

E-book Usage by Students

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Abstract

The benefits provided by e-books have been hailed by many as guaranteeing widespread adoption, while others cannot seem to overcome the challenges presented by this new technology. This article reports on research into the usage patterns of e-books among students in the School of Information Systems and Technology at the University of KwaZulu-Natal, Pietermaritzburg campus. The results of this study indicate that a large number of students within the school have not used e-books in the past. Those who have used e-books have used them mainly for research and study purposes; very few of the respondents indicated that they have used electronic books for leisure purposes. Many of the respondents also indicated that they preferred downloading free e-books from the Internet rather than purchasing e-books.

Keywords: E-books, electronic books, perceptions, user attitudes on e-books, adoption of new technology, adoption of e-books

Introduction

Reading printed books, for any purpose, is as outdated as writing in hieroglyphics on papyrus – surely the convenience and ease of use of electronic books would convince readers to use the new reading technologies? Does this claim hold true? Obviously, Information Technology students would be the first to adopt the shiny, new electronic reading devices?

Reading is one of the core learning activities of most societies. People make use of books for various reasons: studying, leisure, research and teaching. As new technologies surface globally, the adoption of these new technologies directly impacts on people's lifestyles. While some people adapt easily to the new technologies, others experience difficulty in developing the necessary knowledge and skills in learning how to use them.

With advances in technology, digitalisation has also reached the publishing industry in the form of electronic books. In today's digital society, electronic books are gradually becoming the more popular form for accessing literature, despite the incorrect early predictions of rapid rates of adoption. A widely accepted definition of an electronic book (e-book) is 'an electronic version of a traditional print book that can be read by using a personal computer or by using an e-book reader' (Sagar, Maharana & Sharma n.d.).

This broad yet basic definition of an e-book has created confusion and misinterpretation among many potential e-book users. User expectations about possible uses of e-books vary widely and the definition has evolved to include new applications and methods of accessing e-books (Bennett & Landoni 2005).

E-books are available in several forms, including web-accessed e-books, web-downloadable e-books, dedicated e-books and general-purpose Personal Digital Assistant (PDA) e-books. These different forms allow readers the convenience and pleasure of reading multimedia information anywhere, anytime, with better storage and functionality.

A variety of multipurpose handheld devices such as PDAs are available for accessing e-books. Gregory (2008:266) summarises the three major trends in the e-book market as:

- (1) web-based aggregated collections with academic content, such as reference, business, and information technology;
- (2) audio e-books, due in large part to the combined popularity and ubiquity of Harry Potter audio books and iPods; and
- (3) a curious resurgence in dedicated e-book devices, such as the 2006 Sony Reader and the 2007 Kindle Reader from Amazon.

E-books are distributed and sold in many ways via the Internet. For example, e-book author Stephen King prefers selling his own e-books from

his personal website, while others choose to use the route of specialised stores such as Amazon.

For the most part, existing literature on e-books examines the course of the e-book revolution from a library perspective. These studies have focused on student usage of e-books provided in libraries as well as on identifying barriers to usage. There are very few studies that investigate the adoption of e-books from a student perspective, where usage for personal and leisure purposes complements the interest in academic uses. This article attempts to address this gap in the research.

There may be numerous reasons why students do not use e-books in their everyday interactions with both books and technology, but to date the e-book usage patterns of students have not been widely documented. The current immature stage of e-books, the lack of awareness of e-books, preference for printed books, eye strain or perhaps students that see no need to use e-books could very well be some of the dominant factors. This article reports on the usage patterns of e-books among students at the University of KwaZulu-Natal (Pietermaritzburg) and establishes some reasons for these usage patterns.

The article is organised as follows: the next section provides an overview of the relevant literature, after which the chosen research methodology is outlined, followed by a discussion of the findings, limitations and possible areas for further research.

Literature Survey

Background and Context

The growth of the Internet, accompanied by rapid developments in information and communication technologies, has changed the nature of the publishing industry. E-books are slowly moving away from being a niche to being part of the mainstream, providing publishers with endless, innovative opportunities. Fast adoption and increased use of this new technology is evident in the current literature, mainly in academic libraries; however, the adoption of e-books outside the library environment has been much slower than anticipated. Most of the literature reviewed focuses on student use of e-books in libraries, with emphasis on factors influencing the purchasing and provision of e-books in academic libraries.

