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Launching e-books in Finnish markets: Defining and deploying a digital distribution model

Faculty of Electronics, Communications and Automation

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ABSTRACT OF THE MASTER'S THESIS

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Abstract:

The Finnish e-book market is starting as web stores are launching their e-book sites, publishers are activating their e-book production and wholesalers are discovering ways to deliver e-books from publishers to consumers. In addition to the traditional actors, also new actors are entering the Finnish book market as the new digital medium makes it easy and cheap to produce and distribute book content over the Internet. Thus, all actors in the industry are forced to rethink their business models and strategies and align them accordingly in order to secure their business.

In the theoretical part of this thesis, a literature study was conducted to review the current state of e-book markets. The different technical and economical issues regarding e-books were researched. Based on the literature study, the challenges and possibilities of e-books were gathered.

In the empirical part, a pilot for e-book delivery was conducted and the user experience was collected. In the pilot, the end-to-end channel to deliver e-books from publishers to consumers was implemented by deploying a Software as a Service (SaaS) platform. In addition, an e-commerce system of the client company was integrated to the system and e-books were delivered also through that system. 10 test users took part in user testing, which lasted for 3 months. After the testing phase test users' evaluations and ideas were collected with a questionnaire and group interview.

The results of the pilot show that the current e-book technologies are difficult for consumers and people not specialized in them. The most difficult issues are different file formats and content protection (DRM) methods. In addition, in order for the e-book to make a successful launch in the Finnish markets, common practices are needed for the different actors in the industry. Based on the test results, also the future functional requirements for the Finnish e-book platform were listed.

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Tiivistelmä:

Suomen e-kirjamarkkinat ovat alkaneet. Verkkokaupat ovat lanseeranneet e-kirjoja myyvät sivunsa, kustantajat ovat aktivoituneet e-kirjojen tuotannossa ja tukkurit ja logistiikkayhtiöt selvittävät mahdollisia tapoja e-kirjojen välittämiseen kustantajalta kuluttajalle. Perinteisten toimijoiden lisäksi myös uudet toimijat ovat tulleet markkinoille, kun uusi digitaalinen media mahdollistaa kirjasisällön jakelun Internetin välityksellä. Kirja-alan toimijoiden on siis arvioitava liiketoimintamallinsa uudelleen sekä tarvittaessa tehtävä uusia linjauksia turvatakseen liiketoimintansa myös tulevaisuudessa.

Tämän diplomityön teoriaosuudessa tehtiin kirjallisuuskatsaus e-kirjamarkkinoiden nykytilaan tutkien e-kirjojen teknologisia ja liiketoiminnallisia tekijöitä. Kirjallisuuskatsauksen pohjalta kerättiin e-kirjan haasteita ja mahdollisuuksia tulevaisuudessa.

Kokeellisessa osiossa pilotoitiin e-kirjojen jakelua ja kerättiin testikäyttäjien kokemuksia alustasta. Pilotissa toteutettiin aina kustantajalta kuluttajalle asti ulottuva e-kirjojen jakelukanava ja alustan toteutus ostettiin Software as a Service (SaaS) –palveluna. Lisäksi asiakasyrityksen verkkokauppa integroitiin alustaan ja e-kirjoja välitettiin myös tämän verkkokaupan kautta. Testivaihe kesti kolme kuukautta ja testikäyttäjiä oli 10. Testivaiheen jälkeen käyttäjien arvioita ja ideoita kerättiin käyttäjäkyselyllä sekä ryhmähaastattelulla.

Pilotin tulokset osoittavat, että kuulttajien sekä maallikoiden on vaikea ymmärtää e-kirjateknologioita. Erityisesti eri tiedostoformaatit ja sisällönsuojausmenetelmät (DRM) tuottavat vaikeuksia. Jotta e-kirja voidaan tuoda menestyksekkäästi Suomen markkinoille, tarvitaan kaikille toimijoille yhteiset käytännöt. Testivaiheen tulosten perusteella listattiin myös toiminnalliset vaatimukset Suomen e-kirja-jakelualustalle.

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Salla Tero

TABLE OF CONTENTS

TERMS

E-book
Literal publication produced in digital form that can be read on computers and other digital devices.

E-reader
Digital device designed for reading e-book files.

DRM
Digital Rights Management technology that limits the usage of digital content and devices. DRM technologies are used by content producers and device manufacturers for protecting their digital content against piracy and misuse.

Digital watermark
Copyright protection measure intended to prevent unauthorized copying of digital media. The digital watermark embeds information of the legal owner to the media file and the source of illegal copying can be traced.

File format
A particular way that information is encoded for storage in a digital file. Being able to read a file, a corresponding device or software is needed that can decode the file.

Digital distribution platform
A computing framework consisting of hardware and software that can be used to manage, store, and deliver digital content from one party to another.

Format conversion
Changing a file format of a media file to another, for example in order to make the media file readable on different e-reader devices.

Metadata
Data about data. In the context of e-books, metadata refers to information (such as bibliographic information or format and technological information) that is used to describe and define an e-book.

Piracy
Unauthorized copying or distribution of copyrighted works.

E-paper
An electronic display technology that is used to offer a paper like reading experience. E-paper displays are typically used in e-readers.

Audio book
Digital media recording of a book being read aloud. Downloadable audio books typically use mp3 and wav file formats.

Text-to-speech
Functionality of an e-reading device or software that uses voice synthetization to read text aloud. Differs from an audio book because text-to-speech is not a previously recorded voice, but machine generated in real time.

1 INTRODUCTION

1.1 Motivation

Over the past year, e-books and e-readers have become current topics in the newspapers in Finland. The e-book market is finally taking off in autumn 2010 as Akateeminen kirjakauppa launched their Latauskauppa, the first mass-market store for buying e-books and e-readers. Also other web stores are launching their e-book sites by the end of this year. Publishers are also activating their e-book production as new titles are published in e-book and audio book formats. The markets are still small, but both the number of e-book titles available and the overall sales have been increasing in recent years. It is interesting to see how the market takes off.

Especially publishers and wholesalers are pondering how the new market will affect them. Traditionally in the Finnish book business, there have been clear roles for publishers, wholesalers, and resellers. They each have had their tasks in the production and distribution chain. However, the new digital medium enables new actors to enter the markets as the production, warehousing, and distribution of e-books is quite easy and does not require large investments. These new actors can be device manufacturers such as Apple, telecommunication network providers and operators such as Elisa, or any other companies that have traditionally not been part of the book business.

The new actors are trying to take over parts of the traditional book value chain. For example, Elisa can offer publishers a ready delivery channel to consumers. They can utilize their existing consumer base and sell e-books directly to the devices of their customers. Apple offers the same kind of model through their iBooks store, which delivers e-books to Apple devices such as the new iPad. Elisa and Apple might therefore take over the wholesaler and reseller parts of the chain.

There are also companies that offer authors a service they can use to publish their work without using a publisher. These self-publishing service providers offer greater revenue shares to authors than traditional publishers do. As they are selling e-books through a web store, they are taking over the whole chain from publishers to resellers. Of course, they cannot offer the same services that publishers do (such as copy editing, marketing, and demand generation) but might prove to be a better deal to some authors nonetheless.

As these new actors enter the markets, the traditional actors are forced to rethink their business models and strategies and align them accordingly in order to secure their business. Some functions might stay the same in the production, warehousing, and delivery chain but also new functions can emerge. When the e-book market really takes off, the increasing e-reading device base will create more demand for digital content and the markets might eventually reach a point where books are mainly published in digital form. This poses challenges to the actors in the traditional book business, thus they should start to acquire the skills and knowledge needed in the future e-book business.

1.2 Background

This thesis was made at IBM Finland Consulting Services in co-operation with Kirjavälitys Oy, the largest wholesaler in the Finnish book industry. They are currently facing new challenges as they are striving to align their services to their customers to enable the storage and delivery of e-books and audio books. In order to revise their business models and processes it is important for them to understand the nature of e-book as a product as well as the possible challenges that they might face in the e-book business. The new product requires also new technologies that are not currently available in their infrastructure.

This thesis therefore concentrates on researching the e-book industry in order to provide Kirjavälitys insight to the business and technological aspects of e-books as well as to guide their decisions regarding the implementation of an e-book delivery platform.

1.3 Objectives and research questions

This thesis is divided into two parts. The first part is a literature overview with the objective to study the business and technology aspects of e-books and to determine the functionalities the e-book delivery platform should fulfill. In the second empirical part, different alternatives for implementing e-book platform are evaluated and a suitable approach is then selected and a pilot is implemented. The objective of the pilot is to gain experience of distributing e-books and audio books from publishers to consumers. Based on the pilot the future requirements for e-book delivery platform are derived.

The research questions are formulated as follows.

- What are the challenges and opportunities of e-books?
- What is the e-book market situation in Finland?
- What are the alternatives for implementing a digital distribution platform for e-books in Finland?

In order to answer to the first research question, the different aspects of e-books are studied and compared to the traditional printed book. Based on these differences, a SWOT analysis will be conducted to gather the challenges and opportunities of e-books.

In order to answer to the second research question, the actors in the Finnish book industry and different delivery channels for e-books are studied. The e-book markets will be evaluated also based on the number of new e-book titles published and the sales figures.

Answering the third research question will be made based on evaluating different approaches for implementing the platform. Different platform providers are evaluated and the most suitable is selected for the pilot.

1.4 Scope of the thesis

In this thesis primarily downloadable text-based e-books are discussed. In the literature study audio books were not discussed as they are already in the market and no not use the same technology as e-books.

Regarding the delivery channel this study focuses on the channel from publishers to aggregator and to web stores selling e-books to consumers. Libraries are mentioned a few times if considered necessary but the focus is only on the web store retailers.

In the pilot, also audio books were tested. It is possible that Finnish audio books are delivered through the same platform as e-books, and therefore the platform should support them as well.

1.5 Structure

This thesis is divided into two parts; a literature study and an empirical part. The literature study begins with an introduction to e-books and the related technologies in Chapter 2. It provides definitions and gives an overview of the e-book history, file formats and devices. In Chapter 3 different aspects of e-books are discussed. This chapter covers both technological and business aspects. At the end of Chapter 3 a SWOT analysis for e-books is presented.

Chapter 4 provides insight into the traditional Finnish book market as well as the current e-book markets. It discusses the changing roles of actors in the field, briefly presents the market figures and discusses the changing value chains.

The empirical part begins in Chapter 5. A requirements analysis for the Finnish e-book platform is presented and different alternatives for implementing the platform are evaluated. Chapter 6 introduces the pilot by presenting the setup and arrangement as well as gives on overview of the pilot platform functionality. In Chapter 7 the results of the test user questionnaire and group interview are presented and discussed. At the end of the chapter suggestions for the future platform are given.

In Chapter 8 the research questions are answered and the research is evaluated. Finally, in Chapter 9 the conclusions for this thesis are given.

2 E-BOOK TECHNOLOGY

2.1 Definitions

2.1.1 E-book

The terms *electronic book* or *e-book* (in Finnish *sähkökirja*, *e-kirja*) are quite ambiguous since they are used to refer to digital book-like content as well as electronic devices for reading them. And when it comes to content those terms can mean different kinds of electronic documents consisting of physical books converted to digital format (through a digitization process), electronic books, articles and magazines available online and even content that encompasses multimedia and hypertext (Shiratuddin 2002). In this thesis, the term *e-book* is used to refer to content that can be any kind of digital document that is an equivalent for the traditional printed book, covering e.g. textbooks, novels, reference books, etc. Digital documents that represent newspaper, magazine or article content are excluded from the definition of e-book, and are not included in the scope of the study.

E-books can be bought on numerous Internet sites such as amazon.com and ebooks.com. Many sites also offer e-books for free (www.gutenberg.org, www.getfreeebooks.com, www.free-ebooks.net). It is also possible to lend e-books from a digital library (www.helmet.fi) or download them against a subscription (www.ebooks-library.com). After buying e-books, they can be read online, downloaded to a computer or a laptop, or transferred to a separate e-reading device. It all depends on the service offered by the e-book store. Some offer only the possibility to read e-books online, as others allow also downloading them to a computer or a laptop. After this, some e-books can be transferred to a smaller e-reading device, and the user can read them anywhere and anytime.

2.1.2 E-reader

E-books can be read on different kinds of devices that combine the storage, search capabilities, and allow viewing of the content on a display. The most common devices are computers and laptops, which can be used for reading e-books in all formats, although some formats require the user to install specific software. There are also other devices that can be used to read e-books. These include smart phones, PDA’s, tablet devices and e-readers. These devices will be discussed in Chapter 2.4 in more detail.

2.2 Beginning of e-book industry

It has been said that the first e-books were created by the Project Gutenberg in 1971. Founder of the Project, Michael Heart, wanted to bring all famous and important print collections available to the public in electronic form. (Herther 2008)

In the 1980's CD-ROM was introduced and used for digital publications such as reference books. In addition, as Lynch (2001) stated, also different kinds of manuals are good examples of the first books in electronic form. However, it took almost ten years to manufacture the first devices, as the first portable CD-ROM players enter the markets in the beginning of the 1990's. Ten years later, at the end of the 1990's, the first handheld devices start entering the markets, including the PalmPilot by Palm, the Rocket by NuvoMedia, and the SoftBook reader by SoftBook. At the same time, the first trade publishers start to release books in electronic form over the Internet. (Herther 2008) Also Finnish literature made its way to e-books, as Project Runeberg started to offer public domain classics as e-books in 1992 (Project Runeberg n.d.).

In the beginning of the 21st century, the e-book industry really takes off, as new companies start to offer their e-books and e-reader devices. In 2000, Stephen King's novel Bag of Bones is published exclusively in electronic form, and ended up selling 500 000 copies in only 48 hours. Also, Amazon and Microsoft join forces and start selling e-books on the Internet. In 2001, Apple releases the iPod and Adobe launches its latest e-book reader software, that offers annotations functions, such as underlining, taking notes and making bookmarks. The handheld devices gain wider usage and reach a $140 million market. More e-books enter the markets as Random House, HarperCollins, and Penguin start to sell their e-books. (Herther 2008)

In 2004 Google starts its Google Print Library Project (currently known as Google Book Search) to scan large amounts of print books and offer them over the Internet. During 2006 and 2007 new lightweight and book-sized e-readers are launched, including the Sony Reader and Amazon Kindle. At the same time, Apple introduces its iPhone. In 2007 the US e-book market has been established, and the Association of American Publishers estimates the trade e-book sales in the U.S. to be at $54 million. (Herther 2008)

In early 2008, the launch of Amazon Kindle e-reader brought about an increased interest in e-books and e-readers. The Kindle was the first device to offer an integrated, easy-to-use e-book store that can be used directly from the e-reader. (Behler 2009)

Amazon announced that on Christmas Day 2009 for the first time they sold more e-books than traditional physical books (Amazon.com Inc. 2009). Even though it has been reported by Boog (2009) that most of the e-books sold were free (and probably did not generate more revenue than physical books) it still demonstrates that e-books are gaining more and more readers all the time and will probably find their place in the book business in the future.

The Finnish e-book market is still small compared to the US markets. In 2009 the US e-book sales reached $50 million and the Finnish e-book sales was only about €130 000 (SKY n.d.a; IDPF n.d.a) However, with the recently opened new Finnish e-book web stores and some of the largest publishers announcing their new e-book titles, it is expected that the e-books are hitting the mass markets later this year.

2.3 File formats and standards

Introduction

There are several different standards currently for e-book files and devices. Some of them are proprietary, i.e. can only be used by the owner of the standard, but some of them can be used by anyone. Some formats allow also the content to be DRM protected, which in many cases means that those protected e-books can be read only with specific software or e-reader. Because the standards and formats are not compatible, it creates difficulties to users as they need to select the formats they want to use and acquire the specific reader software and e-readers for them. Below the most widely used formats are presented.

PDF and AER

PDF (Portable Document Format) is a file format created by Adobe Systems. The format provides a standard form for storing and editing printed publishable documents and preserves the original layout of the document regardless of the device used for reading. The software needed for reading PDF files is available as a free download from Adobe. PDF format is supported by almost all e-readers currently in the market.

Adobe offers also a DRM (Digital Rights Management) system, that can be used to protect PDF files. If the DRM is applied to a PDF file, the file format changes to AER, and requires additional software for reading. This software, called Adobe Digital Editions, must be downloaded to the computer before the user can download and read Adobe DRM protected e-books. In addition, also the e-reader has to be able to support Adobe DRM. There are several e-readers in the market with this support and a list can be found from Adobe's web site (Adobe Systems Inc. n.d.a).

Mobipocket (.prc, .mobi)

Mobipocket e-books have file extensions .prc and .mobi. The format is based on the Open eBook standard and uses XHTML language. Mobipocket e-books can be read using Mobipocket Reader software, which can be downloaded to a computer. Several e-readers support this format, and a comprehensive list can be found from Mobipocket web site (www.mobipocket.com). Mobipocket is owned by Amazon, and mobipocket e-books can be read also on a Kindle device.

Kindle proprietary format (.azw)

Amazon's Kindle device uses its own proprietary format, AZW. It is based on the Mobipocket standard and uses its own DRM protection technique. This means that AZW e-books can only be purchased from Amazon Kindle store and read on a Kindle device. In addition, Amazon offers a Kindle reader software that can be used for reading

AZW e-books on a computer, on smart phones and on an iPhone or iPad. However, reading AZW e-books on other e-readers is not possible. (Amazon.com Inc. n.d.)

ePub (.epub)

The ePub format is an XML based open standard for reflowable digital books and publications. It is the official standard of the International Digital Publishing Forum (IDPF) (IDPF n.d.b). The standard is free and open, making it available to be used by anyone. ePub e-books can be read on several different e-readers, not Kindle however. The ePub format does not offer DRM, but it can be added as an additional layer. ePub e-books can be protected using the Adobe ACS4, and in that case those e-books can be read using Adobe Digital Edition software or an e-reader that supports ACS4 (Adobe Systems Inc. n.d.b). Also the Apple iPad supports the ePub format. However, they use their own DRM system, which is different from Adobe. The Apple DRM is proprietary, and all e-books sold through Apple store can be read only on an Apple device. (Cook 2010)

2.4 E-reading devices

2.4.1 Categories

E-reading devices can be categorized into different groups based on their functionalities (see Figure 1). Computers and laptops are the most commonly known devices that many people already own. Smaller devices, such as PDA's, iPads and iPhones, and other smart phones are referred to as *multifunctional handheld devices* because they are not limited only to reading e-books, but can also be used for other functions, such as making phone calls, listening to music, taking photos, and using the Internet. These devices typically use LCD or OLED displays. The devices intended only for reading e-books and making annotations typically use e-paper displays to mimic the appearance of traditional paper, but do not offer additional functionality. As suggested by Saarinen (2001), these devices will be referred to as *dedicated e-readers* (or just *e-readers*). When referring to all of these different devices, the term *e-reading device* will be used, and when referring to multifunctional devices and dedicated e-readers, the term *handheld devices* can be used.

