1-1-2016

Do E-books Enhance the Reading Experience: An Affordance Theory Perspective

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Disciplines

Business

Publication Details

D'Ambra, J., Wilson, C. & Akter, S. (2016). Do E-books Enhance the Reading Experience: An Affordance Theory Perspective. Diffusion Interest Group In Information Technology (DIGIT) 2016 Proceedings (pp. 1-9). United States: Association for Information Systems.

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Research-in-Progress

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Abstract

The digitisation of publishing has redefined the publishing industry and the reading experience for consumers. E-readers and smart devices are now part of the value proposition of e-books offering affordances ranging from overcoming the physical limitations of print books to providing the functionality of information systems to the reading experience. A gap exists in understanding the preferences of readers for print books and e-books. Through an affordance theory lens this paper aims to go some way to fill the gap in understand the perception of reading e-books on smart devices as well as advancing the use of affordance theory in information systems research by demonstrating the use of a proposed theoretical model. Using netnography an appropriate sample is identified and thematic analysis is used to identify affordances, positive and negative. The theoretical model is illustrated in the context of e-books and e-readers.

Keywords: e-books, adoption, affordance theory, netnography

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Introduction

"In a world of intrusive technology, we must engage in a kind of struggle if we wish to sustain moments of solitude. E-reading opens the door to distraction. It invites connectivity and clicking and purchasing. The closed network of the printed book, on the other hand, seems to offer greater serenity. It harks back to a pre-jacked-in age. Cloth, paper, ink: For these read helmet, cuirass, shield. They afford a degree of protection and make possible a less intermediated, less fractured experience. They guard our aloneness. That is why I love them, and why I read printed books still." – Excerpt from an article published in the *New York Times*, December 2013 (Hamid 2013).

The above quote expresses the conflict that many users of e-readers experience: the convenience of reading on a mobile smart device and how that experience differs from reading a print book, a major issue being the distraction that comes from reading on a smart device. E-books and the devices on which they are read are an application of information technology (IT) which has changed and is changing human behaviour: changing reading and learning, offering opportunities to enhance the reading experience through the functionality of mobile smart devices. However as expressed in the quote from Hamid (2013), as well as offering new opportunities and experiences, these technologies can lessen readers' enjoyment of the reading experience. The evolution of e-books presents challenges to the publishing industry. E-books and online sale of e-books as well as related business models is transforming the publishing supply chain. As with all transitions to digital markets uncertainty has been created in the market as user preferences are yet to be determined (D'Ambra et al. 2013). A gap exists in understanding the preference of readers for print books and e-books, publishers need to understand the behaviour of readers in order to maximise the mix between traditional printing and e-publishing and related cost and price models. Further motivation for understanding user behaviour, reading and e-books is grounded in the hedonic pleasures of reading and satisfaction derived from the reading activity.

This paper adopts the approach that e-books and the smart readers on which they are stored and read are IT artifacts. Orlikowski and Iacono (2001) argue that "how people engage with various technological artifacts in the course of working, learning, communicating, shopping, or entertaining themselves must become a central theoretical concern" (p. 132). E-books are an application that can be executed on smart devices. Smart devices offer the readers of e-books the added functionality of accessing multiple information resources such as online dictionaries, online encyclopaedias, and other useful information resources. By enabling web access while reading e-books, the reading experience is enhanced, allowing the user to resolve questions and thereby enhance the reading experience. This new context of reading takes the content of books beyond the boundary of print books to an information system capable of resolving information need as it arises in the process of reading (D'Ambra et al. 2013). However as the opening quote of this paper elucidates, this additional functionality of e-readers can detract from the reading experience. This paper aims to go some way to fill the gap in understanding the perception of reading e-books on smart devices in order to understand readers' preferences for either print or e-books from an IT artifact perspective.

Guided by the literature on e-books we adopt an affordance theory lens. The literature indicates that this is an appropriate theoretical approach to explore the evolution of e-books and e-reading thereby contributing to IS theory as well as contributing to a broader understanding of human behaviour and reading on smart devices. Based on this theoretical perspective this paper attempts to explore the research question: What are the affordances of e-reading on smart devices and do they enhance the reading experience? We acknowledge that the motivation to read varies. People read for pleasure, to entertain themselves; to reduce uncertainty in terms of an information task that they may have at hand; to facilitate

learning that may be self-directed or within a more formal systematic learning context. In this paper we focus on reading for pleasure and the findings are restricted to this domain. The following section is a review of the literature on e-books and an overview of affordance theory and its application to the current research. This is followed by the method where the virtual ethnographic approach (Hine 2000, 2008; Kozinets 2002) is adopted for the application of the thematic analysis and the related coding is described. The emerging themes are then presented and discussed in the results and discussion sections, future research and limitations are also outlined.