In an effort to understand the e-book usage patterns of students, Christianson (2006) collected and examined the e-book usage patterns from five academic institutions over a period of a year. During this study, Christianson (2006) evaluated topic/subject use by libraries. The study found that there are several types of e-books that are perceived to be more useful than others, 'showing small clusters of high-use material among low-use and no-use material' (Christianson 2005:361).

Ismail and Zainab (2005) conducted a study at the University of Malaysia where they focused on categorising several e-book usage patterns based on when, how, why, and where students in the Faculty of Information Technology and Computer Sciences made use of the e-book services provided by the university library. The results showed that 'even though the students are heavy users of the Internet, rate themselves as skilled in Internet use and have positive attitudes towards the e-book services, the level of e-book use is still low at 39%' (Ismail & Zainab 2005:1). Their study also identified four overriding factors that influence e-book use: 'ICT competencies of the students, their cognitive makeup, the degree of user access to the e-books and the functional or use factors' (Ismail & Zainab 2005:1). Furthermore, these authors point out that experienced users of e-books find it easy to use e-books but, for the most part, only make use of them for writing assignments (Ismail & Zainab 2005). The majority of these respondents indicated that they preferred making use of e-versions of textbooks and reference sources.

In a study to uncover the levels of awareness and usage of e-books among students in an academic library, Abdullah and Gibb (2006) found that only 57% of students within the entire university had used e-books. They also reported a substantial number of students who had not used e-books, attributing this to a lack of awareness of the existence of e-books. Some students intended to use e-books in the future but felt no need to do so as yet; others did not like to read from a computer/device screen, and many students indicated a preference for printed books.

Levine-Clark (2006) examined the varying degrees of awareness and knowledge of e-books, including how and why they are used, as well as the level of satisfaction with the format. The study revealed that 'many respondents indicated that they would use e-books, or use them more, if they only knew about them' (Levine-Clark 2006:297). Some respondents argued that it was the duty of the libraries to provide training on e-book use. An

additional set of comments showed that the respondents were not clear about the definition of e-books. Some clearly confused e-books with e-journals. Ismail and Zainab (2005) reported that students only became aware of the e-book service on the website or from their lecturers, friends or the librarians.

To provide further insight into the levels of knowledge on e-books, Gunter (2005) conducted an online survey that attracted a total of 3 916 responses. The survey attempted to establish whether the respondents had ever heard of e-books. The findings showed that 85% of the respondents had heard of e-books in one form or another. The survey analysed the usage patterns of these 3 322 (85%) respondents. Usage patterns showed that 49% had used e-books on a trial basis, 38% had bought at least one e-book, and 13% had borrowed an e-book from a library (Gunter 2005). Based on the perceived advantages that these e-books can be obtained more conveniently and are often cheaper than hard copy versions, the more popular and most purchased form of e-books used included technical e-books and non-fiction publications read for leisure.

Attitudes to and Perceptions of E-books

Shelburne (2009), in her study on e-book usage in an academic library, focusing on user attitudes and behaviour, found that 45% of respondents were not aware that e-books were available in the library. Lam, Lam, Lam and McNaught (2009), who conducted an exploratory study at the Chinese University of Hong Kong, examined the usability and usefulness of e-books. Despite the many advantages of using electronic material (convenience, portability and up-to-date material), the findings indicated that students did not find e-books a useful and practical tool for academic learning. In addition, students did not seem keen to use e-books for non-academic purposes.

As part of the Joint Information Systems Committee (JISC)-funded UK National E-Books Observatory Project, Jamali, Nicholas and Rowlands (2009) conducted a study on both students' and academics' perspectives on e-books. It has been acknowledged that the extensive survey has provided insight into what the academic community thinks of e-books. Searchability was the most frequently reported advantage. In addition, a potential market for e-textbooks was highlighted. However, improvements to features such as printing and screen reading were identified as being required in order to make e-textbooks more student-friendly (Jamali *et al.* 2009).

In summary: mixed feelings, attitudes and varying levels of perceived usefulness of e-books have been reported, primarily by students, in the articles reviewed.

Factors that May Inhibit or Assist Adoption of E-books

As mentioned above, most available literature on e-books is based on studies done in libraries where the focus was on factors affecting usage from a provisioning perspective. Libraries increasingly make use of e-books as part of their resource offerings. Connaway and Wicht (2007) examined the barriers to e-book adoption from an academic community's perspective with focus on the libraries as e-book providers. In terms of barriers, the results showed consistent reports of a need for standards, hardware development, copyright and operability issues, as well as impractical access, price and purchase models, and lastly, limited discovery and delivery options.