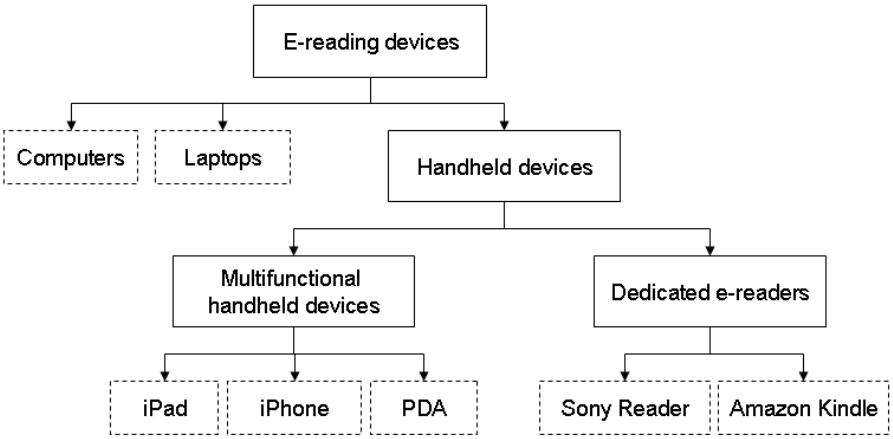

Figure 1. *Term diagram for e-reading devices*

2.4.2 Handheld devices

Handheld devices offer different connectivity options, including USB, 3G and Wi-Fi. USB is the basic option for transferring e-books to a handheld device. If only USB is available, the user will have to search and buy e-books using a computer. After that, the e-books will be downloaded to the computer and transferred from the computer to the device.

Some handheld devices, especially smart phones, offer 3G connection, which allows the reader to search and buy e-books as well as to download them directly to the device, wirelessly. This requires a subscription from a 3G operator, and is limited to the availability of the 3G network. Some devices offer Wi-Fi connection, which means that the user can search, buy and download e-books directly to the device wherever a Wi-Fi network is available. It is also possible that some devices offer both 3G and Wi-Fi access to compensate each other and for offering better network availability.

2.4.3 Multifunctional handheld devices

Reading e-books on a multifunctional device, such as iPad, PDA, and other smart phones, requires specific e-reading software. Each different e-book format may require their own e-reading software, which makes it complicated if the user uses several different formats. The multifunctional devices typically use LCD or OLED display technologies, which makes them suitable for different kinds of content (including video) offering clear color displays with high contrast. Because of their high power consumption and bright light, these devices are not suitable for long-lasting reading. However, the high switching speed of the display makes the menus and graphics

appealing. A good example of an attractive user interface design is the Apple iPad presented in Figure 2.

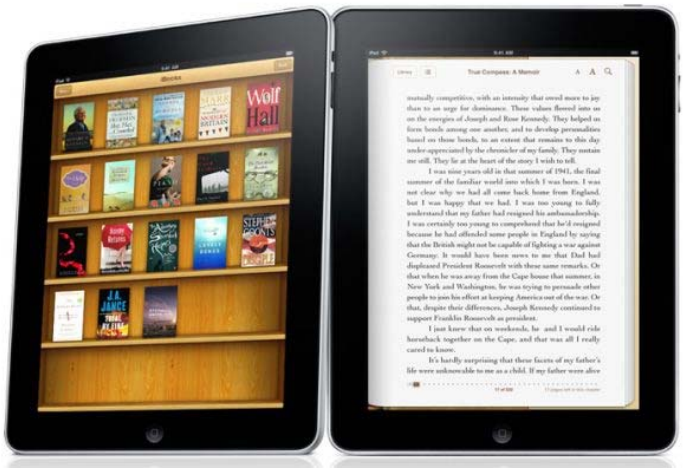

Figure 2. *Apple iPad for reading e-books (Absin-Viente 2010)*

Reading e-books on an iPad can be done by using iBooks application that is available from Apple App Store. iBooks displays ePub format e-books and supports only Apple's own DRM. This means that ePub e-books purchased from other web stores cannot be read on an iPad, unless they are unprotected. Apple has not yet launched iPad in Finland (Apple Inc. n.d.), but M-Technology Oy has started to resell the EU version of iPad on their web site www.m-technology.fi. The prices range from € 850 to € 1050.

2.4.4 Dedicated e-readers

Dedicated e-readers are handheld devices made especially for reading e-books but cannot necessarily be used for other activities as opposed to multifunction devices that where discussed in the previous chapter. Dedicated e-readers are typically bigger than multi function devices having a larger screen that can display an entire page of a book. These displays are often electronic paper displays that mimic the appearance of ordinary paper. Electronic paper displays (e-paper displays) use electronic ink that reflects ambient light to create the image or text. These kinds of displays are considered more eye friendly than LCD (liquid crystal display) or OLED (organic light emitting diode) displays, which contain an active light source and therefore cause more eye strain (de Grancy 2007). This makes reading more natural and comfortable.

During recent years dedicated e-reading devices (e-readers) have entered the markets especially in the US and Japan and are now spreading across Europe. There are several devices available with different functionalities, standards and prices. The most widely known are the Amazon Kindle and Sony Reader Touch Edition that are shown in Figure 3. E-readers currently in the market are about the size of a traditional book but far more

thinner. For example the Amazon Kindle and Sony Reader Touch Edition are about 1 cm thick (Amazon.com Inc. n.d.; Sony Electronics Inc. n.d.).

Figure 3. *Amazon Kindle on the left and Sony Reader on the right (Amazon.com Inc. n.d.; Sony Electronics Inc. n.d.)*

2.4.5 E-paper displays

E-readers are typically equipped with e-paper displays that aim to emulate the extremely high level of readability of ordinary paper (Anderson 2005). This paper-like display (e-paper display) is the main advantage of e-readers compared to those of other mobile devices that are equipped with LCD (Liquid Crystal Display) or OLED (Organic Light-Emitting Display) displays.

Traditional displays (LCDs and OLEDs) produce light, which is said to cause eye strain, especially if used for long periods. Because producing light requires constant power, also battery life becomes a challenge. When reading e-books with a handheld device, adequate battery life is one of the most important requirements.

E-paper displays are designed to answer to these shortcomings. Ideally, they are expected to provide the user with a more paper-like reading experience that does not cause eye strain and that have the contrast and reflections like real paper (de Grancy 2007). This has been implemented by using electronic ink, which reflects ambient light and produces the image like normal ink on paper. The high reflectivity of electronic ink eliminates the need to use an additional light source, resulting in lower power consumption and weight. (Bonneau 2009) The lack of active light source makes e-paper displays also more readable in various lighting conditions, especially outdoors (Wilson 2003). However, reading in dark lighting conditions is difficult (as it is for traditional paper). Kimmel et al. (2002) suggested that this requirement could be fulfilled by using a frontlight that could be turned on to enhance the ambient lighting.

There are also other disadvantages to e-paper technology. Due to their nature, e-paper displays are typically bichromatic, meaning they can display only two colors (black and white). Adding color could be done only to the detriment of other important reading characteristics (Bonneau 2009). Another disadvantage is that moving the particles in electronic ink is slow leading to a quite long “switching speed” and therefore e-paper displays are not suitable for displaying video or other content that require frequent updating. (Kimmel et al. 2002) This affects also the graphic user interfaces and menus offered in e-readers. Moving in the menu takes time and deteriorates the user experience. However, the switching speed has little effect to the reading experience when the user just turns a page now and then.

As a result, e-paper displays are very portable and lightweight and are especially suitable for e-book reading offering a good paper-like reading experience when page turns are infrequent. E-paper displays offer a similar reading experience as traditional paper, but currently do not offer enhancements like reading in the dark.

2.4.6 Role of handheld e-reading devices

There has been discussion whether or not e-readers will replace the print book. Although this may happen in the far future, it is not probable that the print book would be threatened at least in decades. There are, however, certain genres that work well in digital form and are not published in print that much anymore. According to Lynch (2001), these genres are e.g. bibliographies, citation indexes, dictionaries, encyclopedias, directories, product catalogs, and manuals. All of these genres share several key properties: they are used for finding and reading relatively short chunks of specific text; they are frequently updated; and can be enriched by adding large amounts of content and multimedia amenities, which is not as easy in the print world.

Lynch also notes, that these genres might not always be suitable to be used in e-readers because they are not presented like traditional books, but rather as databases to be searched and browsed. Thus, they are targeted to be used with computers and laptops. Lynch reasons, that the fact that they are not literal translations of the predecessor print products, is why they have succeeded in the digital world. The content itself has not changed much, but the presentation interface has been radically restructured, thus enhancing the usability of the content. When it comes to e-readers, according to Lynch, they are merely supporting digital books that are very similar to traditional print books, and therefore cannot be used to replace computers.

Mace (n.d.) gives another example of content that is suited for digital reading. Short stories were traditionally published in magazines, but have now been replaced by other sorts of content. These short stories are well suited to mobile reading, because they are consumed in small bites. Consumers could buy these stories from a web store equivalent to iTunes store, and this store could also be tied to a tablet device or e-reader. Authors

could also sell subscriptions for their stories, and these new episodes would be automatically sent to the readers through a 3G or WiFi connection.

According to Mace, this new short story web store would give e-reading devices a real benefit, content that you cannot get anywhere else. This short story model might also encourage reading as well as writing. It might make people read more than they normally do, because they can do it when commuting, waiting in line at the grocery store, or waiting for a doctor's appointment. This kind of new content genre has already been identified in Japan, the mobile phone novels gaining a wide reader base (Farrar 2009).

So, it depends much on the content whether the most suitable and usable device is a computer or an e-reading device, or even the traditional paper. Both O'Leary (2003) and Lynch (2001) agree that people tend to prefer reading on paper especially when reading long texts, and like to use a computer or some other digital device for searching and consulting texts. According to Lynch, people use a digital version (whether on a computer or an e-reading device) to browse, quick check, and eventually decide what they do and do not want to read carefully. Those parts they do want to read carefully, they usually print out.

Also Nordqvist and Picha (2007) discuss the role of e-readers and sees that there are usage situations in which dedicated e-readers work well. When reading for pleasure, people like to be disconnected with the world and enjoy the book they are reading (this is the traditional print book usage scenario). Norqvist and Picha call this a "Me-media" activity, something you do on your own, not together with other people. In this situation, no 3G or WiFi connection is needed, thus there is demand for these kinds of connectionless e-readers as well.

However, according to Nordqvist and Picha, there are also situations when that connectivity is needed. These e-reading devices offer the portability while being constantly updated from the Internet. These devices are used for "We-media" situations, where the reader can participate in, e.g. communities and forums, or social networks as well as share content with other users. For these situations the constant Internet connection is necessary, thus creating demand for 3G/WiFi e-readers.

Whether e-readers can provide such a paper like reading experience that people would prefer them over real paper remains to be seen. Until that happens, it is likely that dedicated e-readers as well as other e-reading devices and computers all have their advantages that make them more suitable to certain kind of content. It is not likely that one device could offer the best interface for all situations. Furthermore, people will probably still prefer reading certain content, such as novels and classics, in print. The traditional paper will probably remain to be highly valued for many decades and cannot be replaced by any device or screen.

3 E-BOOK BUSINESS ASPECTS

3.1 Introduction

Although e-books present the same content as their print counterparts, they are very different products. The fact that e-book is in digital form, it is difficult to compare it with the physical print book. This digital medium creates many difficulties and but also opportunities that affect the production, distribution, and selling of e-books as well as reading, annotating and sharing them.

There has been a lot of discussion in the literature on different issues that have come forth on this field. Especially the issues related to copyright of digital works and the different content protection mechanisms that are used to protect the intellectual property have gained a lot of attention. The traditional copyright laws are not able to address the issues related to the digital medium and therefore new laws and practices need to be developed for e-books.

Because of the digital form of e-books, selling different versions has become easier than for print books. It is also possible to distribute e-book content instantly over the Internet, which was not possible for print books. These differences pose some difficulties to content owners, as they need to decide the appropriate prices and business models for e-books.

In addition to difficulties and problems, the issues discussed here offer also new possibilities for e-book pricing and distribution, and are very interesting concerning the first research question. In the next chapters, these issues are discussed and the challenges and opportunities they pose to e-books are presented.

3.2 Copyright and content protection

3.2.1 Intellectual property and copyright

When an author writes a book or an artist writes a song the result, the work created, is called Intellectual Property (IP). This term refers to all creations of the mind, which are created as a result of intellectual activities in the industrial, scientific, literary and artistic fields (Tekijänoikeuslaki (404/1961)). The author owns the work he or she has written and is entitled to earn revenues by selling that work. There are different measures to be used to secure the ownership of IP. These measures can be categorized as legislative, business models and technology (Eskicioglu et al. 2003). Legislative measures are introduced in this chapter and business models and technological measures in the following chapters.

Copyright is a form of protection provided by the law, which grants authors exclusive rights over the IP they have created. These rights include, among other things, the right to reproduce the copyrighted work and distribute those copies and to perform or display

the copyrighted work publicly. The author can also grant the rights to a publisher, who then becomes the copyright owner. (Tekijänoikeuslaki (404/1961) Although it is illegal to violate the rights provided by the copyright law, there are some limitations, such as the doctrines of fair use and first sale.

Fair use limits the reach of the rights provided by the copyright law stating that reproduction of copyrighted works for purposes such as criticism, comment, teaching, and research is not an infringement of copyright (Tekijänoikeuslaki (404/1961)). As Lohmann (2005) points out, without this exception the copyright law would reach as far as making it illegal to whistle a tune of a copyrighted song, cutting out a cartoon from the newspaper and posting it on your office door, and quoting lines from movies. The other restriction to the copyright law, the first sale doctrine states that after a copyrighted work (such as a book, CD or a movie) has been purchased legally it can be resold without committing copyright infringement (Tekijänoikeuslaki (404/1961)).

In the case of a physical product such as a hardback book it is clear that reselling it is not questionable. However, when reselling digital products such as e-books, the question becomes more complex. When a digital file is given to someone else or even moved from one folder to another, a copy is being made. It is therefore impossible to resell the original legally purchased product. This is one of the problems the current copyright law is facing when copyrighted works are produced in the digital medium. Another challenge posed by the digital medium is the possibility to produce perfect copies of digital products easily and cheaply.

Because of these challenges, there has been a lot of discussion in the industry whether the current copyright law is suitable to be used for digital IP or not. In the print book industry this approach has worked acceptably, since producing copies of the original product is not economical and the copies would inevitably suffer from poor quality. Therefore, there is no incentive for people to engage in illegal copying. (Shapiro & Varian 1999)

The new digital medium affects also the contracts between authors and publishers. There have been lawsuits against third parties, e.g. Google and Rosetta Ebooks, that have published copyrighted titles as e-books. It has not been clear whether or not publishers who have the right to publish an author’s work as a print book also have the right to publish the same book in digital format. According to Lynch (2001) the Rosetta litigation can determine whether the right to publishing in print also covers the right to publish in digital form. This litigation has now been ruled in favor of Rosetta Ebooks (Stein n.d.).

Like the digital rights, also the audio rights are still unclear. Allowing the read-aloud function in an e-reader to be turned on might infringe audio rights to the book, if the author or another publisher owns them. This causes frustration to the users if the function cannot be used for a title even though the device supports that function. Also publishers suffer if they are forced to disable this valuable feature from their customers.

(Hill Slowinski 2003) Especially for disabled readers this feature might be decisive when buying e-books.

Therefore, it is evident that the current copyright law is not able to cover all challenges that the digitalization of information has introduced. Even though the copyright law could be modified to cover also digital products, it in turn introduces another issue, enforcement, which can be accomplished in different ways. E-books (ore other digital products) could include click-through licenses that express the rights for the user or the e-book file can be protected with technical means. The former approach has little enforcement power, whereas the latter can effectively restrict the user from using the product in unauthorized ways. There exists, however, a trade-off between protection and usability: extensive restrictions make the product more difficult to use. (Shapiro & Varian 1999) The following chapter introduces the current concerns of piracy as well as the business model approach to protecting copyrighted works. Technological protection is discussed in chapters 3.2.3 and 3.2.4.

3.2.2 Piracy

Copyright infringement (sometimes referred to as piracy) is the unauthorized or prohibited use of copyrighted works, in a way that violates the copyright owner's exclusive rights. Thereby it is illegal to reproduce and distribute copies of such works beyond what can be interpreted as fair use. (Tekijänoikeuslaki (1961/404)) However, file sharing over the Internet has become more and more common during recent years. It started with music, then movies and currently the publishing industry is worried it will destroy their market when digital products such as e-books start to become widely available. This is probably one reason why the market has not yet really took off. Publishers are still uncertain of their future rights, revenues and business models.

One approach against piracy is the use of different business models. Offering the users digital products that are valuable to them and pricing them fairly is extremely important when trying to maximize the amount of legal users (and to minimize the amount of illegal users). As the users are those that pay for the products, and ultimately determine the success of the e-book industry, it is crucial that the products are designed, priced and protected with the end-user in mind. Different pricing strategies are explained in Chapter 3.3.

However, it has been noted by Oestreicher-Singer and Sundararajan (2004) that offering users appealing usage rights often has a positive correlation with piracy. For example, the right to make copies of an e-book makes the product more valuable to users and can therefore be priced higher, but also enables illegal sharing of copies. They suggest that when designing the user rights it is important to find the balance between product quality, which determines the user’s willingness to pay, and the possible effects those rights have on piracy. For example, granting the text-to-speech function, which allows the user to listen rather than read an e-book, makes the product more valuable, thus having a positive impact on prices. The threat of piracy is not significant, because

recording the audio output and distributing copies of it is not economical and the copies are of poor quality. The most valuable rights when aiming to charge higher prices are those that enhance the consumption experience by exploiting the digital medium rather than trying to replicate the physical consumption experience (such as allowing printing).

Whether or not technological protection schemes are used to enforce the usage rights, it is important to make the usage rights easy to understand and the product easy to use. According to Einhorn (2004) too restrictive rules actually reduce the market demand and prices. Technological protection schemes are introduced in the following chapters.

3.2.3 Digital Rights Management technology

E-books can be protected using active methods, such as cryptography, that directly prevent unauthorized access and usage or with passive methods, such as digital watermarks (Wolf 2007). Digital watermarks are discussed in the following chapter. Digital Rights Management (DRM) is a system that uses cryptography to protect commercial digital intellectual property and to avoid digital piracy. It prevents unauthorized access to digital content and manages content usage rights, such as the right to view, copy, and print the content. (Liu et al. 2003)

When a user purchases an e-book that has been protected by DRM, he or she receives an encrypted file of that e-book as well as a digital license that grants certain usage rights to him or her. This license is used to decrypt the encrypted e-book file so that the content can be viewed. Without a legal license it is impossible to read the e-book. The usage rights are defined by the content owner and can be a combination of different criteria, such as frequency of access, expiration date, restriction of transfer to other devices, copy permission etc. For example, the user might be allowed to read the e-book for a year, print two pages of it every month but not to make a copy of it. By selecting different usage rights the content owner can sell the same e-book using different business models, such as pay-per-view, subscription, or rental. (Liu et al. 2003)

DRM technology can be used to restrict the usage of content even after it has been purchased and accessed for the first time. Therefore, DRM offers content owners (usually publishers) much more power over consumers than they currently have in the print world. One of the greatest concerns caused by DRM is that copyright owners are able to forbid consumers from using the content in the way that has been permitted by the fair use doctrine in the copyright law. Also the right to resell purchased content (as defined in the first sale doctrine) can be prevented with DRM. (Lohmann 2005) The lack of support for the first sale doctrine poses challenges especially to libraries, that have previously been able to lend out the books they have purchased. The current DRM technologies are not able to handle the issues of fair use or first sale and this way are in conflict with the copyright law. (Hill Slowinski 2003)

As Kramer (2007) pointed out using DRM to protect content can also prevent equal access to that content by readers with visual or hearing disabilities if DRM is used to prevent the use of a read-aloud function for example.

According to Lohmann (2005) it seems unlikely that any DRM technology would be able to accommodate the full range of fair use. This would mean that a balance between DRM and fair use would have to be found in order to stabilize the marketplace. It might lead to a situation where some rights of fair use are sacrificed in order for the content industry to be able to protect their intellectual property sufficiently.

