THEME ARTICLE
Progressing the definition of "e-book"

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Abstract

Purpose – This paper aims to propose a definition for the concept "e-book" on the basis of an analysis of existing definitions. The e-book marketplace is growing rapidly and the potential impact of e-books on publishers, librarian and users is increasing in significance. Yet, there is agreement that despite a few widely accepted definitions there is no consensus on the definition of the term e-book, and, further that consensus on the definition would be beneficial for both researchers and practitioners.

Design/methodology/approach – This paper starts with a brief overview of the developments in e-books, covering technologies, marketplaces, and the attractions and challenges associated with e-books for users and libraries. It then reports on a content analysis of existing definitions of e-book. A collection of definitions was compiled through an exhaustive literature review. Content analysis was performed to identify the frequency of occurrence of key words and phrases across these definitions.

Findings – There is a consensus that definitions of e-book should include reference to: the digital or electronic nature of e-books, analogy to printed book, some indication of the content of e-books, and some allusion to e-book technologies. We propose a two-part definition that embraces these themes, but also reflects the in-use features of the e-book. Conclusions and recommendations make proposals for further discussion on the concept of e-book and, more widely, into the publication, acquisition and use of e-books.

Originality/value – In the rapidly developing e-book marketplace it is essential to have agreement on the definition of e-book, and furthermore, such a definition needs to reflect both the persistent characteristics of e-books, and their dynamic and developing nature.

Keywords Electronic books, Digital libraries, Electronic publishing

Paper type Research paper

Introduction

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 facilitating access to electronic resources such as e-journals and e-books through innovative technologies. Electronic journals have been used by scholars and professionals for more than a decade and have firmly established themselves as crucial resources for libraries and their users. More recently there has been an expansion in book publishing, with some attractive e-book packages being offered to public and academic libraries. Although both publishers and libraries are unsure about the future for and the impact of e-books, there is increasing awareness that e-books demand further attention.

Although the idea of e-books is not new there is still much confusion about e-books, even at the level of basic definition of what an e-book is (Tedd, 2005). Currently, there is no commonly accepted universal definition of e-book (Bennett, 2006) and the term has

been used ambiguously in the literature. Furthermore, although the e-book potential to support learning activities and transform the scholarly environment has been acknowledged, the uptake is slow (Cox, 2004). Referring to these issues, the report "Promoting the uptake of e-books in Higher and Further education" highlights that "within the context of academic publishing, there is not an adequate definition for the term 'e-book', and this is a source of confusion and therefore a barrier to uptake" (Gold Leaf, 2003, p. 9).

Nevertheless, in the last few years the definition of e-book has been the subject of renewed interest "involving more complexity than that of merely any digital text read via a glass screen" (Hughes, 2003, p. 984). Various attempts have been made in the literature to define e-book concerning four perspectives such as media, content/file format, device and delivery. The working definition used by JISC is "an online version of printed books, accessed via the internet" (Gold Leaf, 2003, p. 9). The definition provided by Armstrong *et al.* (2002, p. 217) is one accepted by many scholars:

> [...] any piece of electronic text regardless of size or composition (a digital object), but excluding journal publications, made available electronically (or optically) for any device (handheld or desk-bound) that includes a screen.

In 2003, the *International Encyclopedia of Information and Library Science* updated its definition continuing to use the book-analogy approach, although this definition does not seem to be widely known:

> The result of integrating classical book structure, or rather the familiar concept of a book, with features that can be provided within an electronic environment is referred to as an electronic book (or e-book), which is intended as an interactive document that can be composed and read on a computer (Landoni, 2003, p. 168).

The National Information Standards Organization (NISO, 2005) data dictionary for libraries and information providers that accompanies the standards for e-metrics and statistics defines e-books as:

> [...] digital documents, licenced or not, where searchable text is prevalent, and which can been seen in analogy to a print book (monograph). The use of e-books is in many cases dependent on a dedicated device and/or a special reader or viewing software.