Literature Review

Overviews, literature reviews and bibliographies on e-books or e-reading on smart devices are generally published in information and library science or educational journals and relate to the adoption, use, and advantages/disadvantages of e-books primarily in educational environments (Ramaiah, 2005; Slater, 2010; Staiger, 2011; Yu et al., 2014). E-book studies directly related to the e-reading experience of the general public are seen in online national surveys in, for example, Sweden (Bergström & Höglund, 2014) and the UK (Gunter, 2005): the Swedish study was based on over 1,600 responses to a mail survey in 2012 from a population aged 16 to 85. The aim was to follow the diffusion of e-book reading. The researchers found that, although access to e-reading smart devices was high, only about 9% had read an e-book in the last year. E-book reading was five times higher in those under 30 years old than in those over 65; the higher the level of education, the more likely a person has read an e-book; and e-reading of fiction is higher among those with higher income. The earlier study by Gunter (2005) in the UK was based on nearly 4,000 responses to an online survey from a population ranging in age from 18 to over 65. Although 85% were aware of e-books, only 49% had used them and of these, 38% had bought at least one e-book and 13% had borrowed one from a library. Technical and non-fiction were among the most popularly bought and read. The main perceived advantages of e-books were convenience and cost. Zhang and Kudva (2014) applied media displacement and innovation diffusion theory to examine factors contributing to adoption of e-books by the general public. They used data from nearly 3,000 nationally representative US participants (aged 16 and older) from the Reading Habits Survey of the Pew Research Center's Internet & American Life Project. The results of the study "support the notion that e-books are not yet positioned to replace print books" and that the major predictors of e-book adoption are the "number of books read, the individual's income, the occurrence and frequency of reading for research topics of interest, and the individual's internet use, followed by other variables such as race/ethnicity, reading for work/school, age, and education".With about 500 responses from an online panel of consumers, Read, Robertson, and McQuilken (2011) applied the technology acceptance model (TAM) with a new construct, *emotional attachment*, to print books. Emotional attachment to print books was found to be weakly and negatively associated with consumers' attitudes toward using e-readers. The authors claim that their study was the first to investigate consumers' adoption of e-readers for pleasure (hedonic) reading. Hsu et al. (2014) administered a web-based survey to randomly selected Taiwanese. Of nearly 350 responses 85% had college/institute level education; 29% were unemployed; and the population age consisted of under 20 years old (10%), between 20 and 35 (62%) and over 35 years old (28%). The authors used an extension of the UTAUT (unified theory of acceptance and use of technology) model to examine key factors affecting users' adoption of e-book: environmental concern, perceived benefit, and 'benevolence trust'. The survey results showed that all three factors were significant determinants of e-book adoption with environmental concern having the greatest impact on e-book usage. Antón, Camarero, and Rodríguez (2013) administered an online survey through a variety of social media network groups and webpages related to reading, bookshops, e-books and relevant new technologies. The aim of their research was to explore consumer perceptions of e-books and e-readers. Responses consisted of over 650 nonusers: 63% females with ages of all respondents ranging from younger than 25 years old (51%) to older than 65. The findings showed "that perceived enjoyment and self-image congruence complement perceived usefulness in forging a favourable attitude toward e-book readers and adoption intention, and that knowledge proves essential in the adoption process. Moreover, people highly involved with reading tend to perceive e-book readers as useless, which hampers their adoption." In order to assimilate and synthesise the literature to provide some insights to the theoretical perspective to be adopted in the current research the key findings of the research were considered for emerging themes. On analysing the results we found that the bulk of the findings regarding advantages of e-books were rooted in the functionality and other affordances provided by the devices on which e-books are read rather than the content of the e-book. Intuitively this

is parsimonious as the innovation of e-books is the smart devices on which the books are stored, accessed and read. These devices offer functionality that can enhance, or detract from the reading experience.