In order to access DRM protected content the user has to purchase a valid license which is then authenticated. The license is always personal and locked to the user's device or user identity. Revealing the user identity to the content owner (or device manufacturer) can allow them to monitor what content the user is consuming. This has caused concerns over the user's privacy. According to Liu et al. (2003) users of digital content should be able to consume it anonymously and the DRM system in use should regard privacy protection. The current DRM schemes used for e-books do not offer this, however. For content owners the possibility to profile user preferences would of course introduce an appealing way to do targeted marketing on their content. This kind of recommender systems have been in use over the Internet (for example Amazon) and have created value to users. So targeted marketing is not necessarily a bad thing. The user still has to be able to influence on how and what information is collected and consume content anonymously when required.

Another challenge to the users caused by the current DRM technologies is poor usability. All DRM vendors apply their own protection mechanisms which are not interoperable. Content that has been protected by a certain DRM system cannot be accessed in another system. To be able to access various content provided by multiple DRM systems, the consumer has to install different plug-ins or vendor-specific applications. In addition to different technologies all DRM systems also apply different combinations of usage rights which may not be clear to the user in the time of purchase (Schiller 2010). These differences cause confusion, inconvenience, and lack of transparency to the users. Liu et al. (2003) state that in order to guarantee wide acceptance a standard is required. This way all vendors would implement their systems according to the same architecture and rights language and users would not be locked up into a particular DRM system. Several organizations such as Open Digital Rights Language Initiative (odrl.net), World Wide Consortium (www.w3c.org), and Open eBook Forum (openebook.org) are working to define standards for this field.

When discussing e-books they are often considered to be just like traditional books, the only difference being that they are in digital form. Many times people expect the same rights that apply to traditional books to apply to e-books as well. Owning a print book means that the user owns the copy he or she has purchased and can do whatever he or she likes with it. If the book would be withdrawn from the market, the previously purchased copies would still remain with their owners. This situation might be very

different in the case of e-books. According to Schiller (2010) Amazon has allowed publishers to deactivate the Kindle's text-to-speech functionality after the content has been sold. And according to Bethune (2009), when Amazon stopped selling some e-book titles they also removed previously purchased copies of those titles from users' Kindle devices. Based on these incidents it is clear that the issue of ownership is not well defined for e-books. This causes concerns to consumers, as it is not clear exactly what rights the publishers and content resellers have over content after purchase. Probably most users expect that after they have purchased an e-book title they will be able to read it forever.

There are also arguments on behalf of DRM. When it comes to fair use rights the users are often allowed to make a fixed number of copies of the content they have purchased. This makes it possible to consume content in different devices such as e-readers, computers and mobile phones. (Liu et al. 2003) This does not provide users the full range of fair use but is a compromise between usability and protection, which was mentioned also by Lohmann (2005). There are, however, no implementations of first sale rights in current DRM technologies. So it is not possible to resell content you have purchased. Therefore, the user rights are somewhat reduced when compared to print content. This is why the users might expect lower prices on e-books.

According to Lohmann (2005) content owners often defend their protection policies with arguments that extensive piracy undermines the incentives that make it worthwhile to create new content. And if they cannot make return on their investment because of piracy, they will stop inventing in new content. As a response, Lohmann states that copyright law still protects the production of creative works and that although it does not prevent piracy completely it still works good enough. He argues that there is no empirical evidence that piracy is damaging the copyright industries.

One clear advantage that DRM offers to consumers is product diversity. As Einhorn (2004) and Lohmann (2005) point out, by being able to place different usage rights to content publishers and e-book resellers can produce different kinds of products of the same content. This way they can offer narrow usage rights with a lower price and wider usage rights with a higher price.

As both Lynch (2001) and Liu et al. (2003) have stated the main issue of e-book adoption is whether the consumers are willing to play by the rules set by content owners. Even though some rights such as fair use and first sale are not supported by the DRM technologies, users might still accept such technologies. The main challenge for content owners is the invention of attractive business models that clearly state the usage rights and offer value to consumers. DRM technology vendors need to create systems that enable and support these business models and are easy to use. This might evolve through standardization of DRM technologies. For user point of view also fair pricing and respect for consumers' rights is important.

3.2.4 Watermarking technology

A digital watermark is an imperceptible signal that can be inserted into digital content like an e-book. It can include detailed information of the content owner, buyer of the content, or information of the purchase transaction. The watermark is usually embedded when the content is purchased from an online store. After this the watermark signal becomes part of the content file and in the case the buyer makes a copy of that file, the new file also contains this signal. The watermarking technique does not restrict the usage of the content in any way, which offers more usability than DRM technologies, but cannot actually prevent misuse such as copying or illegal file sharing. It is still considered to be a good way to discourage misuse because the original buyer can always be traced back by extracting the watermark signal from the illegal copies. (Liu et al. 2003; Wolf 2007)

Because digital watermarking is a passive protection scheme (it does not actively restrict the usage of the content) it requires additional efforts to enforce the protection. This means that the content owners need to use active measures to search for illegal copies of their content, and in case such a copy is found, extract the watermark from it and address the original buyer. (Wolf 2007) This active tracking requires resources and introduces costs to the content owners.

In the IDPF Digital Book conference held in May 2010 in New York Schild (n.d.) presented that Libreka's tracking program searched through 600 illegal file-sharing pages on the Internet and did not find a single instance of pirated watermarked e-books. This shows that although watermarking is only a passive protection scheme, it might prove to be a suitable protection scheme for e-books.

3.2.5 Selecting the appropriate protection

It is the choice for the publishers and content owners whether or not they want to use DRM to protect their content. Some publishers will want to use DRM as others might use watermarking techniques or even click-through licenses that merely state the usage rights but do not enforce them (Hill Slowinski 2003; Einhorn 2004). It may seem quite radical to leave content unprotected, but as Hogge (2008) pointed out there have been successful trials of selling DRM free audio books on the Internet. At least in the case of Random House it was seen that these audio books didn't end up in elicit file-sharing sites. He suggests that this same approach could be used for e-books as well. Anyhow, as Schiller (2010) stated the most successful e-book retailers will probably be those that find an appropriate balance between security, usability, and accessibility.

Also focusing on high availability might be essential. For example, probably most people have downloaded illegal music files from the Internet. Some might be ready to pay for the content if there was a place where they could easily find and buy what they are looking for. In case such offering is not available people tend to get the content in

other ways. This kind of piracy is sometimes called casual piracy. It has also been discussed that by protecting content in a way that restricts the usage of that content, content owners are punishing the law-abiding users. Those users that download an illegal file can use it more freely. If the content owners would offer their content in a more usable form probably more people would by that content.

For content owners, achieving a wide user group and selling more legal copies should be their top priority, not trying to minimize the pirated copies. According to Shapiro and Varian (1999), this means that restricting the user from using the purchased content in the way they would like decreases the value to the consumer. Furthermore, too many restrictions together with a price too high might prove to be a serious barrier to purchase, and this could result in lower revenues to the content owners and sellers.

Watermarking has the advantage of offering better usability as it does not restrict the usage of the content in any way. Thus, watermarked content is easier to use than DRM protected content. It also allows the user to make a few private copies so that he or she is able to read the book with any device they may own. In most cases, watermarking enhances the user experience compared to DRM. Even if watermarking does not restrict the usage of the content, it still discourages illegal file-sharing. So it is a better option for the content owners than simply leaving their content unprotected.

The future for DRM is still unclear as the copyright law has not yet been determined for digital content. According to Hill Slowinski (2003) it will take publisher, library, and consumer partnership to provide information that technology vendors need in addressing the DRM issues. Software and hardware vendors will eventually have to give up on their proprietary formats and join publishers, libraries, and users to create products that enable consumers to do what they need and want.

In the mean time, content owners will have to make their own decisions about the content protection issue. In order to offer consumers valuable content, they have to ensure that the content protection technologies do not deteriorate the user experience. There exists a trade-off between protection and usability. Distributing unprotected content enables digital piracy, which threatens the revenues of content owners. However, too restrictive content protection measures alienate users and thereby, lower the demand for their content. For the content owners this means that they have to find the appropriate balance between content protection and usability.

3.3 E-book pricing and future business models

3.3.1 Production and distribution costs

According to Berner (2001) and Shapiro and Varian (1999) the fixed costs are high in the book industry, meaning it is expensive to produce the original work. These fixed costs include e.g. author advances, copyright costs and text conversions. There are also

other costs associated with books. The variable costs consist of e.g. cost of producing a copy of the original and distribution costs of delivering the copy to the end user. For e-books these variable costs are marginal, which means that producing a large amount of copies cost practically nothing.

The cost structure is somewhat similar to the one of print books, fixed costs being the dominant part. However, in the case of e-books the production and distribution costs are significantly lower than for print books. There has been discussion whether the lower production and distribution costs should imply lower e-book prices or not. Shapiro and Varian (1999) suggest that e-books should be priced according to consumer value, not according to production costs. Berner (2001) agrees by stating that there has been no verification in reality that the production costs would in fact decrease enough to result in lower prices.

There are a few reasons why the production costs might not decrease, at least not until the market has matured. According to Connaway and Lawrence (2003), dealing with the new digital medium poses new requirements to the personnel, resulting in higher labor hours as well as the need for education and training. These personnel related costs affect also wholesalers. However, wholesalers might benefit from the lower costs of warehousing and distribution, as digital content requires no shelf space and can be distributed easily over the Internet.

Connaway and Lawrence (2003) point out that despite the potential cost savings offered by the digital medium the costs of producing and distributing both e-books and print books would in fact be even higher. As this is the most probable scenario, it is unlikely that publishers or wholesalers would achieve any total cost savings by expanding their business to include e-books.

3.3.2 Differential pricing with versioning

Introduction

Because the reproduction costs of information goods such as e-books are marginal, they should be priced according to the consumer value. However, people have different values for a particular product, thus it is extremely difficult to determine the value of a product. Shapiro and Varian (1999) suggest that e-books could be priced differently for different market segments. This can be achieved by using versions of the same product. These versions should differ from each other in quality, so that the low-priced version would have a poorer quality than the high-priced version. The difference in quality can be achieved in many ways. The key is to determine the appropriate dimensions which are discussed in more detail later in this chapter.

Versioning is a way to offer differently priced versions of the same product to customers with a different willingness to pay. Each consumer selects the most

appropriate version (and price) to them. Versioning can be used to maximize the total value of the information good by extracting the highest possible price from each customer. (Shapiro & Varian 2009)

Designing product lines

Shapiro and Varian (1999) explain, that for the basis of versioning, the key is to identify the dimensions of the product that are highly valuable to some customers and yet only of little importance to others. After this the different versions are created which differ noticeably in these dimensions. There can be a large number of possible dimensions depending on the product. Some possible dimensions that can be useful for e-books are discussed below.

Delay

One way to differentiate versions of the same product is to use delay. This approach is already deployed in the book industry by publishers who offer a hardback and a paperback version of the same book. The hardback is the high-priced version which is released several months before the paperback. Customers that value the early availability will pay more than the customers purchasing the paperback version. (Shapiro & Varian 1999)

Using delay as a versioning dimension could be deployed also to e-books. It has to be noted, however, that it depends on the content, which versioning dimensions are the most suitable. For example, fiction bestsellers could use the delay dimension, but it might not work for cook books or other hobby-related content. So when using delay it is important to make sure that the version with the early availability should create noticeably more value to the consumer than the version with later availability.

User interface

Another possible dimension for versioning is the functionality of the user interface. As suggested by Shapiro and Varian (1999), in the case of textbooks and dictionaries it might be convenient to offer the high-paying customers more powerful search capabilities. The low-paying customers might then get basic search functionality or no searching at all, only a table of contents. To make the versions even more differing, the high-priced version could also offer linkage to external resources rather than to the content itself. This approach might be suitable for non-fiction and other material that are used for research and learning. However, for fiction is might not make such a strong dimension. There might not be many customers that would value external linkage or search capabilities in a novel.

Convenience

One dimension that is related to delay is the control of convenience by restricting the time or place at which the product can be used. This could be done by offering online versions and downloadable offline versions of the same e-book. The online version would be available only when the user has an Internet connection and therefore it would

be priced a bit lower than the offline version, which can be downloaded to the user's computer or e-reader. (Shapiro & Varian 1999) This approach might work for both fiction and non-fiction, for they can both be used for long-term reading. Some customers might prefer to download the e-book and read it regardless of the place or connectivity and therefore be wiling to pay a higher price.

It is often said that consumers value the print versions of books more than e-books, and therefore expect that the e-book version should be priced lower. However, as noted by Dillehay (2003), in some cases the online e-book version could be priced higher, if that version is in higher demand. For instance a student doing a school project in the last evening before deadline might need a book immediately as he or she cannot go to the library anymore. In this situation, the student might be willing to pay a little more for the immediate access to the e-book version.

Flexibility of use

Another dimension closely related to convenience is the flexibility of use, that is, the ability to store, duplicate, or print the content. (Shapiro & Varian 1999) The low-priced version might not offer these rights at all, as they might only be available to the high-paying customers. As most people still prefer paper to a screen when reading several pages nonstop, some might be willing to pay a higher price for the printing right. It is also possible to make notes at the same time, which makes the printing right more valuable. Also the ability to copy paste text from the content might be valued by some customers, especially when doing research or handling several documents at the same time.

Selecting the dimensions

Shapiro and Varian (1999) explain that when selecting the dimensions for the versioning an understanding of the e-book market as well as the e-book as a product is necessary. The market might naturally subdivide into different consumer groups, in which case those groups can be used as guidance when designing the different versions. However, it is first necessary to determine whether these groups differ sufficiently in their needs and willingness to pay. After the dimensions for the variation have been defined, it is suggested that the high-end version would be implemented first. After that it is easy to start removing the premium features to produce the low-end version for the same product. Shapiro and Varian (1999) also remind that the low-end versions should be relatively unattractive to the high-willingness-to-pay users but still attractive to the next user group down. This way both versions have their own customer demand and the product seller is able to extract the highest possible price from each customer.

In addition to the different versioning dimensions, there is also the question of the number of versions. According to Shapiro and Varian (1999) it depends much of the product and the number of suitable dimensions. However, as a rule of thumb, they suggest that using three versions is justified in most cases. So if the product attributes naturally subdivide into two versions, it might be advisable to create a premium version.

This version might offer some additional features, even though customers might not value them enough to pay a higher price. The objective is not to make customers select the premium version, but to make them select the medium-priced version (that is the former high-priced version). Shapiro and Varian (1999) argue that in many cases people tend to select the medium version because it appears to be a compromise.

Bundling

Shapiro and Varian (1999) also discuss bundling, a special form of versioning where two or more products are offered as a package at a single price. The idea is to offer the bundle at a lower price than the sum of the component prices. For example, the previous book by an author could be bundled together with the new title of the same author. This bundle might be priced somewhat higher than the new title, but because of offering two titles, some customers might be willing to buy the bundle instead of just buying the new one. This might create more revenue than selling the titles separately, because the same customers that would by the bundle might not buy the previous title at all if it was offered only separately.

Especially in cases, where the customers' willingness to pay for two products are dispersed bundling can be used to increase revenue. For example, some customers prefer the print version of a book and might be willing to pay only a little for the e-book version and vice versa. The print version and the e-book version can be bundled together and sold to customers who would normally purchase only one version. (Shapiro & Varian 1999)

A bundle can also be built other ways, e.g. top 10 best sellers, holiday reading, Finnish classics, etc. Still another way would be to offer personalized bundles, in which the customer would be able to select the titles for the bundle. It is also possible to bundle an e-reader with content. Especially in the beginning when most customers do not own an e-reader, this might be a way to create the first relationship to the consumers. In addition, a member account could be included in the bundle. Each consumer that purchases the e-reader bundle would get a 10 percent discount from all future e-book purchases. This might affect customers when deciding where to purchase their e-reader as well as encourage them to make future e-book purchases in the same store.

E-books can be offered also in collections and databases, which are just bundles of a large number of products. The digital medium and the large storage space offered by e-readers enable the distribution and usage of large number of e-books, so it is only natural to offer also a subscription based purchase model. The user might pay a monthly subscription fee for 24-hour online access to a large collection of e-books. Digital libraries are examples of this model. Most of the digital libraries offer the access to their patrons for free but also consumer access to those collections could be sold.

3.3.3 Enhancing sales

According to Schnittman (2008) discoverability and access to digital material leads to purchases. This is easily achieved because indexing e-books and making them available over the Internet requires practically nothing. This easy, 24-hour access allows search engines to do the marketing job for the content owner. Schnittman (2008) also notes that although people might not prefer to read e-books online, they still want to find information of e-books as well as make searches within e-books. Therefore, even if content owners would want to restrict the free usage of their content, they can offer search inside functions that allow potential customers to browse all search results despite of whether those pages are in the available preview limits or not. This can be implemented so that the search function returns a short passage of text for all appearances of the search term. This way the customer can see whether the content is relevant or not. For example, Google Book Search (books.google.com) functions this way.

Posting free content can also drive print sales of the same content. Shapiro and Varian (1999) explain that free content allows the potential customers to find what they are looking for and this might increase the sales of the physical version in many cases. Of course, the online version should not be easy to print out; otherwise, the print sales would most probably suffer. In order to make printing difficult, they suggest that the online version should be divided into short screens by using links and pages, thus making it easy to browse and search (and maybe even easier to read) but difficult to print out in its entirety. This kind of difficulty might be enough to keep most users from printing the content, and therefore there is no need to use restrictive protection mechanisms.

According to Shapiro and Varian (1999), giving free samples to potential buyers can have a significant impact on sales. This is base on the fact that people need a sample to see what the product is, just as they get a sample in the bookstore. The same kind of leaf-through function should be offered also for e-books. Unlike with physical books, promoting e-books this way costs essentially nothing for the producer. Of course, it is sensible to give away only part of the product. The product can be divided into components: some for giving away, and others for selling. This way the parts that are given away advertise the parts that are available for sale.

It depends much on the market what is the best practice for deciding what parts to give away. One possibility is to give the first chapter of an e-book for free. Then, if the user gets interested, they purchase the whole e-book. This might work for fiction and new or unknown authors. Another example would be to give the whole e-book for free, but only for online reading. Then, users who would like to print the content or make notes and copy-paste text would purchase a downloadable e-book version or a print version. This approach might work for textbooks and other non-fiction titles that users most likely read entirely and use for annotation. Another example, given by Shapiro and Varian (1999) is to give away the whole e-book but only for one-time reading.

According to them, this might work extremely well for children's books, because it is typical that children want to hear the same stories over and over again.

There have been reports (Deahl 2008; Hilton & Wiley 2010) that free online access can drive sales of their print counterparts. Hilton and Wiley (2010) noticed that there is a moderate correlation between free e-books being made permanently available and short-term print sales increases. However, this did not hold true in every case that was studied. Therefore, it is difficult to say whether giving away free e-books increases print sales or not. Nevertheless, it is a possibility and might work extremely well in some cases.

3.3.4 P-2-P delivery

There are also new possibilities for distributing e-books. One possible future model, P-2-P delivery, has been introduced by Gayer and Shy (2003) as well as by Lang and Vragov (2005). Gayer and Shy explain that P-2-P (peer-to-peer) Internet distribution channels allow a group of users with the same networking program to connect with each other, and directly retrieve files from one another's hard drives. However, as Lang and Vragov note, deploying this kind of delivery model requires the use of suitable digital rights management and content protection methods as well as a mechanism to communicate information about costs and value available to participants in the network.

Lang and Vragov present also a new usage-based pricing scheme that could be utilized for distributing digital content over P-2-P networks. In their model peer users are rewarded for participating in the distribution process. For every delivery the content file supplier and consumer receive certain prices as rewards. This creates incentives for users to participate in the distribution and recommend e-books to their friends.

Each time an e-book is copied from one user (supplier) to another (consumer) a new copy is created and the new owner (consumer) becomes a new supplier of that content. Therefore, the higher the demand for a particular content file the more it will be available in the network, thus leading to faster content distribution and making P-2-P networks a powerful viral marketing platform. Another advantage of P-2-P networks is the number of different product offerings, as new members joining the network bring their content with them.