These key definitions vary in their nature and extent. Also, further investigation has revealed a large number of other definitions of "e-book". More specifically, the term e-book refers variously to "hardware, software and content" of e-books (Wilson and Landoni, 2001, p. 2). Even those sources which purport to present an overview of perspectives on e-books typically develop their own, slightly unique "working definition" of the term, shaping it to their own domain of interest and purpose of their research studies. Therefore, the aim of this paper is to examine and analyze current definitions of e-book collected from the literature so as to provide a sustainable definition of e-book.

This paper starts with a review of e-book developments, technologies, markets and characteristics, providing a context for later discussion of definitions. The next section describes the process of collecting definitions and undertaking the qualitative content analysis. Findings summarize and discuss the key terms used in the various definitions, and propose a two-part definition for e-book. Conclusion and

recommendations make proposals for further establishing consensus on e-book definitions and taking research on e-books forward.

E-books – technologies and marketplaces

This section offers a brief overview on the technologies, marketplaces, and characteristics of e-books as they impact on users and libraries. The section offers a context which both establishes the increasing significance of e-books, and also demonstrates the evolution of the technologies associated with e-books, which has made a significant contribution to the variations between the definitions of e-book.

Evolving technologies

The unprecedented progress made in e-book publishing industry is one of the major developments in the field of e-publishing during the last decades. The first efforts started in the 1970s with the Project Gutenberg and the Oxford Text Archive. Project Gutenberg was founded in 1971 by Michael Hart at the University of Illinois. Today more than 20,000 public domain titles are freely available on the internet as a result of the ongoing Project Gutenberg cooperative effort (Project Gutenberg, 2006).

In the UK, the Oxford Text Archive (2006) was originally founded in 1976 by Lou Burnard to provide electronic texts to the scholarly community. It is an academic resource which offers more than 2,500 resources in over 25 different languages. Its holdings include electronic editions of works by individual authors, standard reference works such as the Bible and mono-/bilingual dictionaries. Public domain texts are freely available from the online catalogue and may be downloaded in a number of different formats.

Later in the 1980s and 1990s book vendors recognised the possibilities of providing content in digital form and focused on the academic market. Their aim was to integrate e-books into the process of library research (Hughes, 2003). These e-books were typically published on CD-ROM or to be used with personal digital appliances (PDAs) that were read on personal computers. Today e-books are available in a range of formats and accessible using a diversity of devices, including are PCs, PDAs, Blackberrys, Pocket PCs, Tablets, Sony Reader, mobile phones and iPods. Each format has its own features and specific reader software is needed to enable the e-book to be read or viewed on a device.

Many different types and kinds of electronic books are available in the e-book industry. Armstrong and Lonsdale (2003) offer a useful initial list of documents that are being made available in e-book from. They identified the following general types of e-books: textbooks, reference materials such as dictionaries; scholarly monographs; directories; grey literature, including technical reports, working papers, standards, conference papers and proceedings, official publications, trade literature, privately published material, theses, and translations; and, out of print and free e-books.

Research on e-books has categorized e-books from a variety of different perspectives, and not necessarily aligning their focus with the content of the book as do Armstrong and Lonsdale (2003). Researchers discuss, variously:

- free e-books (no direct costs to acquire, access, read, copy, or use), e.g. Project Gutenberg;
- charged e-books: purchased and licensed;
- plain text;

- multimedia books that may contain sound and images and they are usually "born digital";
- desktop PC; and
- e-books that require a dedicated e-book reader.

Expanding marketplaces

In the beginning of the twenty-first century, e-book publishing both internationally and in the UK has made an unprecedented progress. On the other hand, e-book sales are still behind projections and represent only a small percentage of the book market (Nelson, 2008, p. 44). At international level, American e-book sales in 2007, by 15 trade publishers, reached $31.7 million (or 23.6 percent higher than) in 2006 (IDPF, 2008). In Japan, sales of e-book novels over cell phones grew to US$82 million in 2006 (from US$0 in 2001) (*The Economist*, 2007), whilst in Korea e-book sales reached US$144 million in 2006, double the 2005 numbers (IDPF, 2008).

