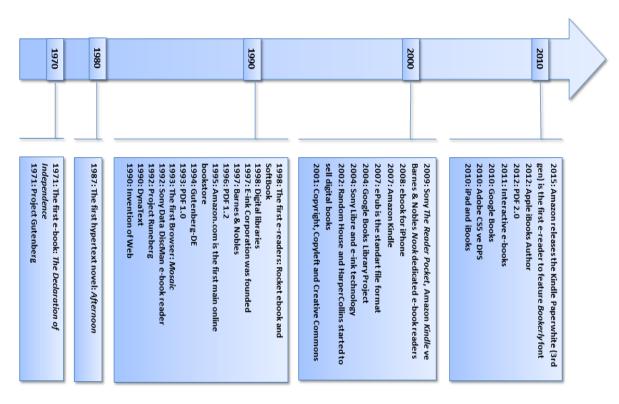


Figure 1. Important events in e-book history (Bozkurt, 2013)

Digital book is a generic term which includes e-books and interactive e-books and other type of digital book formats (Bozkurt and Bozkaya, 2015). E-books are defined as digital versions of printed books (Rao, 2003) and interactive e-books are defined as an improved versions of digital books (Bozkurt and Bozkaya, 2015). In this study, *digital book* is used as an umbrella term which refers to different formats of digital books.

The new gesture based reading devices such as tablet computers, smart phones or dedicated e-book readers accelerated developments of digital books, especially interactive e-books. According to Itzkovich (2012), the invention of the new gesture based technologies has created a new medium for book publishing. Interactive e-books are everywhere, and have revolutionized the way people consume the printed word. Bozkurt and Bozkaya (2015) highlight that interactive e-books promise more than reading experience, they promise "e-reading experience" which includes cognitive, sensorial, and physical interactions. As a result of these developments, the evolution in digital book sphere not only affected reading experiences of readers, but affected publishing sector, book market and libraries as well.

3. E-Publishing, Digital Book Market and Libraries

The developments of digital text and the internet have brought about major and rapid advances in all areas of our lives (Atkins, 2014). One of the advances has been seen in electronic publishing (epublishing). E-publishing is defined as "to use digital media or digital tools to be able to edit, design, publish, store, provide access, make arrangements for copyright issues of the content that were born digital or transformed into digital media" (Bozkurt and Bozkaya, 2013a; p.9) The parallel development of information and communication technologies, and the pervasiveness of electronic information fueled by the Internet, has provided electronic publishing with new explosive growth opportunities. E-publishing, from its initial mainly text-based stand-alone publication base, is fast transforming into a resource set of interactive publications endowed with rich multimedia that can be packaged in many ways and disseminated in various forms across different networked environments. With the advent of the e-publishing, the whole publishing process is changing as the distinction between author, publisher, reader or user, and library are being blurred (Ramaiah, Foo and Choo, 2006).

These developments affected both e-book market and libraries. According to Global eBook Report, by 2014, books, at an estimated value of \$151 billion (including trade, educational and STM - or science, technical and medical - publishing) are bigger than music (\$50 bn), video games (\$63 bn), magazines (\$107 bn) and even movie and entertainment (\$133 bn) (Wishenbard, 2014). Accordingly, digital book market grows while print book market declines (Clay, 2012; Guardian, 2012; Wishenbard, 2014). E-book sales has started to grow at a more rapid pace (Nelson, 2008). For instance, the value of consumer e-book sales increased by 366% in 2011. In the first three months of 2012, the increase amounted to 188% and was expected to reach the level of 376% by the end of the year (Guardian, 2012). Comparatively, in the first six months of 2011, digital sales constituted 7.2% of the total value of book sales, while within the analogical period of 2012, they nearly doubled to reach the 12.9% mark (CILIP, 2012).

In new millennium, electronic books have slowly become common in academic libraries (Tucker and Sinha, 2008). Academic libraries have traditionally played an important role in providing access to and disseminating information across learning and research communities. That role has now been extended to facilitate access to electronic resources such as e-journals and e-books through innovative technologies (Vassiliou and Rowley, 2008). As a consequence of this emerging role, academic libraries are increasingly developing electronic collections as a mean to serve library users in a better way. The growth and dominance of the Internet in daily life, as well as the increasing investments in distance education programs, have contributed to an overall heightened focus on electronic resources. Electronic journals (e-journals) have achieved widespread and enthusiastic acceptance within the scientific disciplines of the higher education community, and are now an integral part of academic science library collections (Berg, Hoffmann and Dawson, 2010).