Lang and Vragov (2005) note that low unit prices for content encourage exploration and experimentation and therefore stimulate demand, while high unit prices offer bigger profit margins but lead to very selective purchases that are largely limited to known and familiar offerings. Based on this, they suggest that a more usage-sensitive pricing mechanism should be used. The unit price should be low enough to encourage users' experimentation with unknown content but at the same time still high enough to compensate, through the increased usage of the system, for the reduced margins.

Even if this kind of model could be deployed, it will most probably not be able to end illegal file sharing entirely. It does still offer a new and interesting way to address the illegal file sharing that is said to be destroying the content industry. If the content prices would be low enough, more people would probably select the legal version over the illegal one. For most people the reason for downloading illegal files might be the wide selection and instant access that are currently offered only by P-2-P networks. Some might even want to pay a reasonable price for those files but cannot. Thus, in order to deploy this model it would be extremely important to make legal files as widely available as illegal ones and to deploy a user-friendly protection scheme to make the legal files as usable as the illegal ones.

3.4 E-book SWOT analysis

3.4.1 Strengths

Accessibility and availability

As long as the original file of an e-book is stored, the title never goes out of print, unlike print books. Several titles are currently out of print but because the demand is so low, it is not justifiable to do a reprint of those titles. This makes the titles inaccessible to potential readers. However, e-books do not suffer from this problem, as there are no reprints; a new copy is produced each time the title is sold. (Berner 2001) Another advantage of the digital medium is that although devices may be subject to damage, the e-books themselves are not. E-books are therefore more easily stored than print books because they do not suffer from broken bindings, yellowing paper, or torn pages. (Burk 2001)

Because of the easy delivery, e-book content is easily updated and corrected, as noted by Berner (2001). This is especially valuable to dictionaries, encyclopaedias, and other content that people read for information. The digital text addresses also problems related to unequal access of content. It offers the sight-impaired people an opportunity to customize the type size and font to make the text more readable. There are also functionalities that help those who cannot read at all. The text-to-speech function can read aloud any text by utilizing a voice synthesizer. This functionality enables also the sight-impaired to access any content, not just the content that is offered in audio book format.

The Internet offers also instantaneous accessibility to content as it is not necessary to go to a library or book store to loan or buy a title. It also enables acquiring content from all over the world. For example, students might find this extremely useful when doing an assignment on the night before deadline. They might need reference material in short notice and are not able to wait until the library opens.

Searching and discoverability

The new digital medium enables more powerful searching capabilities that can be utilized when reading bibliographies, dictionaries, encyclopedias, directories, product catalogs, and manuals. Thus, the digital medium can make it easier to find information and for reading short texts, especially those that are frequently updated. E-books offer also the possibility to add large amounts of content and multimedia thus enhancing the value of the work even more.

E-books are easily discovered through the Internet by using different databases, catalogs, and search engines. For example, the Google Book Search provides a large collection of digitized print books, thus enhancing their discoverability and even driving sales of the print books. According to Schnittman (2008) discoverability and access leads to customer acquisition and book purchasing. Therefore, it is vital to use extensive indexing and to place the content so that the search engines can reach it.

Paper consumption

Berner (2001) suggests that electronic text and devices can be utilized as a solution to environmental problems like deforestation. However, achieving the benefits requires that the majority of text is published in digital form and that people really start adopting them. Berner also states that if the paper consumption would in fact decrease significantly, it would result in increase in electricity consumption. Consequently, this might add to the current ozone layer problem. Based on this it can be concluded that in order to benefit from the lower paper consumption the future devices will have to address the power consumption issue.

3.4.2 Weaknesses

Archiving and permanence

It is known that print books are difficult to archive as they require extensive amount of shelf space and are vulnerable to damage. Although e-books do not suffer from yellowing pages or broken bindings, they are vulnerable to technical failures such as device malfunctions, viruses, and outdated technology.

This poses challenges to consumers as well as for authorities who are in charge of preserving our intellectual and cultural heritage. Consumers will have to ensure to have backups of the content as the e-reader can be damaged. In addition, as it is quite easy to accidentally delete digital files, there should be a safe place where all backups are stored.

The challenge for authorities is the long term archiving and permanence. No piece of written work should ever perish. According to Sottong (1999), storing books in electronic form is not more stable than storing them on paper as the electronic storage

media has a life span of about 100 years. Nevertheless, hardware that reads a particular storage medium also obsoletes and migrating the content to a new medium creates costs. Therefore, archiving and ensuring e-book permanence is not a simple issue and addresses problems and challenges to the book industry.

Digitizing out-of-print books

There are a large number of titles currently out of print. Although the new digital medium provides a way to bring these titles available to the public again, it requires significant investments. According to Lynch (2001), digitizing print books requires using expensive optical character recognition technology and still human review and editing is needed. In addition, clearing rights for those books that are still under copyright is likely to be hundreds of times more expensive than the cost of actually digitizing the work. Therefore, it might be that no one will bother as it is unlikely that the revenues from selling the digitized books can cover the additional costs of rights clearance.

Annotating

As people read for information they tend to make their own bookmarks, notes and highlights to the text. This kind of annotation is extremely easy with a pen and paper. However, it is not as easy or even always possible when reading e-books. Of course, it would be possible to write notes to a separate document when reading an e-book on a computer. However, this is hardly the same thing. The dedicated e-readers in the market offer annotation functionalities, but they are not as convenient or usable as the traditional pen and paper.

Some devices offer bookmarks, and some even writing on them, but do not include a stylus to enable handwriting. Some devices have a stylus but the quality and usability vary. In order to make annotation work well would require that the stylus is easy to use, and creates a natural trace on the page. The user should be able to manage all annotation marks (bookmarks, highlights, and handwriting and sketches) in the e-reader as well as in their computer and other devices they may use to read and annotate that content. Although some e-book reading software enable importing the annotation marks to the computer, they still cannot offer editing them (especially the handwriting).

Several different devices needed

Because there are several different kinds of content that can be used in an e-book, it might not be possible to read or use them with one single device. Especially dedicated e-readers currently in the market are suitable only for linear text-based e-books that do not contain multimedia. Therefore, consumers will need several different devices for doing different tasks. It is clear that for searching large amounts of content from several databases and catalogs in the Internet, the users will have to use a computer. When reading for information users will want to make annotations. For this, they will need a good dedicated e-reader or they will have to use pen and paper. When they want to read

for pleasure, for example reading non-fiction, they might use a dedicated e-reader with an e-paper display. Then again, if they are reading on the beach, they might want to use print version of the title if the e-reader display is not adequate in bright sunlight or if they want to ensure the device does not get damaged by the sand and water.

New skills required

New medium and technology requires new skills from people. Regarding consumers, it might be easier for the younger generation to embrace the new technology. If the older generation is not able to acquire the skills needed they might not have all the content available for them. Some titles may be published only in digital form.

When it comes to people working in the book business, deploying the new medium and all the technology related to it requires skilled people. This will increase the costs for education and training at least in the beginning, when the subject is new. The higher labour costs pose challenges to publishers, wholesalers, and book resellers.

3.4.3 Opportunities

Lower production and warehousing costs

The digital format enables also quick and easy production as it requires no extensive machinery or any materials. After the market has matured and content producers have established their processes it might be possible to decrease the production costs. They could then share the higher revenues with authors and even lower the consumer prices. However, because the costs are still high, and are expected to remain high as long as the content producers are producing print books at the same time, benefiting from the digital reproduction might be possible only in the future.

Wholesalers can utilize the lower costs of warehousing, archiving and distribution of e-books. It may even be possible for new players to enter the market because it requires no large upfront investments. Also book stores may benefit from the lower warehousing costs. However, they will have to start a web store also for selling e-books. As the Internet is the most suitable delivery channel it is only natural that most customers would purchase e-books from the web store. Of course this creates new challenges to book stores as they will have to find new ways to utilize their existing brick-and-mortar stores.

New genres and content types

The digital medium also offers possibilities to create new genres to encourage reading and even make people read more than they normally do. For example, short stories can work well in handheld devices as people can read them on the commute or when mobile. A new short story web store could be launched that would sell short stories or subscription to them like iTunes sells music and utilize the mobile network to

automatically send new episodes to subscribers. These new mobile device genres can give e-reading devices a real benefit if it offers content that cannot be gotten anywhere else. (Mace n.d.)

Different kinds of content can also be bundled together. As Lynch (2001) suggested travel guides might utilize the possibility to combine print and online products. The future travel guide could include an easily portable paperback book as well as an online site offering 3D panoramas and walkthroughs with hypertext links, route computation from maps, and so on. This might prove to be very popular, as people could utilize the online site when planning their trip and take the paperback with them for airplane reading.

As digital content can easily be bundled and delivered, it is possible to create also personalized content offerings to consumers. For example, news could be offered this way. It is no longer necessary to provide the same news for everyone, but users could select the types of news they want to read. The same idea can be used for example for cookbooks, poetry, and textbooks. The user could select the recipes, poems, or chapters they want to buy.

Communicating and sharing

Because e-book are in digital form they can be easily shared, commented, and discussed over the Internet. Social networking has become extremely popular with people communicating with each other more and more over the Internet. For example, people can recommend reading to their friends or even share e-books directly, if suitable business models are created to support this. One way would be to create a working P-2-P delivery system (see Chapter 3.3.4). If people would get e-books directly from their friends they might buy and read them more spontaneously.

Sharing content can also create new ways for communicating as presented by Lankes (2010). He would like to see e-books that can be annotated so that those annotations could be easily shared with friends who are reading the same title.

However, the ability to share e-books easily can also pose threats as discussed in the next chapter.

New business models

Many times people download illegal files from the Internet because there simply are no legal copies available which are easily discovered, purchased and used. This kind of casual piracy can be addressed with new pricing strategies. For example, utilizing existing P-2-P networks for delivering content to users might increase the penetration of content. By rewarding users for participating in the delivery process this new model might become very successful. This would require appropriate business models with working payment and content protection mechanisms.

It has been discussed that consumers expect e-books to be cheaper than print books, however, publishers feel that they should be priced the same as print books as the production costs may not be significantly lower (at least in the beginning). To address this difference of opinion content owners should offer their content to all user groups for a price suitable to them. This can be achieved by using versioning where the same product or e-book is offered in different versions. These versions would differ from each other in quality and price, so that the version with the lowest price would be less valuable to the end user, and the high-priced version would offer the most value. This way all potential customers can find a suitable version and the content sellers can extract the most revenue from their content.

3.4.4 Threats

Tying content to devices

It is not likely that one device could offer the best interface for all reading situations and different kinds of content. This is why e-book vendors should not focus on tying content to specific e-readers or e-reading devices. Instead, they should create flexible and convenient ways for people to use their content with different devices. Especially because the e-book market is still very young, it is vital to get as many users to try e-books as possible.

Competing standards and formats

The large number of competing standards and file formats are making the market extremely vulnerable. One effect is that, as people cannot make a decision on which platform to choose, they choose to wait. People may feel that especially as the devices and e-books are not cheap and switching from one e-book platform to another creates even more costs and inconvenience, they should not make any investments until it is clear which standards and formats become established. Therefore, all actors in the e-book industry, including content producers, libraries, resellers, and consumers, should work together to create a market that can serve all fairly.

Copyright in the digital medium

The un-established situation of digital copyright and the fair use and first sale doctrines are threatening the traditional library business model where libraries can purchase books and lend it to their patrons without infringing copyright. Therefore, in order to ensure the survival of the library model, all players in the e-book industry, especially copyright owners, legislative authorities, and libraries need to work together to determine the rules for the future.

Piracy

Because e-books are in digital form, they are easily reproduced, and anyone can make perfect copies of the original. Also sharing these illegal files over the Internet is extremely easy. This poses problems to content and copyright owners as they are losing revenues from their content. Based on this many content owners are unwilling to release their content in digital format. It should be kept in mind that refusing to offer content to consumers in the form they need and want may harm the content owners' business even more. In addition, overprotecting their content with using too restrictive protection mechanisms may drive consumers to use illegal copies, which offer more usability and are more easily acquired. Thus, there exists a trade-off between protection and usability and it is a challenge for content owners to find the appropriate balance.

4 SITUATION IN FINNISH MARKETS

4.1 Traditional book industry

4.1.1 Actors

There are different actors with different roles involved in the traditional book value chain (Figure 4). Production starts from the creation of the piece of work. Writer (author) is responsible for writing the text and illustrator for creating the pictures for it. There are also other actors involved with the creation of the work. These might include a translator, an editor and a graphic artist. All of these actors involved in the creation are traditionally not employees of the publisher. Often the publisher orders the piece of work but occasionally an author might also offer their work to be published. (Saarinen 2001)

Editor is responsible for making the text readable and understandable and for correcting all stylish flaws and still preserving the author's voice. The role of the editor is essential especially when producing non-fiction. The author is probably an expert in his/her field but not necessarily a skilled writer. The editor has to make the text understandable also for non-professionals. (Saarinen 2001)

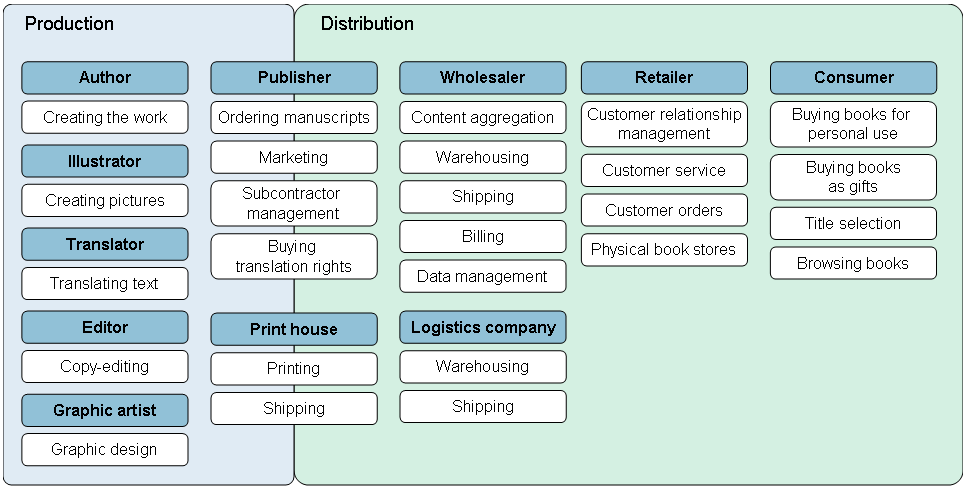

Figure 4. *Different actors and their role in traditional book industry*

Publisher is a person or an organization that selects the manuscripts to be published or orders the piece of work from an author. Publisher is responsible for taking care of the financial and technical resources that are needed in order to edit the manuscript and produce it to the form, that the end customer and eventually the reader can and will use the content. The editing is often subcontracted and ordered from a freelance editor. After the book has been edited, it is sent to a print house, which provides the required resources for producing the work to the final form. Publisher might own a print house or use a subcontractor. The print house takes care of shipping the copies either to the

publisher's warehouse or to a logistics company offering the warehousing as a service to the publisher. (Saarinen 2001)

Publisher is one of the central actors in the book value chain because it acts as a coordinator between the production and distribution chains. In addition to acting as a coordinator, a publisher can also buy translation rights of foreign literature from foreign publishers or agents. When it comes to marketing, publisher is the most central actor pursuing the highest possible sales of its own production.

Wholesalers and logistics companies acquire (aggregate) books from several publishers and offer the collection to several retailers, but do not market books directly to consumers. For publishers these companies traditionally offer warehousing, shipping and billing services. In addition, they might offer data management services by centrally collecting data of all Finnish books that are available. The wholesaler offers this data also to retailers, who can further provide the information to consumers. In addition to the product information, the most valuable service to retailers is the wide selection of books. To both publishers and retailers, the most valuable partner is the one with the largest customer base in both fields. (Saarinen 2001)

Kirjavälitys is the largest wholesaler in the Finnish book industry. They offer product information and logistics services, delivery channels from publishers to resellers, as well as the widest selection of Finnish and English literature. Kirjavälitys is owned by its customers, which include almost all Finnish publishers and all Finnish book retailers, thus Kirjavälitys is the central player in the Finnish book industry. (Kirjavälitys Oy n.d.)

Retailer is an actor in the book distribution chain closest to consumer. They offer customer service and handle the customer relationship management, with the objective to offer a valuable collection of books easily available for consumers to explore. The advantage for consumers when purchasing books from a retailer is the instant availability and delivery (for books on the shelf). Retailers also offer product information of Finnish books that are not on the shelf but are available through a customer order. The main business for book retailers is selling books in their brick-and-mortar stores. When it comes to print books, selling them on the Internet or through other remote channels is only supplemental. (Saarinen 2001)

The Finnish book store base has decreased significantly during the past 20 years. Today the market has centralized around a few retailers. The largest book retailer in Finland is Suomalainen Kirjakauppa with 61 stores (Suomalainen Kirjakauppa Oy n.d.) and approximately 50 percent market share. The second largest retailer is Akateeminen Kirjakauppa with 7 stores (Stockmann Oyj Abp. (n.d.a)) and about 25 percent market share. (YLE Uutiset 2008)

The last actor in the chain is the consumer. According to the Suomi lukee study (Anon 2009), consumers purchase books for personal use and as gifts. The exact title is often selected at the book store, which means that consumers want to see what titles are

available and leaf through them. Consumers like to buy books in physical stores because they can ask the personnel to recommend books for them. This personal customer service is one of the advantages only a physical book store can offer.

4.1.2 Traditional book value chain

There are different ways in which a book can be delivered to the consumer. Saarinen (2001) presents three different chains: long traditional, short traditional, and direct publisher sale (represented in Figure 5). The long traditional chain is the most common when the retailer in the chain is small. They do not have the resources or connections required to operate directly with different publishers. Therefore, they have to cooperate with a wholesaler that can offer the large collections from a single point. Also larger retailers use a wholesaler to deliver small supplementary orders. In these cases, the centralized distribution is of great value as the product batches are small.