Affordance Theory

As we have identified that the IT artifact is the innovation that is being considered, we have adopted affordance theory as our lens for the remainder of the study. Gibson (1979) proposed the school of thought known as ecological psychology where the concept of "affordance" or the "opportunity for action offered by the real world" is proposed; that is, "the affordances of the environment are what it offers the animal and the environment". Norman (1988) observed that in order to understand the interaction between humans and objects it is important to recognize both an object's intended uses (real affordances) and the affordances perceived by the user (perceived affordances). Thus the concept of affordance becomes relational rather than subjective or intrinsic; therefore intended affordances of a designed object constitute only a portion of the affordances a human being may perceive in it (Norman 1999). The concept of affordance has been applied in varying contexts, including Human Computer Interaction, software design, work team organization and information ecologies (Volkoff and Strong 2013; Fayard and Weeks 2007; Nardi and O'Day 1999) and provides the lens for this research. Our use of the word "affordance" refers to *"what is offered, provided or furnished to an actor by an object"* (Volkoff and Strong 2013 p.822). In this case the *object* is the e-book/e-reader and the *actor* is the reader. Multiple affordances can arise from a single object-actor relationship. By understanding the perceived affordances of e-books/e-readers we can develop a theoretical perspective for understanding IT use and preferences for e-books and e-readers.

Method

In order to contribute to a better understanding of readers' perceptions of the affordances of e-readers and e-books from a practical perspective, we examined an online discussion on e-books and e-readers by readers of e-books using a virtual ethnographic or netnographic approach (Böll et al. 2014; Hine 2000, 2008; Kozinets 2002). By analyzing below the line comments of readers to the question "How do e-books change the reading experience? " (Hamid 2013) we are able to identify issues of relevance to perceptions of the affordance of e-books and e-readers, from both a positive and negative perspective. Thus enabling us to identify issues of relevance to e-reading and users' preferences not currently captured in the research literature. Virtual ethnography enabled us to conduct our research, particularly in terms of data collection, in a context that is not affected, obstructed, or interfered with by the researchers' prior assumptions and understanding of a research domain (Kozinets 2002; Böll et al. 2014). This renders the analysis sensitive to uncovering aspects that are not yet revealed by research but that are prevalent from a practice perspective (Böll et al. 2014). The research data site chosen was the debate that emerged in response to the article published online in the *New York Times* (Hamid 2013) on December 31, 2013. Within a week 305 comments had been posted. These comments provide a unique opportunity to investigate data from an online discussion about users' perceptions of e-reading that involved a substantial population. Our empirical data included 307 comments made in response to the article – a further two comments made later in January and early March 2014 were also included. (The 307 comments were made by 288 individuals, a few of whom made from two to four comments.) The comments were loaded into a Word file comprising 123 pages and 39,000 words. Comments, or replies to previous comments, varied in length from several paragraphs to short one-sentences. All the comments related to a change of one's reading experience due to e-books. The *New York Times* (NYT) moderates all comments ensuring a high quality of debate, evident in the complete absence of spam and inflammatory comments in the data set. The NYT parses two subsets of the data by tagging comments in one of two ways: *NYT Picks* or *Readers' Picks*. The full complement of 307 comments was used for this analysis ignoring the tagging by NYT or readers. Not surprising, most (86%) of the comments came from readers in the USA and of these, over one-third (36%) were from the Northeast; 11% came from 18 other countries and 3% of commenters gave no location. Nearly one-half (46%) expressed a preference for reading e-books; one-quarter (25%) stated reading both electronic and print books; 18% clearly preferred reading print books; and 11% indicated no preference for either format. Furthermore, we inferred that the 288 individuals who wrote the 307 comments are: computer-competent; read and/or subscribe to the online version of the NYT; interested and/or passionate reader. We adopted a thematic analysis of the empirical material (Ezzy 2002) and were particularly guided by Braun and Clarke (2006). Our approach was

inductive, as indicated in the literature section, in line with previous analysis (D'Ambra et al. 2013) demonstrating that themes emerging from the current literature were consistent with an affordance theory approach. The extensive literature review generated a set of initial codes.

After reading and familiarizing ourselves with the data (comments) confirming that it was consistent with the proposed inductive lens, initial coding commenced. The open coding was informed by the codes derived from the literature review and at the same time the coders were open to identifying additional dimensions not currently present in the literature. When individual comments raised multiple issues they were coded against all issues raised by a participant. The data was split into three subsets and each subset coded by one of the authors. The focus was on issues of affordances offered by e-books and e-readers that participants raised as important or critical. After synthesizing the outcomes the data were coded as listed in Table 1.