As far back as 2005, Herther (2005:45) reported that issues hindering the adoption of e-books as a new technology included existing 'e-book standards, digital rights management, content availability, pricing, device/reader technology, integration and market development'.

Comparison of E-books to Print Books

In comparison to print books, e-books have not yet found a specific market segment. Cox (2005) compared the usage of e-books to that of print books, focusing on the commonly perceived potential offered by e-books for learner support. Cox (2005) also outlines how e-books struggle to contend with print books due to restrictive licensing, limited range of titles and subjects offered as well as poor on-screen presentation.

Rao (2001:249) captures the intangible allure of print books: '[T]he touch and feel of a paper book, its longevity and history are in our souls'. Ismail and Zainab (2005:1) illustrate this in their finding that 'generally both users and non-users of e-books prefer to use the printed version of textbooks especially if the text is continuously used'.

E-book Reader Hardware

According to Carden (2008), a variety of effective e-book devices are available. This study highlighted hardware improvements and significant

price reductions of these devices that would assist e-book reading devices in moving into the mainstream.

E-book Standards

Due to the growing popularity of e-books in 2007, Connaway and Wicht (2007) examined the then current standards put in place for e-book design and distribution. In the library context, Connaway and Wicht (2007) conclude that there is a need for standards when developing and distributing e-books since libraries are required to support numerous formats, software, purchasing, hardware and usage models. Academic libraries are presented with the overwhelming challenge of integrating e-books into their existing acquisition, discovery and delivery systems.

In an article by Kaser (2009) it is claimed that the recent adoption of the EPUB (Electronic Publications) e-book standards can be accredited to the increase in adoption, usage and deployment levels of e-books. EPUB standards have also allowed for the increase in the number of available titles. These standards have made it possible to capture or convert XML-based books to open EPUB standard which can then be displayed on a variety of devices, resulting in lower publisher's cost, thus making more titles available as e-books. Kaser (2009:1) claims that '[t]itle availability is now fuelling library sales of e-books'. Kaser's study also revealed that in August 2008 e-book title availability was reported to have increased by 30% to 82.9% on the previous year and sales had increased by 53% for the year between August 2007 and August 2008.

E-book Strengths and Weaknesses

Generally accepted strengths of e-books include increased readership, convenient storing, relatively low cost and instant availability through downloads.

Some of the generally perceived e-book weaknesses include 'cost of the hardware readers; availability of titles; lack of standard formats among products and vendors and lack of awareness of software application compatibility for the readers' (Rao 2001:250).

As shown above, the adoption of e-books as a new technology has seen most of its success from usage within the library environment. An increasing

number of libraries in developed countries are making use of e-books as an additional learning tool. From a non-academic perspective, the adoption of e-books has been much lower than anticipated.

The variable usage of e-books by students, shown in the literature reviewed above, leads to the purpose of this article: to document and analyse the e-book usage patterns of students within the School of Information Systems and Technology (IS&T) at the University of KwaZulu-Natal (Pietermaritzburg).

A limitation of this literature review is that all reported studies have been done in developed countries – the specific nature of context in a developing country such as South Africa may provide fresh insights on the findings reported above.

The next section details the methodology that was adopted to gather the data on student usage and the reasons for usage patterns.

Research Methodology

Introduction

The study followed a quantitative approach in gathering the information from IS&T students at the Pietermaritzburg campus of the University of KwaZulu-Natal. A questionnaire was used to gather the data. The questionnaire comprised mainly closed-ended questions with only one open-ended question at the end. Standard Likert-scale items on a 5-point scale were used.

The questionnaire included five sections, with each section focusing on a different aspect of the e-book adoption process. The sections were aimed at obtaining information on student demographics, levels of knowledge on e-books, e-book usage patterns, students' attitudes and perceptions of e-books, as well as factors that may assist or inhibit students in adopting e-books as a new technology.

A pilot questionnaire was completed by five non-IS&T Honours students to evaluate whether the questions were understandable and to check for errors in grammar. The pilot study did show grammatical areas that needed to be changed; these pilot questionnaires were not analysed.