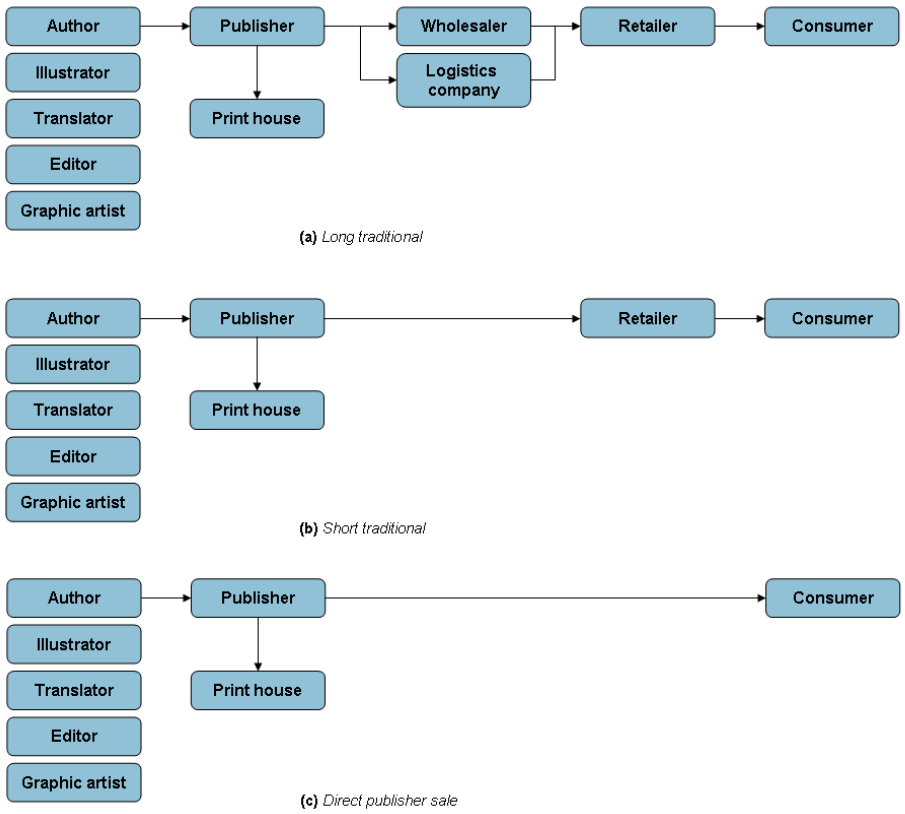

Figure 5. *Traditional book value chains. (a) Long traditional, (b) Short traditional, (c) Direct publisher sale.*

In the short traditional chain, the wholesaler is omitted and publishers operate directly with retailers. This chain is used for large orders, such as advance orders of new titles, as well as for special offers and campaigns. There are also other reasons for using this

model, such as sales commission policies. Some publishers offer lower prices to those purchasing their books directly from the publisher. As there is no wholesaler the shipping of books are typically done by the print house the publisher is using. (Saarinen 2001)

In the direct publisher sale chain, the publisher sells their books directly to consumers. These books are shipped directly from publisher warehouse, thus offering the publisher a way to decrease their stock when needed. This is probably the most rarely used of the three chains. (Saarinen 2001)

4.1.3 The Finnish book market in figures

The total book sales from 2004 to 2009 provided by the Finnish Book Publishers Association can be seen in Figure 6. The total sales as have decreased somewhat during the last two years. Comparing the sales in 2009 to those of 2008, it can be noted that the overall sales have decreased by 7 %. In recent years also the diversity between different genres has decreased. The sales of non-fiction as well as children's literature have come down, but the sales of textbooks and fiction have remained quite steady. (SKY n.d.a)

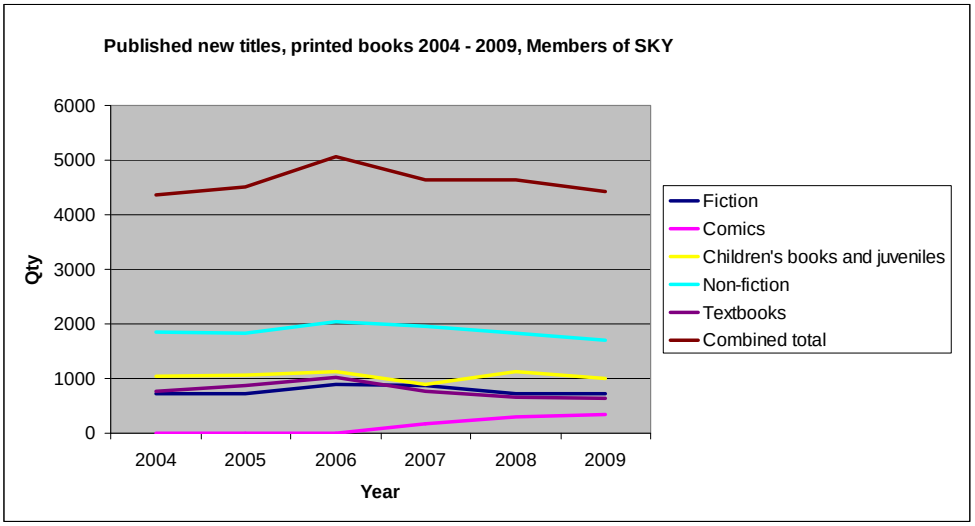

Figure 6. *Total overall sales of printed books in Finland between 2004 and 2009 (SKY n.d.a)*

It is also meaningful to examine the sales compared to the total number of published books. This can be considered as a comparison of supply and demand. The comparison is done separately for printed books and digital publications. The used figures are based on the statistics provided by the Finnish Book Publishers Association.

Figure 7 illustrates the total number of published printed books by different genres between 2004 and 2009 and the corresponding total sales are presented in Figure 6. In 2007 also comics were separated as an individual class and therefore their sales until 2006 are not comparable and are shown as zero (SKY n.d.a). It can be concluded that the total sales followed the total number of printed books published both experiencing a small downturn in 2007.

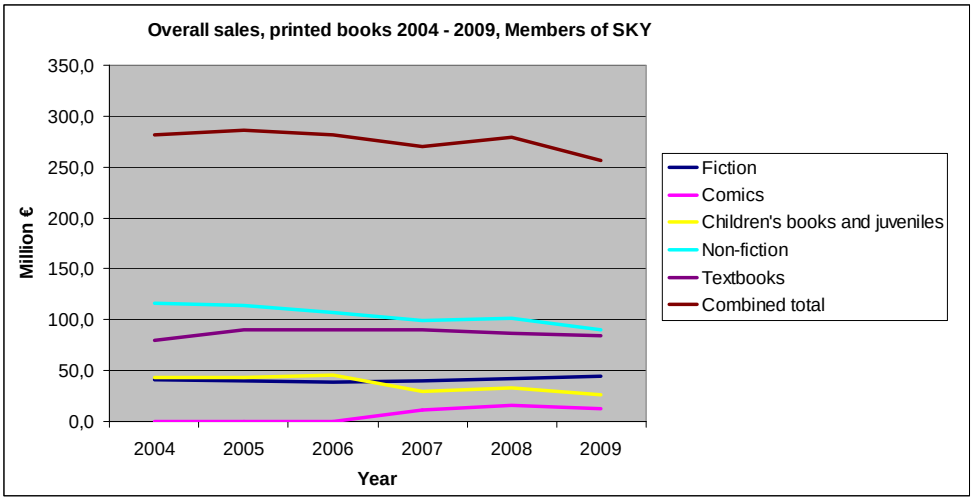

Figure 7. *Number of printed titles published in Finland between 2004 and 2009 (SKY n.d.a)*

Concerning digital publications, the number of new titles between 2004 and 2009 are presented in Figure 8. In 2007 the Finnish Book Publishers Association started to collect more detailed figures concerning digital publications dividing the class into subclasses (recorded audio books, downloadable audio books, digital recordings (other than audio books), downloadable e-books and online publications) (SKY n.d.a). Therefore, the detailed figures are available only starting from 2007. The corresponding total sales are presented in Figure 9.

In 2007 the majority of the published digital publications consisted of recorded audio books, other digital recordings and online publications. However, in 2009 the majority of new titles published were downloadable e-books. This might be a result of the increasing availability of e-reading software and devices as well as publishers' intention to initiate the e-book era also in Finland.

In addition, the number for downloadable audio books increased. The numbers for recorded audio books, however, decreased significantly. The reason for this might be the fact that delivering downloadable audio files through the Internet is easier and far more convenient than selling audio books in physical medium. Although the e-book market has not yet taken off, the audio book market has started and there are many titles available.

What is interesting is the clear decrease in the downloadable e-book sales between 2008 and 2009. The reason is not the amount of new titles, as the numbers are increasing all the time. This decline can be explained by the fact that in 2009 more formats and standards as well as various e-reading devices supporting different e-book and DRM platforms were introduced. This created too much variety for consumers and this might be the fact that the e-book sales have slowed down.

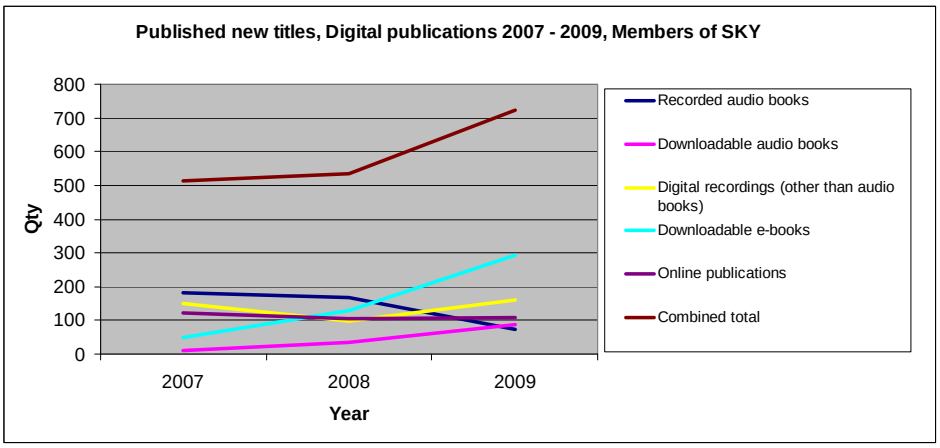

Figure 8. *Number of new digital publications in Finland between 2007 and 2009 (SKY n.d.a)*

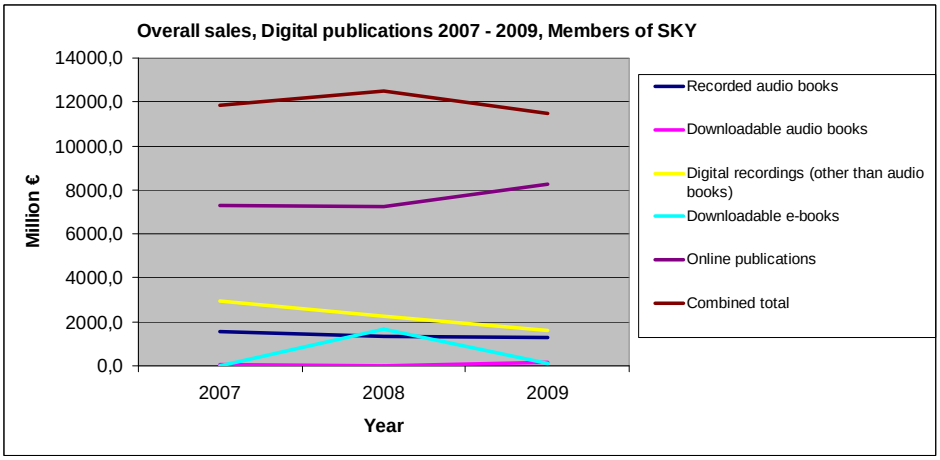

Figure 9. *Total sales of digital publications in Finland between 2007 and 2009 (SKY n.d.a)*

4.2 E-book markets in Finland

4.2.1 Changing roles and new actors

Author

When moving from the physical medium to a digital one, the responsibilities of an author do not change. The author still creates the work in the same way. The decision whether to publish it in print or in digital form will be made later on. Also the editor's role remains the same regardless of the medium. The editor is responsible for the fine tuning and making the text readable and understandable. This work can be done even before it has been decided if the work will be published in print, as an e-book, or both.

Producing and publishing books in digital form is easier and cheaper than it is for print books. There is no need to invest in physical products or their delivery. This creates new possibilities for authors, as they are able to publish their work themselves. These self-publishing services offer greater control for authors and more generous royalties than traditional publishers do. Authors do not need a publisher to do the editing either, but can use a freelancer instead. In many cases, using a freelancer might be significantly cheaper as well (Saarinen 2001; Lynch 2001)

Of course, there are also some drawbacks to this kind of model. As Lynch (2001) states, finding readers might be difficult because of the variable quality of content offered through these channels, so it might be difficult to stand out. It might also depend on the content, whether the self-publishing model can be utilized or not. According to Saarinen (2001) the tools and applications for the actual content production offered by self-publishing services might be simple and therefore, suit better for linear, text-based e-books that do not require cross-media publishing.

Saarinen (2001) suggests that the self-publishing model is extremely suitable for new authors, who might find it difficult to get someone to publish their work. It does not require any upfront investments and up to 85 percent of the revenues are forwarded back to the author (Scribd n.d.; Smashwords Inc. n.d.). Also a well-known author might be better off using a self-publishing model, because they can utilize their existing reader base and do not need extensive marketing. If they sell a lot of copies they might even capture more revenue than if they use a publisher.

Publisher

According to Mace (n.d.) the publishers are still in a quite steady business model. However, as the e-reader installed base gradually grows, it might become a lot different. At some point the industry will reach a tipping point, where the e-reader base becomes large enough to create a strong incentive for authors to publish their work in a digital form (even instead of print). Moreover, if there are self-publishing services available that are attractive enough and offer more revenue to the authors, it creates a difficult

position to publishers. Based on this, Mace suggests that publishers rethink their value for their clients, the authors and the retailers, and align their business accordingly. Some publishers may partner primarily with authors as some concentrate more on serving the retailers. For example, if they generate more demand for the books of their authors than the authors can generate themselves, they are creating more value for their clients. (Mace n.d.)

The traditional publisher functions are changing because of the new digital medium. Producing an e-book does not require large investments to printing machinery or subcontractor contracts with print houses, so almost anyone can publish a work in e-book form. When new kinds of e-books reach the markets and the overall selection becomes larger the traditional mass marketing will give way to new marketing models and channels. Especially e-books with a smaller demand and reader base should be marketed more directly to those readers. The Internet offers new ways for target marketing and reaching the readers, such as widgets, recommender systems, and social networks. (SKY n.d.b)

This new marketing channel is available to anyone, so it is possible for an author to market their own e-books. Thus, the traditional publisher functions are taken over by other players in the field. Many publishers feel that the new digital book business might be affecting them particularly. Mace (n.d.) suggests a new approach for publishers. As marketing and promoting e-books can be done by anyone, and the digital bookstores have unlimited amount of shelf space, it is difficult for the publishers to make their content stand out from other content. Thus, especially for non-fiction, a well-known publisher might reach more customers than a less-known one. Therefore, non-fiction publishers should concentrate on branding.

As Saarinen (2001) reminds, although some traditional publisher functions are taken over by others, there might still be some functions that only a publisher with established processes and mechanisms or equipment can do. For example producing different kinds of products, such as a print book, e-books in different formats, as well as an interactive web site, all from the same content, requires large cross-media publishing machinery. (Saarinen 2001)

Also, as discussed earlier, buying the translation rights of foreign literature from foreign publishers or agents is still something that only a publisher can do, for they have the existing processes it requires. This might become one of the central functions of a publisher when they transform and align their business for the digital age.

Wholesaler

Saarinen (2001) explains that a wholesaler has traditionally purchased books from publishers and sold them to resellers. A wholesaler has also taken care of the warehousing and distribution. Because there are a large number of publishers and resellers in the Finnish book industry a central distribution hub has been necessary, thus

making the wholesaler's role central. When handling e-books instead of physical books, the warehousing and shipping functions change. Warehousing e-books requires no physical space, and distributing can be done digitally through a network. The ownership of e-books is also different from physical books, as the wholesalers do not need to buy them at all (and in case DRM is used, cannot buy them). Instead, they can offer only the distribution functionality. (Saarinen 2001)

In theory this might pose some threats to wholesalers as well, if publishers would start selling their content directly to resellers. However, because of the large amount of publishers and resellers, the direct relationships would be laborious to build and manage. Therefore, it can be stated that if the wholesalers offer a suitable way to deliver e-books from publishers to resellers, their role as the center of the distribution chain need not change.

As the medium changes from physical to digital, also wholesalers need to rethink their business and functions. Saarinen (2001) states, that the wholesalers can concentrate on delivering information of e-books and coordinate the distribution between publishers and resellers. They should keep on maintaining the central repository of information of Finnish literature, as the centrally managed information is valuable to all players in the book business. Wholesalers can develop their information services and thereby strengthen their role in the Finnish e-book business.

There are also new functions that the digital medium introduces. E-books can be sold in different formats, such as PDF, ePub, and prc, and each format needs to be separately created for the same title. It might be that a publisher will produce e-books only in one format, but the resellers would like to sell the e-book in several different formats. A wholesaler could offer the format conversions a service for publishers. This could be included in the e-book distribution service. When e-books are sold to consumers they are often protected with watermarking or DRM. This is a function that is clearly related to the distribution and delivery of an e-book. Therefore, it is a natural function for the wholesaler and can be offered also as part of the distribution service. (SKY n.d.b)

Reseller

As Saarinen (2001) states, reseller has the advantage of being close to the end customer and having the existing customer relationships and established processes for billing. So it is only natural that they would start to offer e-books as well. Many bookstores, especially the largest ones, have a web store already that sell print books and deliver them by mail. In the case of print books, selling them through a web store might not be convenient, as people want to see the book and leaf through it before purchasing it.

This changes radically, when selling e-books. The natural place to sell these digital products is through a web store. The advantages include 24-hour availability, possibly a large collection and instant delivery. Especially if a good preview of the e-book is offered to consumers for free, a web store might increase their revenues a great deal.

Selling also e-readers and possibly packaging them with e-books might prove to be a good idea for driving sales and introducing the new form of books to consumers. For example, there could be different kinds of packages (e-reader and five e-books, e-reader and 20 e-books), and the consumer could select which e-books he or she would like to have.

It is not probable that the traditional physical book stores would vanish or suffer that much at least in several years. There is plenty of time to align the business as new forms of e-books come to market and more consumers start adopting them. However, according to Saarinen (2001), there is a possibility that e-book sales will increase faster than expected, and this might force the physical book stores to reduce their in-store collection or even close some stores. However, book stores can also rethink their role and offer their customers new functions and services that cannot be done by a web store. These might include author readings, theme evenings, recommender services, and so on.

Consumer

Readers or the end customers are the ones that determine whether e-books make a successful launch to markets or not. All retailers (and anyone selling e-books directly to consumers) are competing for their time and attention. Web stores might be the most popular places to buy e-books if they are convenient and easy to use, because they can offer the instant delivery. Because e-books can be previewed in web stores, leafing through the pages is not an advantage of book stores anymore. (SKY n.d.b)

There has been discussion in the media regarding the pricing of e-books. Many feel that print books are of better quality than e-books and therefore e-books should be priced lower. According to the Next Media eReading web site (SKY n.d.b), the prices of English e-books offered currently also affect Finnish consumers. They are expecting that e-books would cost significantly less than print books. However, this might not be the case in Finnish e-book markets.

Other thing that affects the purchasing is the purpose of the book. According to the *Suomi lukee* study (Anon. 2009) print books are bought mostly for personal use. For this purpose most buyers select a paperback because it is cheaper. Books are also bought as a present to someone else. In this case most buyers select the hardback because they feel it is more valuable and of better quality. Based on these, it can be speculated that people might not buy e-books as presents. Of course buying e-readers as presents makes a lot of sense, and it is only natural that those e-readers would come with pre-purchased e-books.

Consumers are facing also other difficulties caused by the new technology, the most challenging being the DRM. In the print world it was easy to buy books from anywhere without having to deal with things like compatibility and user rights. Although some e-books are sold unprotected, and therefore can be used just like traditional books, many e-books will come with a DRM. It is possible to read the e-book only with specific

devices and it cannot be copied, resold or borrowed. The consumer must make a decision of what e-book platform (Amazon and Kindle, iPad and iTunes, Adobe Reader) he or she will start using and have to settle for the collection that particular platform offers. It is clear that most people will not by several e-readers with different DRM. (SKY n.d.b)

New actors

Also new actors are entering the e-book markets. This is possible because publishing, warehousing, delivering and selling e-books is a significantly easier, cheaper and faster than for physical books. New actors are those companies that have not traditionally been part of the book business, but are now taking over some of the functions that were traditionally done by a publisher, a wholesaler or a retailer. (Saarinen 2001)

For example, Amazon.com and Apple with their iTunes are new actors, offering authors and publishers a ready delivery channel to consumers. Self-publishing service providers, such as Scribd and Smashwords, offer authors also publishing tools, as well as tools for sales and marketing (Scribd n.d.; Smashwords Inc. n.d.). These service providers attract authors by offering them a large percentage of the revenues.

Device manufacturers, operators, and telecommunication network providers that were traditionally in subcontractor roles are trying to take over publisher and distributor roles as well. (Saarinen 2001) For example, it has been speculated in the media that telecommunications provider and operator Elisa, would launch an e-book store and start selling also e-readers (YLE Uutiset 2010).