• Convenience • Portability • sustainability • Personal preference • Disability • Navigation	• Additional content • Storage • Fatigue • Distraction • Security • Privacy	• value • Serendipity • Aesthetic • Content • searchability • Accept technology

Table 1. Final Codes

A spreadsheet was used to track and manage all analysis tasks including inter-coder reliability (Guest, MacQueen, & Namey, 2012). Inter-coder reliability was tested with the percentage of items placed in the target theme. The average was 84% which indicates good reliability coefficients as it far exceeded the threshold level (Moore & Benbasat,1991).

The next phase of the analysis included the identification of themes through the consideration of the relationships between codes, between themes, and between different levels of themes (i.e. main overarching themes and sub-themes). This phase was operationalized via a thematic map considering the relationships between primary codes and their dimensions.

Results

Two overarching themes emerged from the analysis: e-books and e-readers enable reading and the functionality of the smart device. It is very clear from the analysis that participants in the debate all enjoy reading and that reading for pleasure is an important activity in their lives. The emerging technology of e-books and e-readers enables them to read more and more often. From a theoretical perspective, e-books and e-readers offer affordances to users that enable them to engage in reading more often.

> *"Among many other ways in which my Kindle has enhanced my life is being able to read and download books while sitting for eighteen hours in a hospital emergency room or being able to download new things to read while visiting places with no English language bookstores. Or not having to s[c]hlep books in a suitcase. In my opinion, it's the best thing that's ever happened to reading."* (32)

Convenience

Commenter 32 highlights the affordances of e-books and e-readers that enable reading. Smart devices are portable and through their functionality provide access to book collections at any place anytime; Internet connectivity provides access to unlimited reading resources at any place any time. The compact size of the device enables readers to have access to their reading material without the bulkiness of print books. Convenience (including accessibility) and portability are two sub-themes of 'enabling reading'.

Portability is an important attribute of e-readers offering the affordance to read anywhere at any time.

> *"My kindle Paperwhite allows me to take twenty or thirty books along in a space smaller than a paperback book."* (137)

> *"The idea of being able to carry an entire library with me wherever I go, …"* (166)

Readers have found that accumulating substantial book collections has placed considerable demand on storage space in their homes. E-readers enable readers to have substantial collections of books without the need to store them.

> "*I ran out of room for print books, and I like the books I buy too much to give them away. E-book is my solution to that conflict. I can hoard books without living in clutter and chaos".* (8)

The online capability of smart devices offers the affordance of downloading e-books giving readers unsurpassed access to books; that is, affordances of the device rather than the content.

> *"Bezos and Project Gutenberg have granted easy access to the classics that I'd never read and the books I would never have found by browsing in a bookstore or even a library."* (36)

If we consider a root-cause approach here in terms of the affordances of convenience (which enables reading at any place and anytime, we discover that it is the innovation (the IT artifact) that delivers the affordances for the user. Primarily let us consider the physical attributes of the innovation. E-readers are smart devices; multi-function e-readers; tablet computers and smart phones. These devices are compact (smaller and lighter than a paperback book) therefore they are portable. This portability allows readers to carry with them extensive book collections thus enabling them to read in circumstances that would otherwise not be possible. The compact size and storage capability of the device allows users to maintain an extensive collection of books that is portable and does not require storage space in their homes. The internet connectivity of the e-reader provides access to unsurpassed reading resources.

Overcome disability

A further dimension of the convenience of the e-reader is the affordance of being able to overcome disabilities that can limit some users opportunities to read. This is attributed to the physical attributes of the device: compact; light weight; easy to use (no need to physically turn pages); adjust font size; adjust back lighting.

> *"Many of us are old or handicapped or arthritic and the Kindle and iPad and Airbook are godsends. You can read from an extremely light medium, easy to hold and easy to carry; you can change fonts and their sizes for maximum legibility."* (64)

> *"I suffer from Cataracts and Glaucoma and the purchase of my Nook is a godsend."* (146)

Functionality of the e-reader smart device perceived as affordances

E-readers are artifacts with a number of functions and attributes that are perceived as affordances by users. Smart devices are analogous to information systems as they provide access to the internet and other information resources thereby enhancing the reading experience. Readers are keen to use the indexing/search function of their smart devices to enhance their reading.