4. Literature Review

The increasing interests to digital books led to researchers to identify users' needs and depict current state in digital book field. In spring 2008, EBRARY collaborated with more than 150 college and university librarians throughout the world to develop an informal survey to understand students' usage, needs, and perceptions with regard to e-books. A total of 6492 students completed their survey (McKiel, 2008). In 2011, EBRARY conducted a second survey. A total of 6329 participants completed the survey (McKiel, 2011). In 2008, Joint Information Systems Committee (JISC) conducted a research to examine the perspectives of students and academics, the main e-book users, on e-books. They conducted a survey between January and March 2008. Their survey obtained a response from more than 20,000 academic staff and students (Jamali, Nicholas, Rowlands, 2009).

5. Research Objectives

There are many advantages of digital books in addition to some disadvantages. (Borchers, 1999; Burk, 2001; Cox, Ormes, Mohammed and Kerr, 2001; Rao, 2003; EBRARY, 2008; Bozkurt and Bozkaya, 2013b; Bozkurt and Bozkaya, 2013c; Bozkurt, 2013; Bozkurt and Bozkaya 2015).

Because of the advantages of digital books, libraries started to provide them and availability of new technologies made them possible to use with almost all devices such as smart phones, tablets, laptops and desktop computers. Eliminating the need for a dedicated e-book reader by means of the capability of new mobile devices increased the use of digital books among academia as well as other users. In this context, this paper aims to identify and present current state of digital books within the scope of post-graduate students' perspectives. Accordingly, the following research questions are sought for:

- For what purposes do post-graduate students use digital books?
- Which kind of devices do post-graduate students prefer to use digital books?
- Which kind of features do post-graduate students generally prefer to use while reading digital books?
- If they don't use digital books, what are the motives not to use digital books and what are their future attitudes to use digital books?

6. Methodology

6.1. Research Design

For the purposes of the research, a quantitative survey design was employed. Survey research designs are procedures in quantitative research in which researchers use a survey to a sample or to the entire population of people to describe the attitudes, opinions, behaviors, or characteristics of the population (Creswell, 2002). This paper presents findings of a descriptive analysis regarding post-graduate students' experiences and preferences regarding use of digital books.

6.2. Sampling

The research employed non probability convenience sampling technique. Accordingly, the participants of this research are 135 post-graduate students who took a must-course in a state university in Turkey.

6.3. Data collecting, procedure and analysis

The data was collected through an online questionnaire. The questionnaire included a filter question to separate participants who used and who didn't use digital books. According to path designated based on their choices in filter question, reasons "why they used or why they didn't" are further investigated. The data was collected in spring 2015 term by announcing questionnaire link in Learning Managements System (LMS) of a must-course. The collected data was analyzed by using frequency and percentage values.

6.4. Strengths and limitations

This study mainly focuses on post-graduate student preferences regarding digital book features. Analyzing preferences of a special target group arises as the strength of the study and the findings of the study can be helpful to researchers who narrowed their research to this level. Besides, the study further investigates why post-graduate students don't prefer using digital books in addition to features they mostly use.

Higher education is a sequential process and students can get associate, bachelor, master and doctoral degrees. In this study, researchers analyzed only master and doctoral students' preferences which stands as a strength as we had a specific target group. In addition to being one of the strength of the study, this issue can also be regarded as the limitation of the study because analyzing and comparing not only master and doctoral students' preferences but also associate and bachelor degree students would provide a holistic evaluation.

7. Findings

Findings of the study are presented in three sections. In the first section, demographics of the participants are presented. In the second section, participants' preferences who state that they use digital books and in the third section, participants who state that they don't use digital books are presented.

7.1. Demographics: Gender, academic level, and age

This part of the paper presents demographics of research participants. The total number of the students who participated to study is 135. Of all the participants, 53% male (N=72) and 47% female (N=63). 60% of the participants (n=81) attend to a master program and 40% of the participants (N=54) attend to a doctoral program (Figure 2).

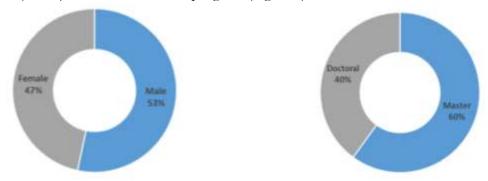


Figure 2. Gender and academic level of the participants

The age distribution has two different patterns. Master students generally cluster in 23-34 age span and doctoral students cluster in 27-36 age span (Figure 3). There is no significant difference between gender and preferences of the post-graduate students.