4.2.2 New e-book value chains

As discussed in the previous chapter, there are different value chain alternatives that can be used for e-books. These alternatives are presented in Figure 10. The traditional value chain presents the situation where publishers, wholesalers and resellers are used in the same way than for print books. This alternative can be used by publishers who partner with authors and publishers who serve resellers.

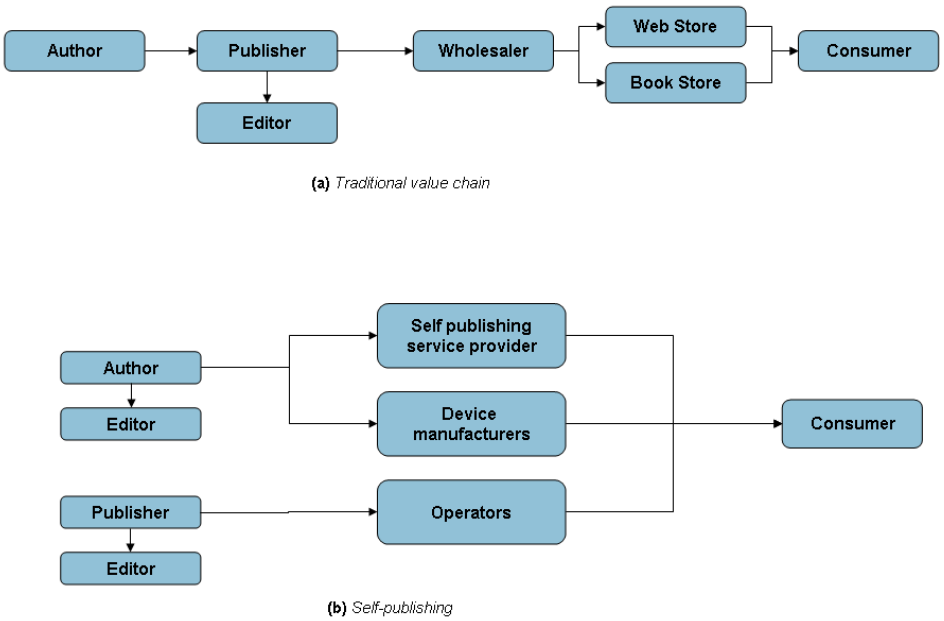

Figure 10. *E-book value chains, (a) Traditional value chain, (b) Self-publishing*

Publishers can align their business and partner primarily with authors or retailers. These different alternatives are presented in Figure 11 and Figure 12 in more detail. Publishers, that partner with authors should create value to them by offering editing services, taking care of publishing in multiple formats, and doing extensive marketing for creating demand for the titles. In addition, branding and promoting the author creates more value to them. This new publisher role is represented in Figure 11.

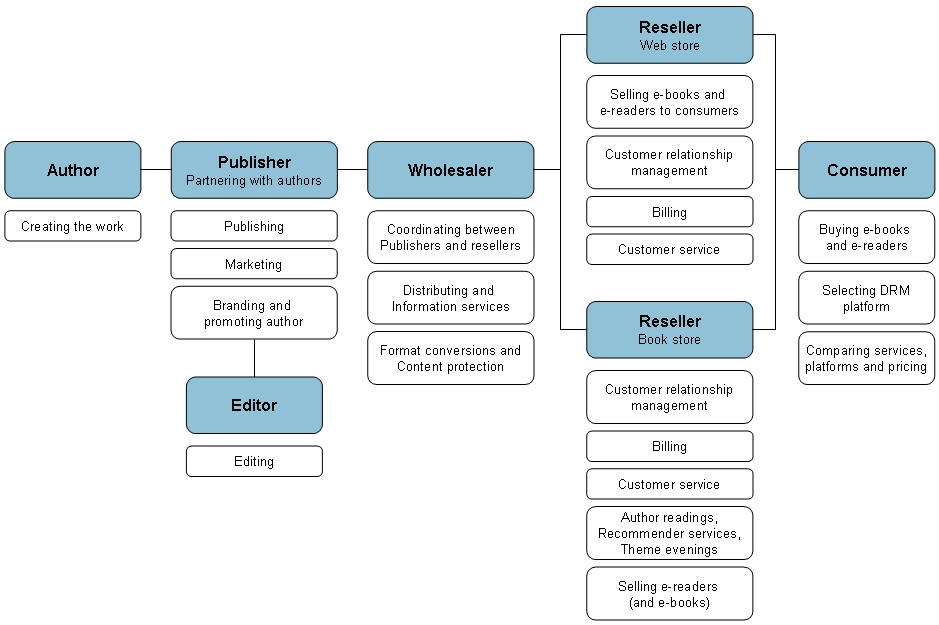

Figure 11. *E-book value chain: Publisher partnering with authors*

Publishers can also collaborate more with resellers, as represented in Figure 12. Publishers may order the writing work for a non-fiction title from an author, but take care of the cross-media publishing, editing and other functions that are needed for publishing the work in different mediums. By building their own brand (instead of an author's), publishers can gain more visibility. Another function for publishers in this model is buying the translation rights or foreign titles.

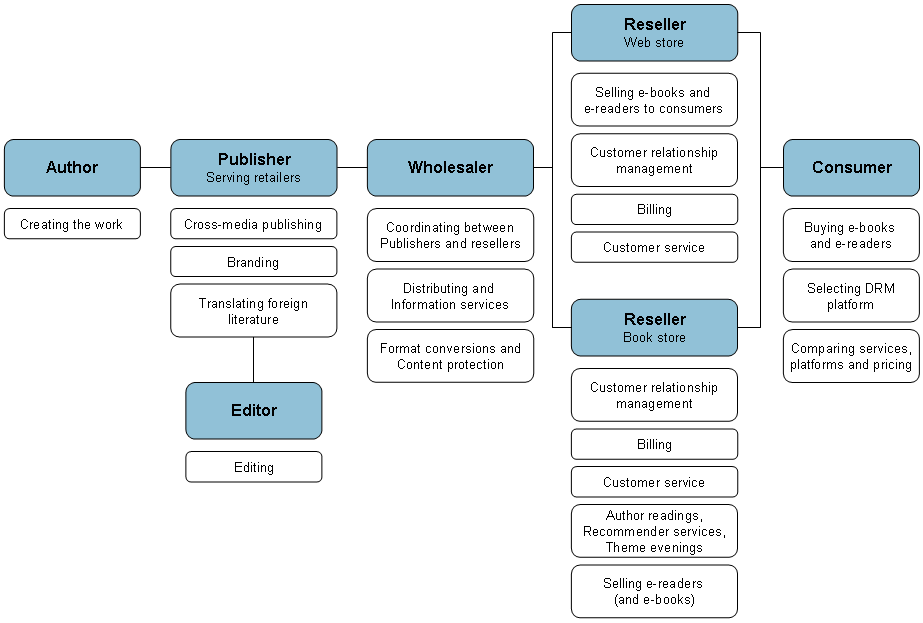

Figure 12. *E-book value chain: Publisher serving retailers*

Self-publishing is the new model for authors, who want to be able to control their work and earn a larger part of the revenues, or who cannot find a publisher to publish their work. New players are entering the field by offering these self-publishing services, and thereby trying to bypass publishers, wholesalers and resellers in the distribution chain. Also publishers can use this new and shorter delivery channel model offered by companies that do not necessarily offer self-publishing tools, but have taken over the wholesaler and reseller functions. These new delivery options are represented in Figure 13.

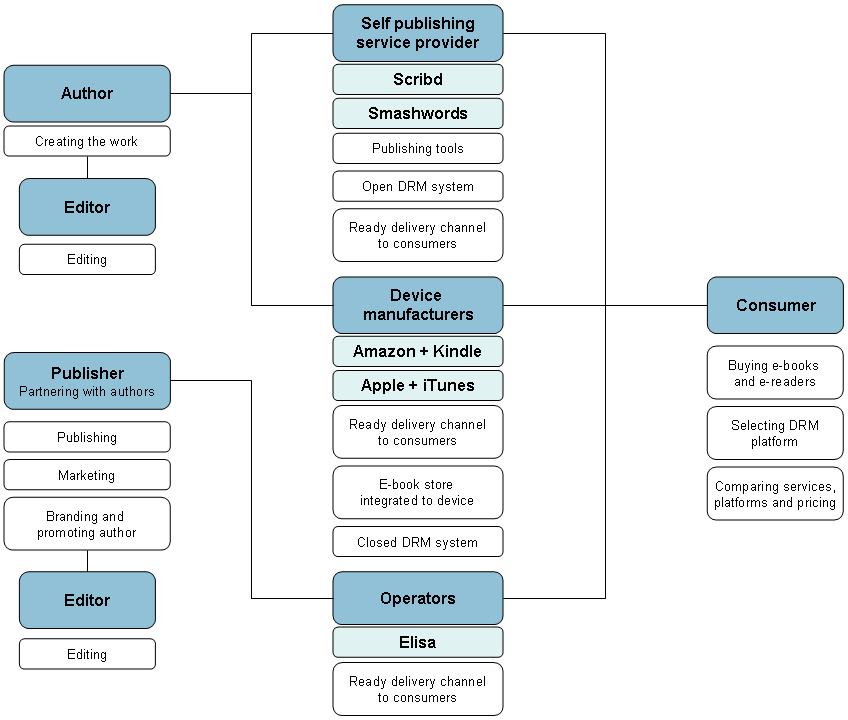

Figure 13. *E-book value chain: New actors offering self-publishing services or new consumer delivery channels*

4.2.3 E-book providers and sellers

Although the Finnish e-book markets are just starting, there are some Finnish web stores where consumers can find and buy e-books.

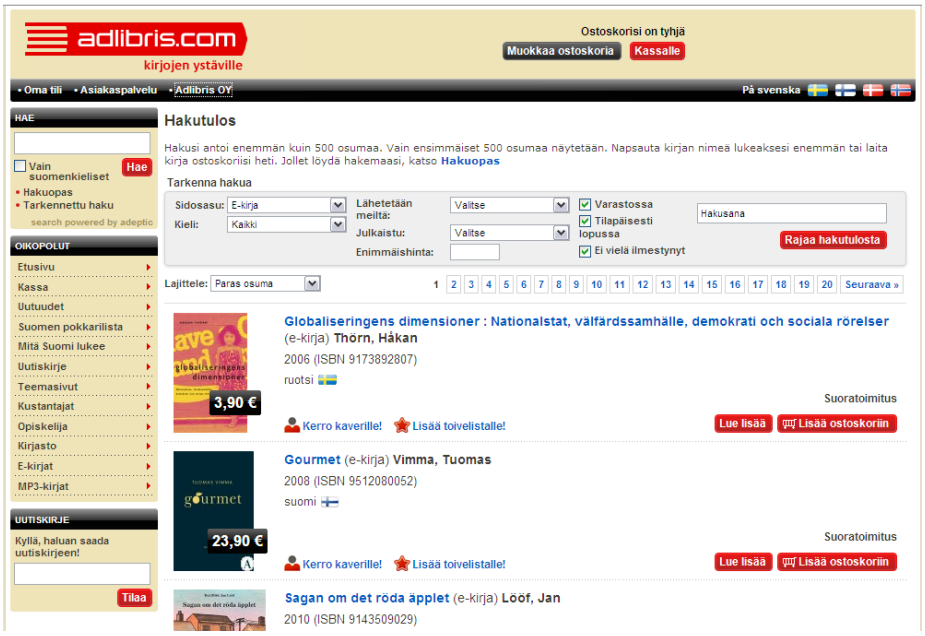

Figure 14. *E-book web store offered by Adlibris (Adlibris Oy n.d.)*

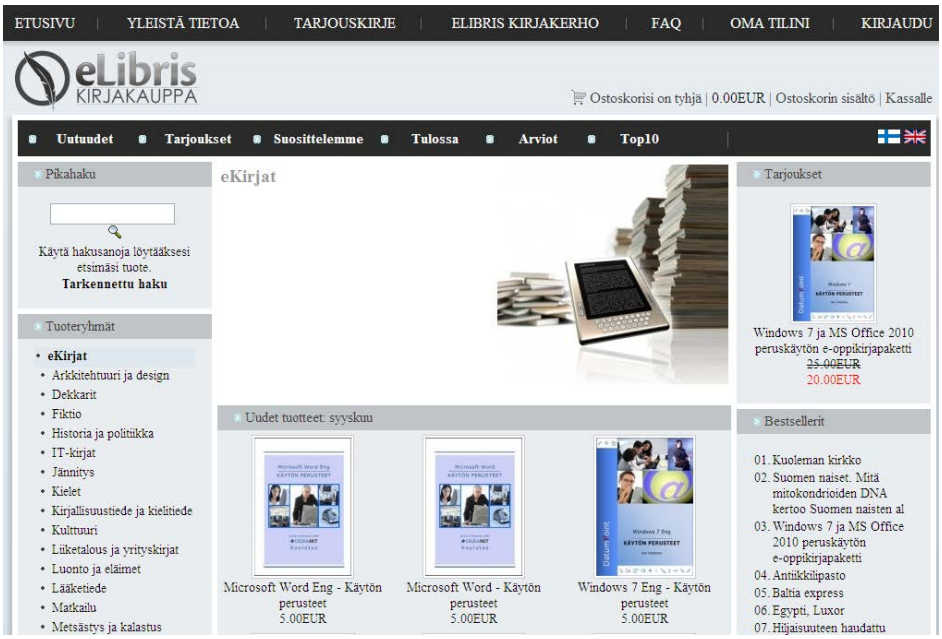

Figure 15. *E-book web store offered by eLibris (eLibris Media n.d.)*

Adlibris (www.adlibris.com/fi) sells a lot of e-books from 2,90 € (see Figure 14). They are mostly in Swedish although some English and Danish e-books are available. However, they have only two Finnish e-books in their online catalog. Elibris (www.elibris.fi) sells both e-books and e-readers (see Figure 15). They have only about 200 e-books in their catalog, most of them in Finnish and priced over 20 €. Elibris has a

wide range of e-readers, however, and together with Pixmania, are the only web stores that sell e-readers in Finland. Their collection includes e.g. Sony Reader, BeBook, Bookeen and the prices are from 200 € to 500 € (eLibris Media n.d.; Pixmania n.d.).

Epuuk started their online Comic e-book store in October 2009. They sell comics to mobile phones and PC with a price range of 0-20 €, most being under 10 €. (Epuuk n.d.) An example of these comic e-books can be found in Figure 16.

Comment [ST1]: Käy läpi kaikki numerot ja valuutat

Figure 16. *Comic books for mobile phones offered by Epuuk (Epuuk n.d.)*

The widest range of e-books is available in Ellibs Bookstore (see Figure 17). They have currently about 64 000 e-books in their catalog, which are mostly English non-fiction, but include also 1000 Finnish e-books. In addition to the online catalog, they offer an e-book distribution service for publishers and libraries. Publishers can deliver their content to Ellibs and define the protection for them. (Ellibs Oy n.d.) Libraries can purchase e-books to their collections and lend them to their patrons (Ellibs Oy n.d.).

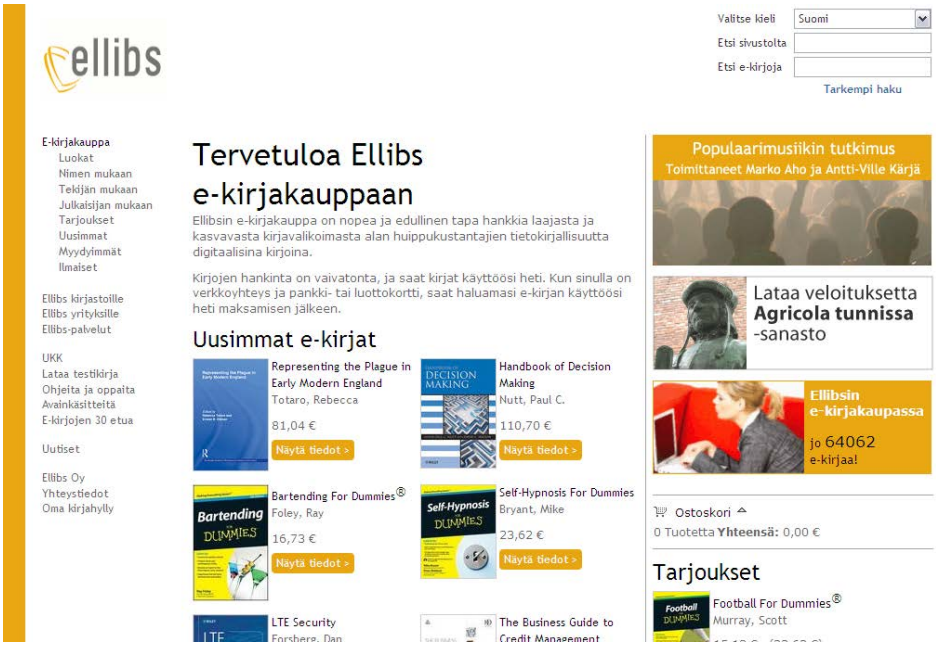

Figure 17. *E-book web store offered by Ellibs (Ellibs Oy n.d.)*

The most recent addition to the Finnish e-book web stores is *Latauskauppa* that was opened by Akateeminen kirjakauppa 13.9.2010 (Simola 2010). They sell thousands of e-books in English, Swedish, and Finnish, as well as e-readers by Bookeen and Iriver, the prices being 200 € and 350 € (Stockmann Oyj Abp n.d.b). A screenshot of *Latauskauppa* is presented in Figure 18.

Figure 18. *The new e-book web store offered by Akateeminen kirjakauppa (Stockmann Oyj Abp n.d.b)*

In addition to Finnish web stores there are also several different international web stores where Finnish consumers can find and buy e-books. The most widely known is perhaps Amazon.com. They have over 670 000 English e-books in their Kindle Store, both fiction and non-fiction. Kindle e-books can be read only on Kindle device or iPhones and iPads if they have an additional software installed. The most e-readers in Finnish markets, however, cannot read Kindle e-books. Earlier it was not possible to buy Kindle devices in Finland, but starting from October 2009 it is now available, and the price has come down, being currently $139. (Amazom.com Inc. n.d.)

E-books have made their way also to public libraries and patrons can lend e-books through HelMet web library in Helsinki area. The service is offered by Ellibs. (Helmet n.d.) The HelMet library also lends out e-reader devices, which contain ready-downloaded public domain e-books. The patrons can also download other e-books from the HelMet web library or from other sources. If they want to use DRM protected e-books, they will have to authorize the e-reader with their own Adobe ID. After the e-reader is returned back to the library, it will be reset and all content will be cleared. (Helsinging kaupunginkirjasto 2010; Espoon kaupunki n.d.)

Because Adobe allows only six devices to be authorized with the same ID, patrons will most likely not be willing to use one authorization for a device they do not own. Therefore, patrons are most likely to use only unprotected content with the library e-reader, and possibly buy their own device later on after familiarizing themselves with the new technology.

E-books can be acquired also for free. The largest collection of Nordic literature in digital form, over a thousand titles, can be found from runeberg.com. Project Runeberg is a volunteer effort founded in 1992 in Linköping, Sweden. (Project Runeberg n.d.) It is equivalent to the Project Gutenberg in the US (Project Gutenberg n.d.). Other web sites offering free e-books include Free eBooks (www.free-ebooks.net) and The eBook Directory (www.ebookdirectory.com).

Google has been digitizing print books and offering them in digital form through their Google Booksearch (books.google.com). They are aiming to digitize old public domain print books as well as books that are under copyright and offer them on the Internet, so that anyone can access them. The Association of American Publishers raised a lawsuit against Google Books, claiming they were infringing copyright. The lawsuit was settled and it was agreed that Google will pay financial credits to authors and copyright holders. Google is allowed to continue their digitizing efforts only for works registered in the US, Britain, Australia and Canada (Moisio 2009). (Siy 2008; Rust Consulting Inc. n.d.)