Questionnaires were distributed to first-, second-, third-year as well as Honours-level IS&T students. Both paper and electronic questionnaires were used in an attempt to gain as many responses as possible. Electronic questionnaires were distributed to students during IS&T practical sessions

through the use of Google docs. These were electronically submitted into a folder immediately after completion. Paper questionnaires were personally distributed to students during lectures and collected immediately after completion.

Sampling

Respondents were selected on the basis that they had shown a clear interest in the field of information technology as they would have voluntarily chosen the option to pursue their studies in IS&T. It was also assumed that students within the field of information systems would be more likely to have some knowledge of e-books, but would not necessarily have had individual experience of using e-books.

The Disproportionate Stratified Sampling method was used to ensure that each of the four years of study was adequately represented. A census survey was done on years two, three and four while the one lecture group out of two in year one was deemed sufficiently representative of all first-year students.

Data was collected during the month of September 2010. The research instrument was distributed to 113 IS&T students at the University of KwaZulu-Natal (Pietermaritzburg). Of the 113 respondents, only 106 responses were suitable for analysis. Respondents of the seven spoiled questionnaires either did not give their consent in the informed consent letter or answered the entire questionnaire which then made that data unreliable. The spoiled questionnaires have been kept and will be archived along with the rest of the questionnaires.

The actual respondents for this study comprised 39 first-year students, 40 second-year students, 11 third-year students and 16 Honours-level IS&T students at the University of KwaZulu-Natal (Pietermaritzburg).

Data Analysis

The findings and analysis acquired from the research instrument are presented in this section. Graphs, tables and statistical tests derived from using SPSS have been used to present these findings and analysis.

Demographics

This section aims to present the demographic information of the participants

in the survey. Respondents are broadly representative of the year of study, gender, age groups, faculties, computer competency levels and race – all respondents take IS&T.

First-year students comprised 36.8% of the respondents, 37.7% were second-year students, with only 10.4% of the respondents being third-year students and 15.1% Honours-level students. There were 30 female respondents (28%) and 76 male respondents (72%).

Participants were asked to indicate which faculty they belonged to in order to explore trends associated with fields of study. Table 1 below shows that the majority of the respondents were from the faculties of Management Studies (48.1%) and Science and Agriculture (46.2%). A small percentage of respondents were from the Humanities faculty (5.7%).

Table 1: Faculty Distribution

	Frequency	%
Management	51	48.1
Humanities	6	5.7
Science & Agriculture	49	46.2
Total	106	100.0

The majority of the respondents were black (69.8%), while 22.8% of the respondents were Indian, 6.6% white and 0.9% coloured, as summarised in Figure 1.

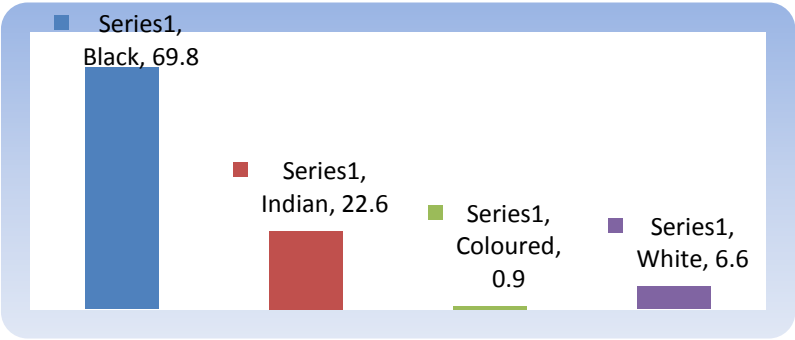


Figure 1: Racial Group Distribution

Furthermore, respondents were asked to indicate their perceived computer literacy levels: 16% felt that their computer literacy levels were at the beginner level while 17.9% were at the intermediate level. The majority of the respondents felt that their computer competency levels could be categorised as Solid (35.8%) and Advanced (30.2%). This is illustrated in Figure 2.

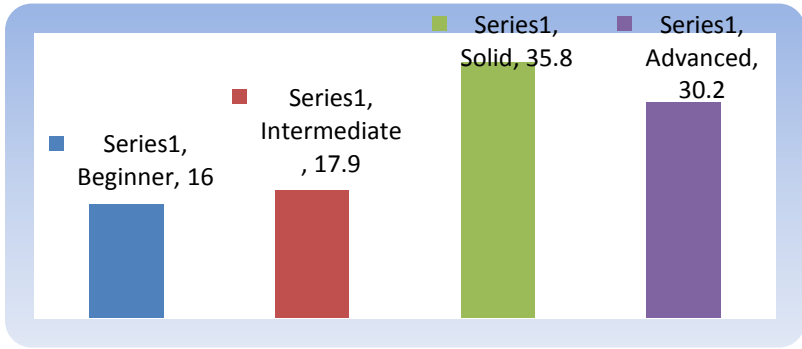


Figure 2: Computer Competency Distribution

The distribution of computer competency is shown in the cross-tabulation (Table 2).