In European market e-books "have not yet been successful" and "the low level of sales has meant that no tracking has been established" (European Commission, 2005, p. 106). Back in 2003, Linda Bennett reported that publishers in the UK:

> [...]are reluctant to make their publications available in e-book format and/or to promote them too strenuously, because they are afraid of the effect on their revenues. This is especially true of the major textbook publishers, who have instead invested heavily in producing supplementary/complementary electronic materials to support print books (Gold Leaf, 2003, p. 9).

Four years later, Caren Milloy still suggests that publishers are proceeding cautiously: "although progress has been made, they were still dipping their toes in the water and waiting for someone else to take the initiative" (Milloy, 2007, p. 33).

The major international publishers of e-books for the tertiary education libraries are: Cambridge University Press, Springer, Elsevier, RSC Publishing, Wolters Kluwer/Ovid, Taylor and Francis, Wiley Interscience, Blackwell and Oxford University Press. The emergence of e-book aggregators is another noteworthy manifestation in the field of electronic publishing. Some well-known aggregators operating in the UK are NetLibrary, Questia, ebrary, Credo Reference, MyiLibrary, EBL, Proquest Safari and Knovel. Both publishers and aggregators supply libraries with considerable subject collections of international titles in various formats through a range of access and licensing models.

E-book characteristics from the perspectives of users and libraries

Compared to traditional print books, e-books have the potential to offer to the library users the following key benefits: browsing, keyword searching within a book and across a collection of books, customizable search interfaces, extracting, comparing, and assessing relevance and quality of information presented. They can also incorporate other features such as hyperlinks, bookmarks, annotations, highlighting, underlining, linking to other parts of the book or outside resources such as dictionaries and thesaurus, linking of complex multimedia objects including movie files and simulations. Interaction among users can be achieved with the enhancement of commenting and chatting tools. Information in an e-book can be cut, pasted, printed or saved for later use. The content of e-books is portable and can be easily accessed nearly instantaneously by using standard web browsers without any time or geographical constraints.

The downsides for the readers include, lack of standardisation of interfaces which can confuse users, limited number of e-books in all disciplines which are mostly in English; and, e-book software which does not always seem to be designed in a user-friendly manner. Furthermore, rights management features may prevent users from printing, e-mailing, or sharing e-book contents (Microsoft, 2003).

On the other hand, libraries benefit from the advent of e-books. Digital libraries can eliminate manual and physical processing such as packing, unpacking, shelving and physical circulation of books and also to save cost in the whole acquisition process because of the instant delivery of an ordered e-book title. In addition, there is no risk of the book being lost, stolen or damaged nor are there any physical space requirements. Given appropriate licensing models, e-books provide concurrent access to heavily used titles. E-books enable libraries to stock a broader range of material in individual subjects and access essential material that is out of print. Most suppliers provide free MARC records and COUNTER-compliant usage statistics which gives the possibility for dynamic collection management (Tedd, 2005). Another advantage is the potential for the integration of e-books into VLE's and MLE'S.

However, there are a number of issues that libraries need to deal with. The "E-book mapping exercise" (Armstrong and Lonsdale, 2003) has identified nine main difficult challenges: hardware and software issues; printing and copying matters; physical use; non-intuitive interface problems; management issues including cost and collection management; limited array of current titles and archiving issues; authentication matters (Athens); lack of information skills on the part of students; and, technophobia on the part of library staff and e-book publishers.

Methodology

For the purpose of this study, the method of content analysis was used as a research tool to examine a set of representative definitions from the e-book literature. Content analysis is a linguistic technique for "the objective, systematic and quantitative description of the manifest content of communication" (Berelson, 1952, p. 18). According to Powell (1997, p. 50) it is "a systematic analysis of the occurrence of words, phrases and concepts".