4.2.4 E-book publishing and sales

The Finnish e-book markets are still at their very early stage and Finnish publishers have not yet started their e-book business. There are a wide range of English e-books available on the Internet, but very few Finnish ones. In 2007 only 50 e-books were published and the sales were 900 €. In 2008, however, the numbers started to increase, the amount of e-books published being 131 and the sales €166 000. Year 2009 showed the same increase in the amount of new titles published, 293. However, the sales did not increase, as might have been expected. On the contrary, the sales reached only €127 000 (SKY n.d.a). These are small numbers compared to the US market, which reported e-book sales of $165 million in 2009. And already during the first two quarters in 2010 the sales were $179 million. (IDPF n.d.a) One reason why Finnish e-book markets have not yet started is the lack of standards, common practices, and service providers (Kapanen 2010).

It has been reported, however, that the Finnish e-book markets are starting in autumn 2010. Several publishers have promised to bring at least tens of e-book titles to the markets. The most probable channels are existing web stores that currently sell print books, such as Suomalainen kirjakauppa and Akateeminen kirjakauppa. The new possibilities of e-books, such as their digital form, and the new marketing and publishing possibilities offered by the Internet have allowed also other players to enter the field. It has been speculated that operator Elisa would start selling e-books and e-reader devices. This would be quite easy, because they can utilize their existing customer base and the Elisa Kirja service (www.elisa.fi/kirja), that is currently used for selling audio books. (YLE Uutiset 2010)

5 ALTERNATIVES FOR IMPLEMENTING E-BOOK PLATFORM

5.1 Requirement analysis

When designing the e-book distribution platform for the Finnish markets the requirements have to be specified. Due to the scope of this research these requirements have been defined to include the basic functional requirements that need to be met in order to deliver e-books from publishers to resellers and finally to the consumer. The desired functionalities were collected based on the literature research in the previous chapters.

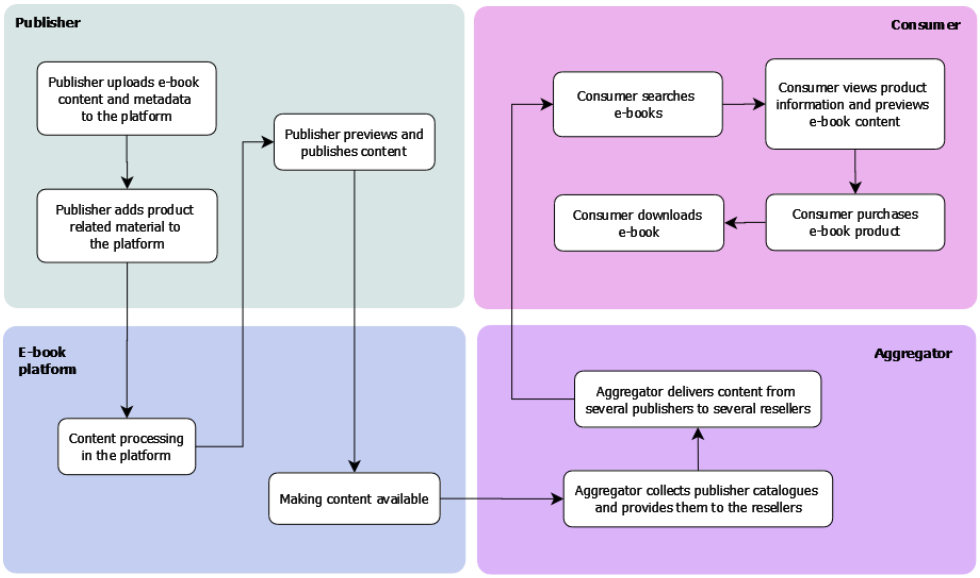

Figure 19. *The e-book delivery process for Finnish markets*

The requirements are represented as use cases, with each different role, i.e. publisher, aggregator, and consumer, having their own use cases. The e-book delivery process is represented in Figure 19. The process starts with the e-book content that the publisher produces. This content is uploaded to the platform with the corresponding metadata. Because there are several different e-book formats available, and the support for these formats have to be offered by the delivery platform, they have to be defined separately. The most widely used e-book formats are PDF and ePub, and almost all e-readers in the market support them. Based on this, it has been defined that the Finnish e-book platform should support both PDF and ePub content. These publisher actions imply use cases such as “upload PDF and ePub e-books” and “add and edit basic product metadata”. All use cases are listed in Table 1.

For the sake of offering the consumers an appealing service in the retailer end, also additional material related to e-books, such as book cover images, author interviews, and video clips) should be delivered through the platform. Therefore, a use case “add and manage product related material” has been added to the list.

After uploading the e-book content files and metadata, the sellable product must be created. This processing might include indexing, packaging, building preview, etc., and these actions should be done automatically by the platform. After this the publisher should be able to see what the product looks like. In case the publisher is satisfied with it, they can publish the product and make it available to the resellers. For this, a use case “preview and publish product” has been added.

The aggregator is responsible for delivering the e-book catalogs to the resellers, so that they can provide them to the consumers. The catalogue should list all the titles available on the platform with their metadata and other related content. Therefore, the platform has to support the aggregator use cases “collect publisher catalogues and provide to sellers” and “deliver content from several publishers to several resellers”. Because the Finnish book industry is centralized, the aggregator must be able to combine content form several publishers and provide that content to several resellers. The platform has to support this.

At the reseller site, the consumer must be able to search and list available e-book titles. Therefore, use cases “search products form catalog” and “view product information” has been added. The product information in this case covers both the basic metadata and product related material. Before the consumer purchases an e-book, they will most likely want to preview it, thus implying a use case “preview e-book”. After making the purchase decision, the consumer should be able to buy the product. Because the retailer implements the payment process and the distribution platform implements only the delivery of the e-book, this use case is stated as “order e-book” (instead of “buy e-book”).

After purchasing the product the consumer must be able to access it. This is done by downloading the e-book to a computer or an e-reader. The use cases are “download PDF and ePub e-book to computer” and “download PDF and ePub e-book to e-reader”.

Table 1. *Use cases for the Finnish e-book platform*

Use cases		
Role	***Id***	***Name***
Publisher	*P1*	*Upload PDF and ePub e-books*
	P2	*Add and edit basic product metadata*
	P3	*Add and manage product related material*
	P4	*Preview and publish product*
Aggregator	*A1*	*Collect publisher catalogues and provide to sellers*

	A2	*Deliver content from several publishers to several resellers*
Consumer	*C1*	*Search products from catalog*
	C2	*View product information*
	C3	*Preview e-book*
	C4	*Order e-book*
	C5	*Download PDF and ePub e-book to computer*
	C6	*Download PDF and ePub e-book to e-reader*
	Total 12 use cases	

Implementing an e-book platform for Finnish market could be done in different ways, either with custom development or with Software as a Service (SaaS) model. These two approaches are introduced in the following chapter and their characteristics concerning the Finnish e-book platform will be identified and evaluated. At the end of the chapter suggestions for the future implementation approach are given.

5.2 Custom development vs. SaaS

Regarding the e-book distribution platform, there are two alternative ways of implementation: custom development and Software as a Service. The former approach is the traditional way in which the whole system is build and hosted in-house. This means that the infrastructure is located in the company premises and the software development is done either in-house or the work is purchased from a software development company. This alternative is called custom development, which means that the software is developed against the specific requirements of the acquiring company. The software can be implemented from the beginning or ready-made off-the-shelf software components can be used. Either way, the implementation requires significant amount of time and resources. Furthermore, in addition to the initial development work there is also need for future development, maintenance and support. Therefore, the custom development model can be time consuming and expensive.

Software as a service (SaaS) is a growing model of software deployment where the SaaS vendor hosts the application as a service to the client. The client can use the software typically through a browser. (Candan 2009) Unlike in custom development, in the SaaS model the vendor runs and maintains all necessary hardware and software and the client only subscribes to using the service. SaaS providers typically charge a monthly subscription fee for the service. (Choudhary 2007)

When it comes to choosing the right approach for implementing the e-book distribution platform, there are several differences between custom development and SaaS model which need to ne considered. The most obvious advantage of the SaaS model is the set-up cost. Creating and maintaining software is extremely costly, which makes the custom development model significantly more expensive than the SaaS model, which in contrast requires no upfront investments (Candan 2009; Choudhary 2007). With SaaS it

is therefore possible to experiment new business models even though the market is still somewhat uncertain. In addition, if the client is not satisfied with the service offered by the SaaS vendor, it is easy to end the subscription.

SaaS offers also other advantages over custom development. First, because the SaaS software is already up and running, deploying the service can be done quickly. In contrast, implementing the software as custom development would take more time and might not be a suitable approach when aiming at a rapid market launch. (Candan 2009) Second, SaaS software is typically used by several different clients. This large client base enables the vendor to scale their service to a single client when needed. This way the client can start slow, and after a successful trial, they can change the capacity of their application without investing on new infrastructure or training new personnel. (Xin & Levina 2008)

Although SaaS offers some important advantages over custom development, there are still some downsides. One issue is data security. The fact that the software is hosted in the vendor premises, might pose some threats to confidential material or intellectual property of the client. (Choudhary 2007) This is something that has to be considered when selecting the right approach. There is also another implication of the vendor-side hosting. Because the client's data can be spread on several vendors' systems, it must be integrated in order to gain an overview of the client's business (Manford 2008).

Another advantage of custom development is the fact that the required functionality can be fully implemented in the software. For example, in order to fulfill a specific business need some functional requirements may be essential. However, it might be that there is no SaaS vendor that offers these functionalities. Many SaaS vendors develop their software and introduce new product features as part of their service. According to Choudhary (2007) SaaS vendors have an incentive to release new features as soon as they are completed in order to keep their clients. So there is a possibility for the clients to influence what features are added, but because these requests have to be prioritized, clients cannot rely on their requests to be implemented.

While some compromises are required in functionality, the cost advantage offered by a SaaS model is significant. SaaS model also enables a quick launch and a ready solution. These characteristics are important as the Finnish e-book market is still in a very early phase. Common practices and standards have not yet evolved, so large investments are not justified. Thus, it is suggested that the Finnish e-book platform should be launched using a SaaS model. After a trial period, it is possible to phase out the SaaS vendor and invest in a custom platform. This should, however, be done only after the market and the requirements have stabilized. In the next chapter, a few SaaS vendors are benchmarked and the suitability of their offerings for the Finnish e-book platform is evaluated.

5.3 Benchmark analysis

5.3.1 Approach to vendor evaluation

SaaS vendors were selected based on a preliminary search of potential e-book platform solution providers on the Internet. Material and references of the solutions and offerings were collected from the vendor web sites, press releases, and from the existing digital content web stores that were implemented with these vendor solutions. The SaaS providers selected were

- Impelsys
- Klopotek
- MPS Technologies

The suitability of the SaaS offerings for the Finnish situation was evaluated using three dimensions:

- Functional feasibility
- Architectural feasibility
- DRM feasibility

Functional feasibility was evaluated by conducting a fit/gap-analysis based on the previously defined use cases (see Chapter 5.1). Each use case was assessed and either a fit or a gap was assigned to it based on whether the offering supports the use case or not. For all possible gaps, the implications were evaluated and potential solutions for fixing the gap was examined.

DRM technology is an extremely important factor which affects the possible distribution channels as well as end user access to content. Therefore, it was elevated to be handled separately (instead of including it to the use case requirements). In the following chapters, all selected SaaS vendors are evaluated.

5.3.2 Impelsys

Introduction of company and SaaS offering

Figure 20. *Impelsys solution offering (Impelsys Inc. n.d.e)*

Impelsys, founded in 2001, offers online content delivery technologies and services to the global publishing industry. Their e-publishing solution is called iPublishCentral, which was launched in 2008. It is an online content delivery and content marketing platform that is offered as a Software as a Service (SaaS) model with a pay as-you-go pricing. It includes iPublish Widget and iPublish Viewinside for marketing online content, iPublish Warehouse for warehousing and distributing online content, and iPublish Portal for delivering content to end-users. (Impelsys Inc. n.d.a)

Impelsys has some large publishers as their customers. Benchmark Educations Company is a leading supplemental publisher in the K-8 segment. They use iPublishCentral for converting their content into e-books with audio and read-along facility, and for selling the content both online and by bundling e-books with print books. (Impelsys Inc. n.d.b)

The MIT Press is a university press affiliated with the Massachusetts Institute of Technology (MIT). They publish about 200 new titles a year and over 40 journals. MIT Press uses iPublishCentral for digitizing their print content and marketing and distributing that content online. (Impelsys Inc. n.d.c)

ACP Press ,a small unit of the American College of Physicians (ACP) specializes in publishing medical titles for health care professionals. They wanted to create online marketable products to enhance their readership and revenues. Impelsys's iPublishCentral is used as an end-to-end workflow solution for leveraging ACP's existing content and providing the end user portal for delivering the content to their readers. (Impelsys Inc. n.d.d)

Feature match and gap resolution

Table 2. *Use case support of Impelsys offering*

Use cases			***Fit/Gap***
Role	***Id***	***Name***	
Publisher	*P1*	*Upload PDF and ePub e-books*	*Fit*
	P2	*Add and edit basic product metadata*	*Fit*
	P3	*Add and manage product related material*	*Fit*
	P4	*Preview and publish product*	*Fit*
Aggregator	*A1*	*Collect publisher catalogues and provide to sellers*	*Gap*
	A2	*Deliver content from several publishers to several resellers*	*Gap*
Consumer	*C1*	*Search products from catalog*	*Fit*
	C2	*View product information*	*Fit*
	C3	*Preview e-book*	*Fit*
	C4	*Order e-book*	*Fit*
	C5	*Download PDF and ePub e-book to computer*	*Fit*
	C6	*Download PDF and ePub e-book to e-reader*	*Gap*
Total use cases supported: 9			

The iPublishCentral platform functionalities were evaluated against the previously defined use cases. The support (fit) or the lack of support (gap) for each use case is listed in Table 2. The platform supports different formats, including PDF and ePub, thus supporting the first use case P1. The iPublish Warehouse module for asset management offers different ways for importing product metadata and assets, linking assets to other assets, and publishing them, thus supporting the use cases P2, P3, and P4. (Impelsys Inc. n.d.f, n.d.g).

The platform enables publishers to sell their content directly to their readers, but not to reseller web sites, thus supporting only one publisher per web store. The platform does not offer product metadata exports either, which means that the product catalog of a publisher is only available through the end user web store. Therefore, combining metadata and content of separate publishers is not possible, thus the aggregator use cases A1 and A2 are not supported (Impelsys Inc. n.d.a). There are, however, two ways to overcome this gap. The first option is to provide all publishers their own delivery channel (web store). This would then result in numerous integrations from reseller side, as they would have to integrate their web store to all separate publisher delivery channels. Therefore, this option would not be reasonable.

The second option is to use only one publisher platform and one delivery channel. This way the resellers would have to integrate only once, but still have access to content from all publishers. However, this would mean that publishers would have to share the iPublishCentral platform and they could not manage their content separately. Publishers having access only to their own content is an absolute requirement and therefore this option is not suitable either.

When it comes to the consumer use cases, the iPublishCentral platform offers the end user web store for searching, viewing and purchasing e-books. This can be concluded from the web stores offered by the Benchmark Educations Company (www.ebenchmarkbooks.com), the MIT Press (mitpress-ebooks.mit.edu), and the ACP Press (www.acppress-ebooks.com). Thus, use cases C1, C2, and C4 are supported.

The iPublish Widget and Viewinside allow the creation of online samples that can be offered as a free preview for end users (Impelsys Inc. n.d.g), thus supporting the use case C3. The iPublish Portal delivery module enables publishers to create online products, which are available to be read online through a browser. In addition, it offers an offline reader that consumers can download to their computers. Through this reader software, the consumers can download and read e-books on their computers. However, this does not allow consumers to download e-books to e-readers or other devices, because the offline reader software is not available to those platforms yet. (Impelsys Inc. n.d.e) Therefore, the use case C5 is supported, but C6 is not. All in all, the Impelsys SaaS offering supports nine use cases.

As stated above, the iPublishCentral uses an Impelsys proprietary DRM technology for protecting content. This poses a vendor risk because the protected content cannot be accessed without the end user platform or the reader software provided by the vendor. In case the vendor goes out of business, or terminates the technology support the previously purchased e-books would not be available to readers anymore.

5.3.3 Klopotek

Introduction of company and SaaS offering

Figure 21. *Klopotek solution offering (Klopotek n.d.c)*

Klopotek & Partner GmbH, founded in 1992, is the leading supplier of international standardized software and consulting services for books and journal publishers. (Klopotek n.d.a) They have launched their SaaS offering to allow publishers to access their software also without implementing it themselves. The SaaS offering includes two parts: an e-book platform and title management. The e-book platform is iPublishCentral offered by their partner Impelsys (Klopotek n.d.f). On top of that, Klopotek offers the Title Management & Product Marketing module that can be used as a data repository for storing and managing all kinds of products such as monographs, series, multimedia products and marketing material etc. (Klopotek n.d.c, n.d.d)

Klopotek software references include Elsevier, Moody Publishers, and Eichborn among others. In early 2009, Elsevier completed the worldwide roll-out of the Klopotek solution for editorial, production and marketing, known as PPM Product Planning and Management. PPM and its central database are used for electronic supplier

communication, book publishing, marketing, and metadata management. (Klopotek n.d.b)

Moody Publishers implemented the PPM Product Pool and Business Partner Pool in the middle of 2008, and in 2009, they implemented the Production, Scheduling, and Production Cockpit modules. They are also implementing the Contracts, Rights & Royalties module. (Klopotek n.d.b)

In 2008 Eichborn launched Klopotek's Contracts, Rights & Royalties module. After the Frankfurt Book Fair in 2009 they became the first Klopotek customer in Europe to utilize the SaaS model. They use the Klopotek SaaS for their editorial, production, sales, distribution, marketing, and advertising operations. (Klopotek n.d.e)

Feature match and gap resolution

Table 3. *Use case support of Klopotek offering*

Use cases			***Fit/Gap***
Role	***Id***	***Name***	
Publisher	*P1*	*Upload PDF and ePub e-books*	*Fit*
	P2	*Add and edit basic product metadata*	*Fit*
	P3	*Add and manage product related material*	*Fit*
	P4	*Preview and publish product*	*Fit*
Aggregator	*A1*	*Collect publisher catalogues and provide to sellers*	*Fit*
	A2	*Deliver content from several publishers to several resellers*	*Gap*
Consumer	*C1*	*Search products from catalog*	*Fit*
	C2	*View product information*	*Fit*
	C3	*Preview e-book*	*Fit*
	C4	*Order e-book*	*Fit*
	C5	*Download PDF and ePub e-book to computer*	*Fit*
	C6	*Download PDF and ePub e-book to e-reader*	*Gap*
Total use cases supported: 10			

For each use case the support (fit) or the lack of support (gap) offered by the Klopotek offering is listed in Table 3. Due to the e-book platform being the same as in the Impelsys SaaS offer, the same publisher use cases P1, P2, P3, and P4 are supported also by the Klopotek SaaS.

When it comes to the aggregator use cases, Klopotek offers a wider functionality than Impelsys. Klopotek's Product Management system offers standard ONIX exports of product metadata, which allows the publisher catalogs to be delivered to several reseller web stores. (Klopotek n.d.f, 2008) Therefore, the Klopotek SaaS support the use case A1, but not A2.

Because the iPublishCentral platform is used as the end user web store, the same implications apply also to the Klopotek offering. Thus, use cases C1, C2, C3, C4, and C5 are supported but C6 is not.