> *"An added bonus is that footnotes are hyperlinked - one can tap the indicated number within the text and have the entire footnote appear; another tap brings you right back to the place you were reading."* (73)

> *"Apple and Nook and I really suppose Kindle have the ability to fast forward or rewind a book like a movie along a line and with a marker on the bottom of the page."* (161)

The comment by 237 is an example of a second order affordance of the device (in this case a mobile phone) which enables the reader to overcome a perceived limitation of the e-reader device – difficulty to navigate. The camera of the mobile phone is used to create and store a permanent record that can be used for future reference to resolve uncertainty that arises from complexity within the content. The need to consult a dictionary is an information need that arises from the activity of reading. The functionality of the smart device allows for this need to be resolved immediately. The function of accessing an online or embedded dictionary is a boon for many readers.

> *"If I don't know a word, I can look it up then and there."* (164)
> *"Being able to instantly look up a word definition is a fantastic feature."* (153)

There are some negative perspectives of e-reading and e-readers. The functionality of being online does offer affordances as discussed above, however, on the other hand, can be seen as detracting from the reading experience.

> *"I do agree that it is too distracting to read on an iPad, but there is a solution for that: have a dedicated eReader like the Kindle Paper White. It is terrible for internet surfing, so you get the solitude you need to concentrate on reading."* (40)

> *"... kindle fire. I had that thing for about two days before I sent it back, because the main purpose of that piece of junk is to be connected. I traded that in for the paper-white and since have read [from] nothing else."* (166)

Discussion and future work

This RIP paper has gone some way in understanding reader's preferences for e-reading on e-readers. We have studied the affordances of e-reading and e-books by untangling the interaction between social actors (readers, users of e-books and smart devices) and a material artifact (e-books on a smart device). This was achieved by analysing *below the line* comments provided in response an article appearing in the *New York Times*. We have uncovered the immediate outcome that actors experienced during their reading of e-books on an IT artifact, an e-reader. The preliminary findings of the thematic analysis confirm that an affordance perspective of user's perceptions of e-readers is appropriate and consistent with the literature. The extant literature has two dimensions: the largely qualitative information science work and the smaller body of work in the information systems domain. Our findings confirm the literature's advantage/disadvantage work (D'Ambra et al. 2013; Jamil et al. 2009; Schiller 2011; Shelburne 2009) perspective of the information science investigations with convenience of e-books and e-readers being the major theme to emerge from the analysis. The findings are also consistent with the information systems perspective (Lai and Ulhas 2012; Read et al. 2011; Lai and Chang 2011) in the literature with the two themes of convenience and the IT artifact being consistent with the findings of perceived usefulness, convenience and perceived enjoyment explaining the intention to use e-readers.

The depth of insight into the affordances of e-books and e-readers provided in this work will enable the development of richer scales for use in future quantitative studies. The current quantitative work can also be improved by considering the dimensionality of the themes that map to constructs, that we have identified. For example: The theme of convenience, a construct used in quantitative approaches, has a number of dimensions including *read anywhere anytime*, *access* and *portability*. The theme of the IT artifact and its sub-themes will also enrich quantitative work by enabling the development of constructs reflecting perceived affordances of the artifact that enhance or detract from reading. From a behavioral perspective this research has contributed some understanding to human behavior in the context of e-reading. This may be useful to publishers in discerning user preferences for e-books and print-books and enable them to develop demand focused business models. Our study does have some limitations. The data is drawn from a single location, thus necessitating the need to confirm the findings. Future studies should consider multiple sources of data. The study is also the first to consider an affordance perspective of e-books and e-readers. Therefore one should take caution in generalizing the results. Our findings support Read et al (2011) who suggest that e-reader adoption may not be a binary choice between print and e-formats. Our findings clearly indicate users' preference is complex and that affordance of e-readers is only one factor in choosing a reading context. This insight should be explored in future research. As the participants are predominantly drawn from North America, future studies could consider populations from other regions thus reinforcing the validity of the results. This research is expected to make important contributions. Our study is among the first to examine the user behavior in the context of e-reading with an affordance lens and provide valuable insights to this behavior. In particular our findings do provide some support for an affordance perspective of e-books and e-readers as well as shed some light on the preferences of readers. The work is the first to consider e-readers as an IT artifact providing information processing capabilities. We hope that this may encourage further investigation of e-books, e-readers and e-reading in the information systems context. On the practical front our findings can help book publishers and retailers in understanding their market/clients and formulate successful business models to meet their needs.

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