Table 2: Level of Study – Computer Competency Cross-tabulation

	Computer Competency				Total
	Beginner	Inter- mediate	Solid	Advanced	
Year1	15	6	11	7	39
Year2	2	13	16	9	40
Year3	0	0	6	5	11
Honours	0	0	5	11	16
Total	17	19	38	32	106

As expected, third-year and Honours students rated themselves either as Solid or Advanced, whereas first- and second-year students responses show an even distribution across the four categories.

Usage Patterns of E-books

This section of the questionnaire was designed to identify the usage patterns of e-books among the respondents. Of the 106 respondents, 42 (39.6%) reported that they had used e-books in the past, while 64 (60.4%) had not.

The explanation for these differences in usage appears to be directly related to level of study. Students who had not used e-books before were mostly in their first year, while those who had used e-books previously were mostly Honours students. Of the 16 Honours students who completed the questionnaire, 12 had used e-books previously. However, of the 39 first-year students, only 13 had used e-books before.

Specific reasons for using e-books were diverse. As illustrated in Table 3, of the 42 respondents who indicated that they had used e-books before, a large proportion reported that this was due to their being available around the clock, or due to timely access to new titles or that there were no relevant paper book titles available. A total of 21 respondents (41% of e-book users) indicated that they had used e-books mainly because they have helpful features, are searchable, allow easy navigation, save space, save trees and allow e-archive or seamless sharing. The remaining 3.9% of e-book users mostly indicated that they had used e-books because they were downloadable from the Internet at no cost.

Table 3: Reasons for Using E-books

	Frequency	%
No relevant paper book (p-book) titles are available	9	17.6
E-books are available around the clock	10	19.6
E-books offer timely access to new titles	9	17.6
E-books have helpful features	2	3.9
E-books are searchable	5	9.8
E-books allow easy navigation	4	7.8

E-books save space	4	7.8
E-books save trees	2	3.9
E-books allow e-archive or seamless sharing	4	7.8
Other reasons	2	3.9
Total	51	100.0

When asked what kind of e-books they had used, 70.8% of e-book users stated that they largely used computer-based e-books, while 29.2% indicated that they had used reader-based e-books. On average, 39.6% of the e-book users stated that they did not regularly use e-books, 31.3% indicated that they used e-books on a monthly basis, 22.9% said they used e-books weekly, while only 6.3% indicated that they made use of e-books on a daily basis.

Based on the literature presented in the literature review section, one would expect that most e-books were accessed by students from the library. Contrary to this, findings from the research instrument show that at the University of KwaZulu-Natal (Pietermaritzburg), a large proportion (35.6%) of the IS&T e-book users preferred downloading free e-books from the Internet and only 13.3% used e-books available from the library. This was reflected in the questionnaire, where participants selected the 'Other, Please Specify' option and wrote that they mostly download e-books from the Internet. Many of the e-book users (31.1%) borrow e-books from peers, friends and family members. A relatively small percentage (20%) of the e-book users purchased the e-books they use. This is consistent with earlier results where 3.9% of the respondents (see Table 3) indicated that they had used e-books because these were downloadable from the Internet at no cost.

When examining the purposes for which e-books are usually used, the results showed that 28.3% of the e-book users use e-books for leisure, 23.9% for study and a large number (47.8%) for research purposes. This could be largely attributed to the fact that most of the respondents who indicated that they used e-books were Honours students. These results are illustrated in Table 4. Obviously, non-users are not shown.

Table 4: Purposes for E-book Usage

	Frequency	%
Leisure	13	28.3
Study	11	23.9
Research	22	47.8
Total	46	100.0

As mentioned earlier in this section, 64 respondents indicated that they had not used e-books previously. The reasons for not using e-books vary. Respondents were asked to select and rank the options that best indicated why they had not used e-books. It is very interesting to note that a large proportion (29.8%) of the respondents who had not used e-books agreed that using e-books would mean additional cost for them. This was in direct opposition to the information indicated by the respondents who had used e-books in the past; however, the apparent contradiction could be attributed to a lack of awareness of and knowledge about e-books.