The aim of this content analysis was to systematically identify all the sub-concepts referenced in the e-book literature and to develop a taxonomic representation of these sub-concepts that characterises the concept of e-book as reflected in the published literature. On the basis of this analysis, the overall aim was to propose a revised consensus definition of e-book.

The content analysis was conducted on a sample of 37 e-book definitions collected from the literature as the result of an exhaustive literature search (see Appendix). The selected definitions provided by authors and organisations use the term e-book to designate the content of the books that are presented in some digital format. Definitions which characterise e-books in a sense of a book-reading appliance were excluded.

The content analysis involved both word and concept search on the extant definitions of e-book. Content analysis was used to achieve a categorization of the concepts in the definitions. The process involved a number of stages:

- Initial identification of key terms used in definitions of e-book, whilst maintaining a record of the definition in which key terms occurred.
- Identification of the dimensions of a potential typology for the sub-concepts in the definition of e-books.

- Initial counting of the occurrence of key terms in the e-book definitions to produce tables showing the frequency of occurrence of key terms.
- Checking of the categorization and counting by co-researchers. Checking covered both accuracy and appropriateness, with particular reference to the identification of key sub-concepts and how those sub-concepts were various represented.
- Revision of key terms list and typology.
- Counting of occurrence of key terms in accordance with the new list, and the compilation of a number of tables containing the sub-concepts, reference to the definitions in which they occurred, and a count of the frequency of occurrence of the definitions across the dataset.

Findings and discussion

This section summarises and discusses the outcomes from the content analysis. In summary, this analysis reveals that the most common themes in the quoted definitions are the digital/electronic form of e-books, the print book analogy, and the basic components of e-books including content and e-book technologies used to view or read e-book content. The first stage was to identify the key sub-concepts; these are: digital/electronic; content; book analogy; technologies; accessibility/delivery; and, use features. These sub-concepts are used to organize the discussion in this section. Within each sub-concept a number of ways of representing the concept (key terms) were identified across the various definitions, as discussed below. The frequency of occurrence of sub-concepts and key terms within the dataset of definitions was noted. Where a definition used more than one of the key terms, it would be counted under each term that it used.

Digital/electronic

Most of the authors place emphasis on the electronic and digital nature of e-books. The key term digital was used in 19 definitions, the key term electronic in 20 definitions, and the key term online in 2 definitions. In other words, a number of definitions use both of the key terms "digital" and "electronic". For example:

> [. . .]a digital object that is an electronic representation of a book (EBX, 2000).

> [. . .]an e-book is an electronic representation of a book, usually a parallel publication of print copy, but occasionally "born digital"(Lee, 2002, p. 43).

In general, the terms electronic and digital are used interchangeably when referring, for example, to format, form and text of e-books. The same terms are applied to describe e-books as versions of printed books. For instance: "electronic version of a printed book" (Soanes and Stevenson, 2004) and "digital version of a traditional print book" (Reitz, 2004). The word online is used only by Gold Leaf (2003) to demonstrate that e-books are "online version of printed books" and by Zivkovic (2005) to illustrate the availability of an e-book.

Book analogy

The print book analogy of e-books is mentioned in 31 out of 37 definitions. E-book is mainly viewed as an electronic/digital version of traditional printed book made accessible with the help of appropriate hardware and e-books reading software.

According to the sample, e-books still borrow essential features from the paper book metaphor including contents and logical structure of a book, length and form of a book such as reference materials and monographs. Authors appear to have considerable difficulty in defining e-books without reference to "traditional" books. The following list gives examples of some of the phrases that are used in this context.