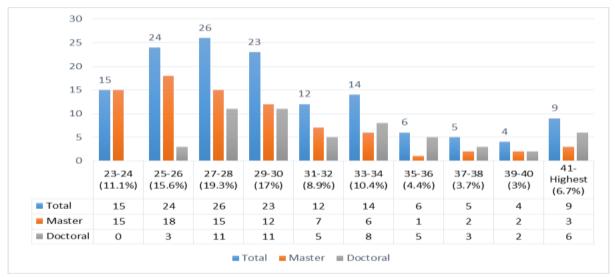


Figure 3. Age distribution of master and doctoral students.

7.2. Post-graduate students' digital book experiences and their preferences

7.2.1. Digital book experience: Have you ever read a digital book (e-book, interactive e-book)?

Post-graduate students were asked about their previous digital book experiences. 83% of the participants stated that they used digital books and 17% stated that they didn't use digital books heretofore (Table 1).

Table 1. Digital book experience: Have you ever read a digital book (e-book, interactive e-book)?

Responses	Frequency	Percentage
Yes	112	83%
No	23	17%

In online questionnaire, this item is additionally used as a filter question. Therefore, research findings regarding digital book experience represents 83% of the participants while research findings regarding their reasons not to use digital books represents 17% of the participants.

7.2.2.Do post-graduate students read digital books mainly for what purpose?

Of all the students who reported that they used digital books (N=112), 39.3% stated that they used digital books for academic reading (N=44), 6.3% for leisure reading (N=7) and 54.5% for both (N=64) (Table 2).

Table 2. Do post-graduate students read digital books mainly for what purpose?

Responses	Frequency	Percentage
Academic	44	39.3%
Leisure	7	6.3%
Both	61	54.5%

7.2.3. Which kind of devices do post-graduate students prefer to read digital books?

Of all the post-graduate students, 71.4% preferred laptop computers (N=80), 52.7% smart phones (N=59), 48.2% tablet computers (N=54), 33.9% desktop computers (N=38) and 6.3% dedicated e-book readers as reading devices for digital books.

Table 3. Which kind of devices do post-graduate students prefer to read digital books

Responses	Frequency	Percentage
Laptop Computer	80	71.4%
Smart Phone	59	52.7%
Tablet Computer	54	48.2%
Desktop Computer	38	33.9%
Dedicated e-book reader	7	6.3%

7.2.4. Which kind of features do post-graduate students generally prefer to use digital books?

Post-graduate students were asked which features of digital books were influential. The top reasons were anytime, anywhere access (77.7%), portability/mobility feature (71.4%), ability to full-text searching (69.6%), easy to store (59.8%), affordably priced or free (50.9%) and ability to create virtual library (50%). Though not in the same rank, these results confirm both McKiel (2008; 2011), and Jamali, Nicholas and Rowlands (2009).

Table 4. Which features of digital books effect post-graduate students' preferences?

Responses	Frequency	Percentage
Anytime, anywhere access	87	77.7%
Portability/mobility feature	80	71.4%
Ability to full-text searching	78	69.6%
Easy to store	67	59.8%
Affordably priced or free	57	50.9%
Ability to create virtual library	56	50%
Environment friendly (no paper use)	55	49.1%
Easy to use multiple documents at once	53	47.3%
Durability of digital books	52	46.4%
Ability to highlighting/underlining	49	43.8%
Ability to copy and paste the content	49	43.8%
Easy to share	44	39.3%
Ability to print or convert	43	38.4%
Ability to zoom and scale	43	38.4%
Ability to store large amounts of materials	43	38.4%
Multimedia support (Video, sound, high quality image etc.)	42	37.5%
Easy to browse	40	35.7%
Customizability (font, background color etc.)	40	35.7%
Ability to annotate	40	35.7%
Easy to use	39	34.8%
Easy to cite	39	34.8%
Accessibility (text to sound etc.)	39	34.8%
Easy to read	29	25.9%
Ability to bookmarking	29	25.9%
Content/information is Up-to-date	27	24.1%
Easy to organize	23	20.5%
Ease of navigation	21	18.8%
Ability to link external sources	16	14.3%
Other	0	0%

7.3. Reasons not to use digital books

7.3.1. Why don't post-graduate students prefer using digital books?

Those who stated that they didn't use digital books were asked why they didn't use digital books. The first two reasons were about habitual behaviors. 82.6% of the post-graduate students (N=19) stated that they didn't prefer reading from digital screen and 78.3% of the post-graduate students (N=18) stated that they didn't use digital books due to habit of reading printed books. 56.5% of the post-graduate students (N=13) stated that they didn't used digital books because of the screen resolution issues. Interestingly, 43.5% of the post-graduate students (N=10) stated that they didn't use digital books because digital books lack of tactile experiences such as smell of the book, weight, page turning sound etc.