Lack of relevant book titles (24.6%) and special equipment needs (11.1%) were commonly cited reasons for not using e-books. The remaining responses (total 24.6%) were individually relatively small and are shown in Table 5.

Table 5: Reasons for not Having used E-books

	Frequency	%
No relevant e-book titles are available	14	24.6
E-books need special equipment	12	11.1
E-books could mean additional cost on my side	17	29.8
E-books from different sources are not compatible or interchangeable	4	7.0
There are not many e-book titles available	3	5.3
E-books are hard to read and browse	1	1.8

Copyright concerns	2	3.5
Other reasons	4	7.0
Total	57	100.0

Respondents who had not used e-books before were asked about possible future use of e-books. The results were as follows: 47.4% of the non-users were keen to examine titles in the future, 33.3% said they would wait until more relevant titles became available, and 15.8% said they would purchase an e-book title for themselves in the near future. Only two (3.5%) of the non-users indicated that they were not keen to use e-books.

Limitations

One of the limitations to this research was that the sample was drawn only from IS&T students at the University of KwaZulu-Natal (Pietermaritzburg). The findings and conclusions cannot be generalised beyond UKZN IS&T students due to the limited sample size of 106 valid responses. Seven questionnaires could not be used as they were incomplete or incorrectly answered.

In addition, the use of a self-report questionnaire as the data-gathering instrument always raises the possibility of social desirability bias.

The research instrument used to gather the data for this research has also not been evaluated for reliability or validity. Face validity can be claimed as the questionnaire was sent to a statistician for an expert opinion. An additional limitation is that the analysis of the data has been limited to descriptive statistics.

Conclusion

The benefits provided by e-books have been hailed by many as guaranteeing widespread adoption, while others cannot seem to overcome the challenges presented by this new technology. Of the 106 respondents that took part in the survey, 39.6% respondents had used e-books in the past, while 60.4% of the respondents indicated that they had not. This result is in line with Ismail and Zanaib's (2005) findings at the University of Malaysia where the level of e-book use was reported at 39%, but lower than Abdullah and Gibb's (2006) finding of 57%.

On average, 39.6% of the respondents stated that they did not use e-books very often, 31.3% used e-books on a monthly basis, 22.9% claimed to use e-books weekly, while only 6.3% made use of e-books on a daily basis.

In addition, the data gathered from the questionnaire suggests a significant correlation between the student's level of study, computer levels and e-book usage. This is an expected finding.

The findings show that students at the University of KwaZulu-Natal (Pietermaritzburg) largely use computer-based e-books (70.8%), while only 29.2% of the participants indicated that they had used reader-based e-books. Furthermore, many of the respondents indicated that they preferred downloadable, free e-books available from the Internet. In addition, a large proportion (31.1%) indicated that they source e-books from friends and peers – in general, usage seems dominant in the non-purchasing domain. This trend does not align with Gunter's (2005) finding that 39% of respondents had previously bought an e-book.

Respondents' primary reasons for using e-books were availability, timely access to new titles or the unavailability of relevant paper book titles. These reasons are in accord with the dominant findings in the literature. In addition, reasons for non-use largely confirm the identified factors in the literature.

The nature of e-book usage is dominated by academic purposes (23.9% for study and 47.8% for research) with only 28.3% of the e-book users using e-books for leisure purposes. This could be largely attributed to the fact that the majority of the respondents who indicated that they used e-books were Honours students. However, it is noteworthy that academic (study and research) purposes dominate leisure purposes to this extent.

This research has helped in providing information and understanding about the usage patterns of e-books among students at one South African university. In particular, the expectation that use by Information Technology students would be widespread was not confirmed. Obviously, usage patterns and the main factors that assist or inhibit the adoption of e-books can be further assessed on a wider, more representative sample in the South African context.

This study could also be taken further to investigate the role that can be played by libraries in increasing the adoption of e-books among students. The opportunities offered by e-textbooks would also be a fruitful direction for

further research. Finally, the vexed issue of copyright, legal and ethical practices as well as purchasing models needs to be investigated.

Perhaps the reading of printed books is more deeply embedded in our souls, even those of Information Technology students, than we would like to acknowledge? Or perhaps we are simply stuck in mimicking the characteristics of printed books in the electronic space?

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