- Analogy to a print book (monograph) (NISO, 2005).
- Digital version of a traditional print book (Reitz, 2004).
- Electronic version of a printed book (Soanes and Stevenson, 2004).
- Electronic version of a text (EDUCAUSE, 2006).
- Published materials, such as reference books or monographs, that have been converted into digital format (Secker, 2004).
- Electronic editions of material published in print, and which attempt to emulate "book-like" characteristics (Berglund *et al.*, 2004).
- Electronic equivalent of a conventional printed book (Guy, 2007).
- Electronic file of words and images that are of book length (NetRead, 2008).
- The result of integrating classical book structure, or rather the familiar concept of a book, with features that can be provided within an electronic environment (Landoni, 2003).
- A way of presenting the contents of a book (Cawkell, 2003) the file is formatted to look and read like a book (Chillemi, 2007).

E-book content
Drawing from the sample, a variety of terms and concepts depict the content of the e-books which noticeably illustrates a difficulty in defining it and also the diversity of material that can be embedded in them. The most common used key terms appear to be: book (18), text (9), object (5), content (5) and multimedia features (12) (see Table I). It is worth to mentioning that, in general, the selected sources describe what an e-book is but they do not clarify what an e-book does not include regarding its content. There is only one reference by Armstrong *et al.* (2002) who mention that journal publications are excluded.

There may be potential for the development of a definition that makes a clearer statement about the essential nature of the content of an e-book, especially if this were to free the definition from its present heavy reliance o the book analogy.

Key terms	
Book	18
Document	3
Text	9
Object	5
Content	5
Material	4
File	7
Multimedia	12
Other	1

Table I.
E-book content
and its key terms

This dependence on book analogy may only be tenable for an interim phase, and may become increasingly untenable as the nature of print books and e-books diverge.

E-book technologies
Table II shows the use of key-terms used in definitions relating to e-book technologies. It is evident that particular emphasis is given to hardware needed for displaying and reading e-books such as hand-held devices, dedicated e-book devices, multipurpose devices and display peripherals. On the other hand, less importance is given to the viewing and reading software.

It was not easy to identify the key terms within this sub-concept because a wide variety of different terminology was used in the definitions. This may in part be due to the development of e-book technologies, such, that, for example, some technologies that were in use in, say 2002, are no longer in widespread use, but it also arises from the dichotomies between dedicated v multi-purpose devices and hand-held or mobile devices and desktop devices. Hence, we have used these categorizations in Table II. Hand-held devices were mentioned in 21 definitions, dedicated devices by 6, multi-purpose devices by 30, and display peripherals by 8. Table II includes examples of the various specific terms that have been grouped under each category.

As Table II also shows, the extent of mention of software is very limited, and of the eight definitions mentioning software, three just use "software". The others all use different terms to describe the type of software used (e.g. reading software, viewing software, e-book software).

The diversity of terms used in definitions to describe e-book technologies is one of the main sources of differentiation between the definitions. This suggests that any persistent definition of e-book needs to take a very cautious approach to the mention of specific technologies.

Accessibility and delivery characteristics of e-books are another aspect of e-book technologies that are pointed out only by a small number of writers (19 out of 37).

		Total 57
Hardware		
Hand-held devices	Hand-held devices; e-book readers; special reader; PDA; Palm TM – type devices; book reading appliances; cell phones; pocket pager	21
Dedicated devices	Dedicated device; dedicated portable device; dedicated e-book hardware; portable device; dedicated digital reading devices	6
Multi-purpose devices	Hardware; device; computer appliance; all types of computers; computer; personal computer; desk-bound devices; desktop; notebook computer; dumb terminals; speech generating appliance; MAC	30
Display peripherals	Computer screen; desktop or laptop screen; laptop screen; monitors displays; desktop computer monitor	8
Software	Viewing software; software; reading software; e-book software; special software; web browsers	8

Table II.
E-book technologies

These characteristics are related to the internet and network connection as well as the physical form of the e-books, as shown in Table III.