Table 5. Why don't post-graduate students prefer using digital books?

Responses	Frequency	Percentage
Not to prefer reading from a digital screen	19	82.6%
Habit of reading printed books	18	78.3%
Resolution of the screen/longer reading time fatigues eyes	13	56.5%
Digital books lack of tactile experiences (smell of the book, weight,	10	43.5%
page turning sound etc.)		
Difficulty to use digital books	7	30.4%
Not to be familiar with digital book technology	6	26.1%
Need for a secondary device to be able to read digital books	5	21.7%
Copyright issues/piracy	4	17.4%
Compatibility	4	17.4%
Insufficient number of digital books in related area	4	17.4%
Not knowing where to get digital books	3	13%
Cost	2	8.7%
Digital books are not credible sources	1	4.3%
Other	0	0%

These findings have a similar pattern to results of EBRARY 2008 and 2011 survey (McKiel, 2008; 2011) and another research related to e-book usage of graduate students conducted in Turkey (Ongoz and Baki, 2010).

It is also worth indicating that research participants who stated that they don't prefer reading e-books because they simply prefer reading printed books instead of digital books. This finding is not surprising and reported similar research (Woody, Daniel and Baker, 2010; Holzinger, Baernthaler, Pammer, Katz, Bjelic-Radisic and Ziefle, 2011). Of all the reasons given in Table 5, two reasons are salient. Firstly, post-graduate students' responses indicate that digital screens appear to be limitation of the digital books and secondly post-graduate students prefer tactile experiences while reading a book. Digital screen technology is improving and we assume that post-graduate students' perceptions may change in the future. However, second reason such as habit of reading printed books or sense of authenticity derive from tactile experiences of the users are thought to be intrinsic motives which are difficult to change even in the future.

7.3.2. Do post-graduate students plan on using digital books in the future?

Participants who stated that they didn't use digital books were asked whether they may use digital books in future or not. 60.9% of the participants (N=14) stated that they plan to use digital books in the future; however, 39.1% of the students stated that they don't intend to use digital books even in the future. When examined in terms of total number of participants (N=135), %83 of the participants (N=112) reported that they use digital books, 10% of the participants (N=14) reported that they don't use digital books, but they can use them in the future and finally 7% of the participants (N=9) report that they don't use digital books for any purposes and they don't have intention to use in the future.

Table 6. Do post-graduate students plan to use digital books in the future?

Responses	Frequency	Percentage
Yes	14	60.9%
No	9	39.1%

Considering that e-learning, m-learning and u-learning are increasing trends in education domain, digital books seem to be a promising learning tool for learners who attend to higher education for a post-graduate degree. In our sample, the number of digital book users is 83% which is interpreted as an encouraging percentage for the future of digital books.

8. Conclusion and Future Implications

The findings indicate that there is not a distinct pattern in the use of digital books when examined in terms of age, gender and academic level. It seems that digital books are widely used by post-graduate students. Digital books are mainly used for academic purposes in addition to leisure reading. Laptop computers are distinctly most used devices for e-reading experience. Respectively, smart phones, tablet computers, desktop computers and dedicated e-book readers are other devices used to read digital books.

Anytime, anywhere access, portability/mobility feature and ability to full-text searching are mostly favorited features of digital books. Interestingly, features related to easiness are at the bottom of the list. It is believed that reasons to prefer using digital books should be further investigated to be able to design and provide digital books according to users' needs.

It is clear that post-graduate students use digital books mainly for practical reasons. Post-graduate students' reasons to use (Table 4) and not to use (Table 5) digital books have cross-purposes. For example, accessibility, portability, easiness of different features and ability to enhance e-reading experience are reasons that mainly dedicate to use a digital book. However, intrinsic motives and habits dedicate whether to use digital books or not. It is also encouraging that nearly half of those who state that they don't use digital books express that they can use digital books in the future.

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