



## University Students Awareness, Usage and Attitude Towards E-books: Experience from China



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### ABSTRACT

The purpose of this study was to investigate students' awareness, usage and attitude towards e-books at the Zhejiang University in China. The research design was quantitative using a convenience sampling method and chi-square analyses were employed. Library staff responsible for digital resources collection had been interviewed. Results indicated that there was a significant difference of students' awareness and usage of general e-books and academic e-books. There was a higher awareness but lower adoption of general e-books. The awareness and level of usage of library provided e-books were both very low. A search engine was generally used to access e-books. Senior undergraduates and postgraduate students mainly accessed e-books from the library website and library catalog. Students, particularly undergraduate students, used e-books mainly for the purpose of leisure. In contrast, postgraduate students tended to use e-books more for academic purposes. The use of mobile devices and computers was preferred when reading e-books; but for academic e-books students preferred print part of them for reading. University students showed strong preference for printing books. Academic libraries should put more efforts on promotion, stimulating demands, and cooperation with teachers to improve e-books usage.

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### INTRODUCTION

An e-book is a digital reproduction of a print book. Scholars have defined e-books in a variety ways since its inception in the 1980s (Balas, 2000; Morgan, 1999; Slater, 2010). The definition adopted in this study includes both free e-text online and e-books provided in the library covering e-monographs, e-textbooks and e-reference materials. Since 2006, the market of e-books has been growing steadily. In recent years, the sales of e-books account for 5% of the entire book market (Walters, 2013). Academic libraries have integrated e-books into their collections, and research shows that librarians are keen on expanding their e-book holdings (Library Journal, 2012; Primary Research Group, 2009; Shelburne, 2009). For example, about 95% of academic libraries in the United States provided e-books in 2012. On average, they had introduced this service for 5.2 years. E-books also accounted for 9.6% of the total library material budget. The expenditure was expected to increase to 19.5% in 2017 (Library Journal, 2012).

In parallel with the growth of the e-book market and the development of e-book library collections since the late 1990s, library and information sciences have conducted a number of research studies on the impact of e-books on collection development, specially relating to the challenges and questions of e-book management and service. Around 2000, there began

a keen interest on researching e-book user behavior. A review of the literature clearly indicated that the awareness and use of e-books has been on the rise since 2007 (Library Journal, 2012; McKeil, 2011).

In contrast, e-books are in the early stages of development in China, but they are becoming essential components of most of Chinese academic libraries. For example, in 2011, e-books accounted for an average of 5.43% of total acquisitions budgets in 65 large "211 Project"<sup>2</sup> academic libraries (The Ministry of Education Higher Education Library Working Group, 2011). Despite the great interest in library profession, there are not too many e-book user studies conducted in China. Several studies have been undertaken to investigate the adoption and user behavior of e-books in a single university or institutions since 2009 (Yang, 2009; Ren, 2011; Sun, 2011; He, 2011; Xu & Liu, 2014). However, little research has been done on the usage of different types of e-books, e.g. leisure readings, academic publications, textbooks, monographs, reference works, and at the usage variation among different disciplines in sufficient detail.

In regard to the above research situation, this study aims at exploring the awareness, usage, and attitude towards e-books by undergraduate and graduate students in the Zhejiang University. Zhejiang University is a large and research oriented university with extensive subject areas in

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<sup>2</sup> "211 Project" (literally "The National Two-one-one Project Universities"). It is an educational project sponsored by the Chinese government for the purpose of establishing a number of internationally renowned and competitive research universities and key subject disciplines in the 21st century.

China. Both its total acquisitions budgets and digital resources budgets have been ranked at the top five among all academic libraries since 2006 (Wang et al., 2011). Zhejiang University Library started to build its e-books collections in 2009. The expenditure of e-books is approximately one million Yuan each year, representing 8% of the total digital resources expenditure. A study of Zhejiang University can shed light on the general situation now in China. We will compare students from 6 subject areas and their usage of and attitudes towards e-books. Specifically, the following questions will be addressed: (1) What are university students' awareness and adoption of e-books in general and e-books provided by the library? How do they find and access e-books? (2) What types of e-books would they prefer? What reading medium do they use to read? How do they read e-books? (3) What are their attitudes towards e-books and library acquisitions of e-books and print books? What are their expectations on the future of e-books? and (4) What factors affect their awareness, usage, and attitude towards e-books?

## LITERATURE REVIEW

E-book user studies began around 2001. The earlier studies were mainly conducted in single libraries with small sample sizes. The body of literature has been growing significantly since 2007 (Borchert, Hunter, Macdonald, & Tittel, 2009) and more large-scale surveys were done with a variety of methods, such as questionnaires, analyses of e-book database usage logs, focus group interviews, as well as task analyses (JISC, 2009; McKeil, 2011; *Library Journal*, 2012). However, the literatures generally suggested a complex and contradictory landscape of awareness, usage, attitudes and acceptance about e-books.