Use features
Only 11 of the selected definitions include mention of the benefits and use features of e-books (Anuradha and Usha, 2005; Appleton, 2004; Brooker, 2000; Connaway, 2007; Garrod and Weller, 2005; High-tech Dictionary, 2007; Hillesund, 2001; Hughes, 2003; Cawkell, 2003; Microsoft, 2003; NISO, 2005). Benefits that are highlighted include: text searching, navigation, cross-references, hypertext links, bookmarks, annotations, and multimedia features. In addition, e-books can offer functions such as printing, downloading, storing and posting by e-mail.

The diversity of perspectives in how e-book is defined in the literature engendered the need to systematically examine that literature to determine a valid and representative definition of e-book which incorporates consideration of all relevant sub-concepts. We have performed a content analysis of extant definitions of e-book with a view to exploring the extent of consensus relating to these definitions and the concept of e-book. On this basis, we propose that any consensual definition of e-book must embrace reference to:

- The digital and/or electronic nature of e-books – although there is a split between those who prefer to use the word digital and those who prefer the word electronic.

- Allusion to the book analogy, although in the longer term as the nature of printed and e-books diverges and more e-books are borne digital this analogy may be less sustainable than it is now.

- Some indication of the nature of the content of the e-book, although existing definitions use a variety of different general terms, such as text, object, content, material, file, and the diversity of different types of e-books poses real difficulties with capturing a clear statement on the nature of content.

- Some reference to e-book technologies, although the way in which technologies are described in existing definitions is one of the main sources of variability between definitions, and over time there may be changes in technologies and the features that they can deliver.

This leads us to propose the following two-part definition:

(1) An e-book is a digital object with textual and/or other content, which arises as a result of integrating the familiar concept of a book with features that can be provided in an electronic environment.

(2) E-books, typically have in-use features such search and cross reference functions, hypertext links, bookmarks, annotations, highlights, multimedia objects and interactive tools.

A two-part definition is required to capture both the persistent characteristics of e-books, and their dynamic nature, driven largely by the changing technologies

| Connection | Internet; network services; network connection; network | 10 |
| Physical form | CD-ROM; diskette; discs; physical carriers; medium itself; other storage media | 11 |

Table III.
Accessibility/delivery

through which they are delivered and read. Many earlier definitions of e-books have become outdated due to too heavy reference to specific reader or access technologies, an sometimes their specific use features. Any persistent definition of e-book therefore needs a level of technology and, since they derive from the technology, in-use feature, independence. On the other hand, a definition that only reflects stable characteristics would be limited in the extent to which it communicates the benefits that derive from the in-use features of e-books. Accordingly, we have proposed a two-part definition. The first part summaries the essential and reasonably stable nature of e-books, but it is anticipated that the second part will become less relevant over time and require ongoing revision.

Conclusions

As practitioners and researchers embark on a more extensive engagement with e-books it is increasingly important that some agreement is reached regarding the definition of an e-book. In order to assist in this process this paper reports a content analysis of extant definitions in order to identify the overlap and consensus between existing definitions. On this basis, we have proposed a new two-part definition for e-book. The first part of the definition is relatively stable, but the second part, which focuses on benefits and technologies, should be regarded as dynamic, and in need of regular revision as technologies, benefits and characteristics of e-books evolve. This is in recognition that continuous development of internet and new technologies as well as cultural and commercial changes will affect further development of e-books. The ongoing evolution of e-books will be accompanied with richer media, new formats, wider access and new ways of organisation. Hence, definitions of what constitutes an e-book will continue to evolve in parallel with its development.

E-books are at a relatively early stage of development. There is therefore considerable scope for further research in relation to both the resolution of a consensus definition of e-book, and more widely in relation to the development of the use and adoption of e-books. Further research areas include:

- Consideration of the definition proposed in this paper by other researchers and practitioners.
- The establishment of a process for updating the definition of e-book to accommodate change in technologies, benefits and characteristics of e-books.
- The context in which e-books can support access to information, reading and learning.
- Viable business models for authors, publishers, libraries and users around e-books.
- The development of library acquisition and collection development policies to accommodate e-books.

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