### AWARENESS AND ADOPTION OF E-BOOKS

Research generally indicates that a majority of surveyed users were aware of the availability of e-books through their libraries. The awareness and usage of e-books had been on the rise since 2006, and approximately 50% and above of academic users reported that they were aware of and used e-books (Levine-Clark, 2006; Springer, 2008; Shelburne, 2009; JISC, 2009; Croft & Davis, 2010; Deborah & Smith, 2013; Cumaoglu, Sacici, & Torun, 2013). Studies also indicated differences among users with different academic status. Undergraduate students tended to know about e-books more, while graduate students, particularly doctoral students used e-books more often. In contrast, the awareness and usage of e-books by faculty members tended to be the lowest (Bierman, Ortega, & Rupp-Serrano, 2010; Borchert et al., 2009; Lamothe, 2011; Levine-Clark, 2006; Nariani, 2009; Rowlands, Nicholas, Jamali, & Huntington, 2007). The reasons why faculty members knew but used little of e-books needed to be investigated further. Some studies reported differences across subject disciplines as well. In some studies, humanities scholars were reported showing more awareness of e-books than scholars in other disciplines (Hughes & Buchanan, 2001; Levine-Clark, 2006, 2007; Wu & Chen, 2011). Rowlands et al. (2007) reported that in the science field, engineering scholars were having greater awareness of e-books than scholars from theoretical and applied sciences.

As for the level of usage, there was a clear consensus in the literature that business or economics, computer science, engineering and technology scholars were the biggest user groups of e-books. The e-book usage rates by users from these disciplines seemed to be higher than the usage rate of their printed equivalents (Dillon, 2001a,b; Nelson & O'Neil, 2001; Langston, 2003; Bailey, 2006; Hernon, Hopper, Leach, Saunders, & Zhang, 2007; Levine-Clark, 2007; JISC, 2009; Primary Research Group, 2009; Borchert et al., 2009; Nicholas, Rowlands, & Jamali, 2010; Slater, 2010). However, users from the humanities and social sciences were on the whole less satisfied with e-books than their colleagues from the hard-science and business fields (Staiger, 2012).

### DISCOVERY MECHANISMS

The awareness and adoption of e-books was closely related to its discoverability. Studies had confirmed that library websites were critical e-book access points, and for the majority of undergraduate students, the primary e-book discovery portal (Roesnita & Zainab, 2005; Rowlands et al., 2007; Foote & Rupp-Serrano, 2010; Nicholas et al., 2010). In addition to web links, the addition of bibliographic records for each e-book in a library catalog had been demonstrated to be increasingly used for e-book access (Bailey, 2006; Dillon, 2001a,b; Gibbons, 2001; Langston, 2003; Levine-Clark, 2007; Nicholas et al., 2008; Ramirez & Gyeszly, 2001). Faculty and particularly, graduate students, and humanities scholars relied heavily upon the library catalog to locate and access e-books (Foote & Rupp-Serrano, 2010; Levine-Clark, 2007; Nariani, 2009). Expert users who used e-books primarily and intensively for scholarly purpose tended to access e-books more from the library than from other open access websites (Nicholas et al., 2010). However, the current literature indicated that the library was not the only mechanism to discover e-books. Google-like search engines, Google Scholar, peers and teachers, open access websites, websites of publishers and vendors, etc., are also important information sources and access points for these academic users (Rowlands et al., 2007; Camacho & Spackman, 2010; McKeil, 2011). But several studies also reflected that the library website and the library catalog were one of the least used means for academic users to discover e-books because of their poor designs and discoverability (Bennett & Landoni, 2005; Dinkelman & Stacy-Bates, 2007; Hernon et al., 2007; Lorraine, 2007; Rowlands et al., 2007).

### USAGE BEHAVIOR OF E-BOOKS

Research showed that academic users used e-books primarily for research, project assignments, self-learning, and other scholarly work rather than for leisure reading and class reading (Anuradha & Usha, 2006; Cumaoglu et al., 2013; Hernon et al., 2007; Nicholas et al., 2008; Roesnita & Zainab, 2005; Rowlands et al., 2007; Shelburne, 2009; Springer, 2008; Wu & Chen, 2011). Recent studies also indicated the usage of popular e-books such as best sellers and non-fictions for hobby and leisure, particularly by undergraduate students (Croft & Davis, 2010; Shelburne, 2009; Walton, 2014). However, most of them were accessed from sources outside the library such as free fiction websites or by using dedicated e-readers (Bierman et al., 2010; National Association of College Stores, 2010).

In line with the above academic purposes, most studies confirmed that academic communities were more likely to use e-monographs, electronic reference books and electronic textbooks than other types of e-books (Anuradha & Usha, 2006; *Library Journal*, 2012; Rowlands et al., 2007; Shelburne, 2009; Springer, 2008; Wu & Chen, 2011). Several studies further indicated that e-references were browsed far more frequently than e-monographs (Camacho & Spackman, 2010; Ebrary, 2007; Lamothe, 2010, 2011; Levine-Clark, 2006). Doctoral students were the biggest user groups of e-books, particularly e-monographs, both for searching and browsing (Lamothe, 2011; Rowlands et al., 2007).

However, academic users' usage of and attitude towards e-textbooks varied. There had been much discussion about the potential benefits of e-textbooks, including lower costs for students, increased portability, access to multiple textbooks on one device, and other advantages (Gorski, 2010). Some studies concluded that students enjoyed using e-textbooks (McFall, 2005; Nicholas et al., 2010; Sun, Flores, & Tanguma, 2012; Trotter, 2008), while others suggested that students disliked using them (Appleton, 2004; McGowan, Stephens, & West, 2009; On Campus Research, 2010, 2011; O'Hare & Smith, 2012; Walton, 2014). Those who found it difficult were specially not satisfied with the navigation and displaying features of the e-textbooks (Carlock & Perry, 2008). Barriers to e-book adoption (Brunson, 2008) included eye-strain, potential distractions available on a user's computer (e.g., games, chat, and e-

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