Although the Klopotek offering supports ten use cases, one use case more than the Impelsys offering, they both suffer from two significant disadvantages. First, content from several publishers cannot be delivered to reseller web stores through a single integration, and second, DRM protected content cannot be read on an e-reader.

5.3.4 MPS Technologies

Introduction of company and SaaS offering

Figure 22. *MPS Technologies offering (MPS Technologies n.d.)*

MPS Technologies, founded in 2004, provides innovative and customizable software solutions to the publishing industry. They operate as a subsidiary of MPS Limited, a Macmillan company with over 30 year's experience. (MPS Ltd. n.d.)

MPS ContentStore is a comprehensive e-content delivery solution for publishers, distributors, wholesalers, retailers, universities, and libraries. This e-publishing suite has modules for converting, hosting, showcasing, marketing and distributing the content in multiple ways. (MPS Technologies n.d.) There are also references of earlier deployments of the MPS SaaS offering.

Booksite Afrika is the largest book distributor to the South African book trade. Their Booksite Digital (http://www.booksitedigital.co.za) platform offers publishers a digital content delivery platform for storing, managing, protecting and distributing digital content as well as creating new channels and revenue streams. For retailers Booksite Digital offers access to multiple publishers' content providing the tools for integration, marketing and selling. (Booksite Digital n.d.) This implementation is equivalent to the

desired functionality for Finnish markets, especially because it supports the aggregator model.

Versita Poland, a leading European scientific publisher has also implemented the MPS ContentStore platform (http://versita.pl/BookStore/pagedisplay.do?pub=versita). They publish their own and thirds party scholarly journals across many disciplines, addressed to the global science community. (MPS Technologies n.d.; Versita n.d.)

Macmillan Australia uses ContentStore to publish and deliver e-books from Pan Macmillan, Palgrave Macmillan, Macmillan Educations and Macquarie Dictionary Publishers (http://www.macmillandigital.com.au/BookStore/pagedisplay.do?pub=macaus). (Macmillan Digital Australia n.d.)

Feature match and gap resolution

Table 4. *Use case support of MPS Technologies offering*

Use cases			***Fit/Gap***
Role	***Id***	***Name***	
Publisher	*P1*	*Upload PDF and ePub e-books*	*Fit*
	P2	*Add and edit basic product metadata*	*Fit*
	P3	*Add and manage product related material*	*Fit*
	P4	*Preview and publish product*	*Fit*
Aggregator	*A1*	*Collect publisher catalogues and provide to sellers*	*Fit*
	A2	*Deliver content from several publishers to several resellers*	*Fit*
Consumer	*C1*	*Search products from catalog*	*Fit*
	C2	*View product information*	*Fit*
	C3	*Preview e-book*	*Fit*
	C4	*Order e-book*	*Fit*
	C5	*Download PDF and ePub e-book to computer*	*Fit*
	C6	*Download PDF and ePub e-book to e-reader*	*Fit*
Total use cases supported: 12			

For each use case the support (fit) or the lack of support (gap) offered by the MPS Technologies offering is listed in Table 4. The MPS ContentStore supports multiple formats, including PDF and ePub, and enables publishers to manage content and metadata through the Admin Tool backend control panel. It also provides product related materials through the end user portal and allows publishers to control the publishing of their products. (MPS n.d.b; MPS Technologies n.d.; Versita n.d.) Thus, it supports all publisher use cases P1, P2, P3, and P4.

The platform also supports the aggregator and wholesaler model, where content and metadata from several publishers is delivered to several resellers, thus supporting the use cases A1 and A2 (MPS Technologies n.d.; MPS n.d.a).

The ContentStore offers a comprehensive end user web store where users can search, browse, and purchase e-books. The browse inside functionality provides previews and search inside functions. Therefore, the ContentStore supports use cases C1, C2, C3, and C4. (MPS Technologies n.d.; Versita n.d.)

The platform uses Adobe DRM to protect digital content and thereby supports e-book downloading and reading on several platforms that support Adobe DRM, such as computers, smart phones, and e-readers, thus supporting use cases C5 and C6 (MPS Technologies n.d.; Versita n.d.). As a result, the MPS Technologies offering supports all twelve use cases.

The most important advantage of ContentStore is the support for the aggregator model, allowing multiple publishers per delivery channel. Regarding vendor risk posed by the DRM technology, it can be concluded that the Adobe DRM poses a significantly lower risk compared to Impelsys' proprietary technology, as it is widely used by content owners as well as device manufacturers.

5.3.5 Summary

This chapter gathers the results of the vendor benchmarking (Table 5). The offering of MPS Technologies scores highest in the functional and architectural feasibility areas, supporting all use cases. Both Impelsys and Klopotek solutions suffer from the lack of support for aggregator model, which is quite fundamental in the Finnish case. Fixing the gap would require extensive custom development to the platform, and therefore makes these offerings unappealing.

The MPS solution stands out also when examining the DRM feasibility, being the only one to support Adobe DRM. As there is no DRM standard in the industry, and solutions are not compatible, DRM choice is essential. Adobe DRM is the recommended approach because it appears to be widely used and poses a comparatively low vendor risk. It also supports both PDF and ePub formats and a large collection of e-readers and e-reading devices. Based on this vendor evaluation, the MPS Technologies SaaS offering is selected for the pilot.

Table 5. *Vendor evaluation summary*

Vendor evaluation criteria		***Impelsys iPublishCentral***	***Klopotek iPublishCentral + TM***	***MPS Technologies ContentStore***
Functional feasibility				
	Use cases supported / total	*9/12*	*10/12*	*12/12*
	Gaps	*A1, A2, C6*	*A2, C6*	
Architectural feasibility				
	Gap implications	*One publisher per delivery channel: numerous integrations from reseller side OR managing publishers' content on a single portal.*		
DRM feasibility				
	DRM technology	*Impelsys proprietary*	*Impelsys proprietary*	*Adobe DRM*

6 PILOT FOR E-BOOK PLATFORM

6.1 Research methods and objectives

This is a qualitative case study with the objective to discover and gather the possible deficiencies and shortcomings of a pilot platform for distributing e-books. In addition, test users' ideas and expectations for the future were collected. These results were used to derive functional requirements for the future platform. According to Trochim (2007) surveys can be used as research methods for user related research. Therefore, this research was completed by conducting a survey consisting of a questionnaire and a focus group interview (Hirsijärvi 2000).

In the questionnaire, both open and closed questions were used. According to Heikkilä (2008) open questions are suitable to be used in a qualitative study especially when the answer alternatives are unknown beforehand. The open format was used in questions that tried to gather new ideas and opinions from the test users. In addition to open questions also closed questions were used. These multiple-choice questions were included to provide a statistical perspective and to ensure the users considered both positive and negative answer options. As Heikkilä suggested the amount of answer options should be considered. Based on this, a 5-point Likert scale was selected. Because all test users were not assigned to test all parts of the platform, also a "Don't know" option was provided. The answer options were defined in the following way.

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree
6. Don't know

For some questions these answer options were stated differently to be more suitable for the particular question. The questionnaire was written in Finnish, and the English version is presented in Appendix A.

The questionnaire was implemented as an Internet based form produced with Form Manager tool (provided by Webforum). The url to the questionnaire was sent to the recipients through email. Unfortunately, the Form Manager tool suffered from technical problems, due to which answers from a few respondents were lost. Therefore, the questionnaire was sent to the recipients also as a word document. All in all there were ten respondents (test users), of which three answered through the Internet form, and six using the word document. As a result, the response rate was 90 percent.

After the questionnaire, a focus group interview was arranged. Because there were only ten test users assigned to the pilot, they were all invited. Six participated, thus the response rate of the interview was 60 %. One and a half hours were reserved, but the interview lasted only an hour and fifteen minutes. It was recorded and the recording was transcribed afterwards. The interview followed the same themes as the questionnaire, but the participants were encouraged to discuss all related issues freely.

6.2 Pilot setup and arrangement

6.2.1 Scope and timetable

In the pilot, an end-to-end process for distributing e-books and audio books from publishers to consumers was implemented. MPS ContentStore platform was used for content and metadata management and e-book distribution. The Consumer Interface of ContentStore was used as an e-book web store interface for end users. In addition, Kirjavälitys' Kirjaväylä web store was integrated to MPS e-fulfilment service, which handles the e-book delivery to reseller web sites. The pilot focused on evaluating the MPS ContentStore platform and its suitability for the Finnish markets. This was achieved by testing the functionalities for different user roles.

The pilot lasted for three months from April to June 2010. During this time the test users were asked to complete previously defined test cases and familiarize themselves with the platform. Based on their experience they were asked to fill out a questionnaire and attend to a focus group interview.

6.2.2 Architecture of the pilot platform

Architecture

The basic architecture of the pilot platform is presented in Figure 23. MPS ContentStore platform offered an online delivery solution. Admin Tool was the backend control panel of ContentStore that was used for managing content and metadata of e-books. Admin Tool offered a central distribution hub for Kirjavälitys, so that they were able to act as an aggregator and a super administrator of the platform. Publishers had separate accounts to the platform and were able to manage their own content and metadata. The ContentStore web store was the consumer interface for searching, previewing and buying e-books. Kirjaväylä web store was integrated to the MPS e-fulfilment service, which was used to deliver e-book files with correct user rights to Kirjaväylä customers. Figure 24 presents the e-book delivery process from MPS database to ContentStore and Kirjaväylä web store.

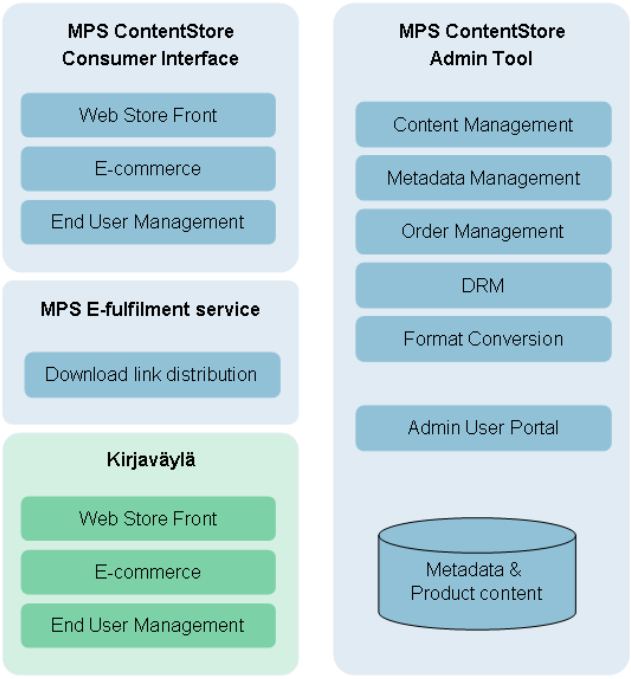

Figure 23. *Architecture of the pilot platform*

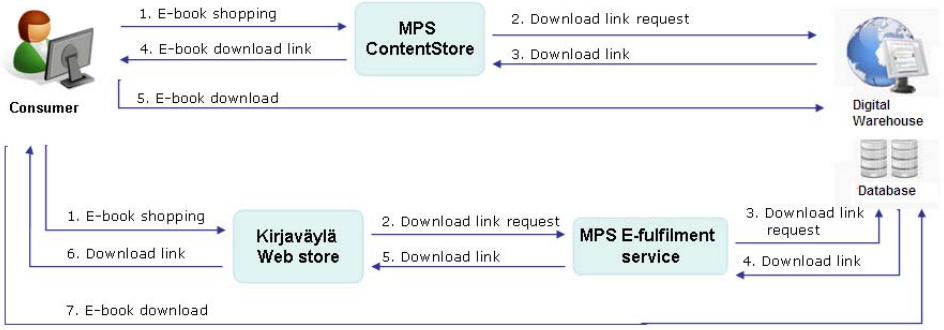

Figure 24. *E-book delivery process in the pilot platform*

6.2.3 Test users and tasks

There were ten test users assigned from Kirjavälitys personnel who work in the corresponding area of business. They participated in different roles. The four roles were:

- Role 1: Publisher using Admin Tool
- Role 2: Kirjavälitys personnel using Admin Tool
- Role 3: Consumer using ContentStore web store
- Role 4: Consumer using Kirjaväylä web store

Each test user was assigned a role that was close to their normal work tasks. For example, publisher facing employees were assigned to the roles 1 and 2 and the retailer facing employees were assigned to the roles 3 and 4.

Testing tasks were derived from the use cases collected in Chapter 5.1 and assigned to the corresponding roles. Test tasks are listed in Appendix B.

6.2.4 Testing tools

Two publishers from Kirjavälitys' customers provided the metadata and content needed for testing. The content files were in PDF, ePub, or mp3 formats, and the corresponding metadata was provided in an excel sheet. In addition, PRC files were needed for testing the e-book delivery to a Kindle device. These PRC files were created by format conversion from the original PDF files. E-book files were protected using either dynamic watermarking or Adobe DRM. PRC files were left unprotected, so that they could be read on a Kindle device. Also mp3 files were left unprotected. E-books were downloaded and read on three different devices: Sony eReader, Hanvon reader, and Kindle.

Admin Tool was available through an Internet browser. Test users in role 2 were responsible for setting up the Admin Tool platform by creating the publisher accounts and usernames and passwords for the role 1 test users. User accounts for the ContentStore web store were created by each user in the web store interface. Accounts for the Kirjaväylä web store were provided by Kirjavälitys contact person.

6.2.5 Reporting

Test users were asked to answer to a questionnaire after completing the test tasks. The questionnaire was divided into six parts

- Background questions
- Questions of Admin Tool for publisher role (role 1)
- Questions of Admin Tool for Kirjavälitys personnel role (role 2)
- Questions of MPS retailer web store (role 3)
- Questions of Kirjaväylä web store (role 4)
- General questions

All test users were asked to answer to the background questions and general questions. In addition, they were asked to answer to those questions that were directed to the roles they were assigned. The questionnaire is presented in Appendix A.

After completing the questionnaire, a focus group interview was conducted and recorded. All test users were invited, and six participated. The interview followed the same themes as the questionnaire, but was more interactive aiming to facilitate

discussion. The issues raised in the interview were collected from the transcribed recording.

6.3 Functionality of the pilot platform

6.3.1 E-book content and metadata management

The whole content and metadata process from the creation of e-book to delivery is presented in Figure 25. In the first phase publisher uploads content and metadata to the platform through Admin Tool. In addition, the publisher defines the content protection parameters and preview rights. The content is then processed by a conversion team. This included e.g. content packaging, indexing, and creation of the preview. After this, the content is moved to staging phase, where the publisher can preview it before publishing it. If satisfied with the content the publisher approves it and the content is processed for live status. After the final processing the product is moved to a live server in a digital warehouse and made available to all resellers.

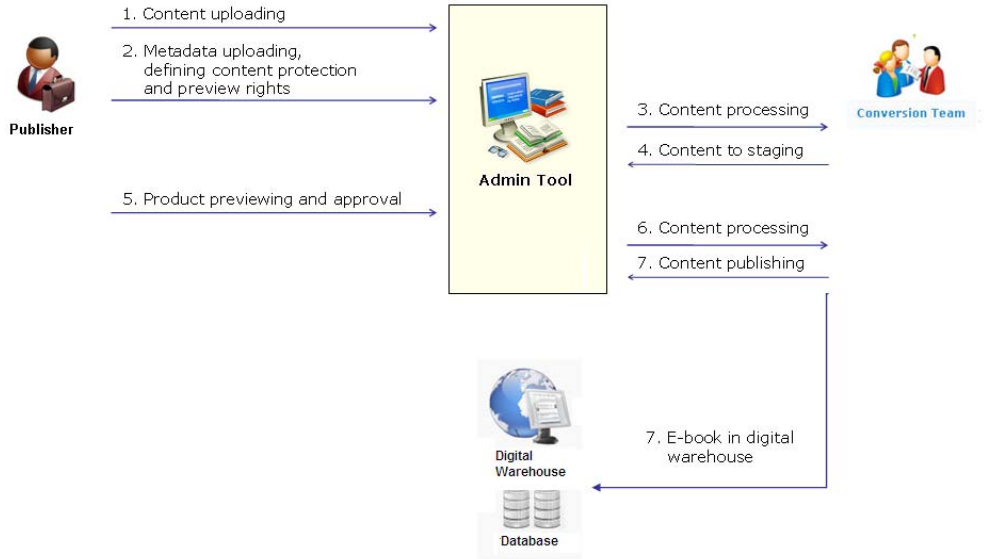

Figure 25. *Content and metadata process in the pilot platform*

A screenshot of the first page of the Admin Tool for publishers is presented in Figure 26. There the publisher can select to upload metadata or content files, or to search all available e-books. Uploading of metadata can be done either by uploading an excel sheet or creating it by hand (as seen in Figure 27). When a new title is created it shows up in the listing of all available e-book titles (Figure 28). From this screen the publisher can see all titles and their current status and is also able to update the statuses. For example, when approving a product to go live, the publisher changes the status.

Before publishing content, publisher can preview it to make sure it displays correctly. For this the Admin Tool offers a QA environment that is presented in Figure 29.

Figure 26. *Admin Tool for managing metadata and content*

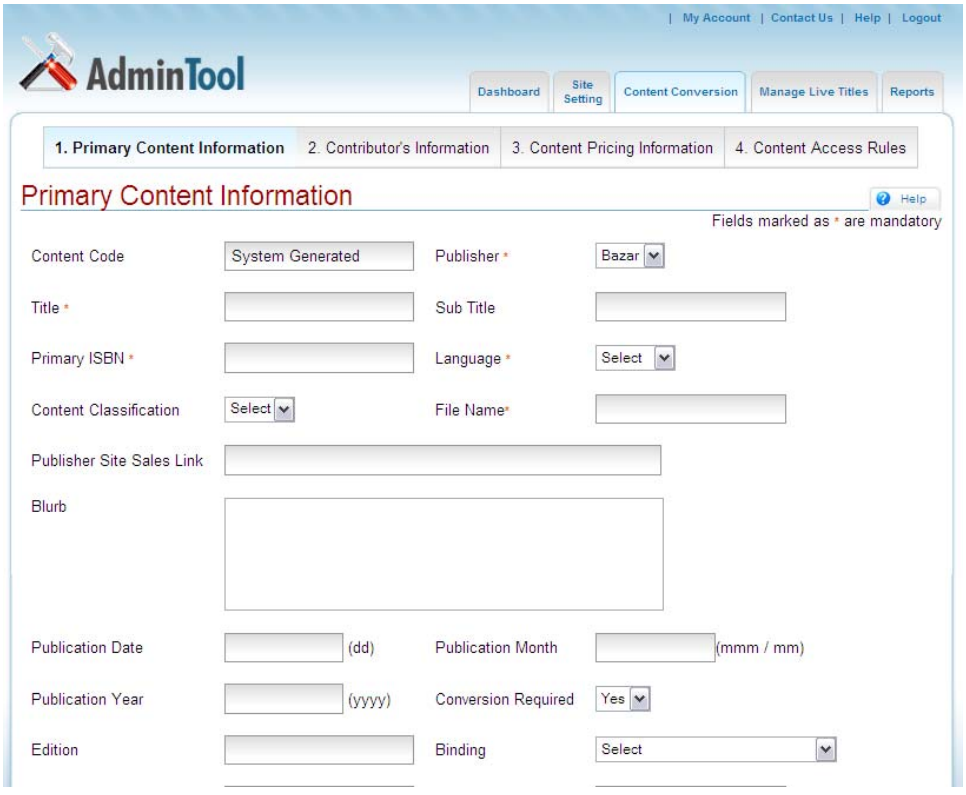

Figure 27. *Admin Tool screen for creating metadata for a new title*

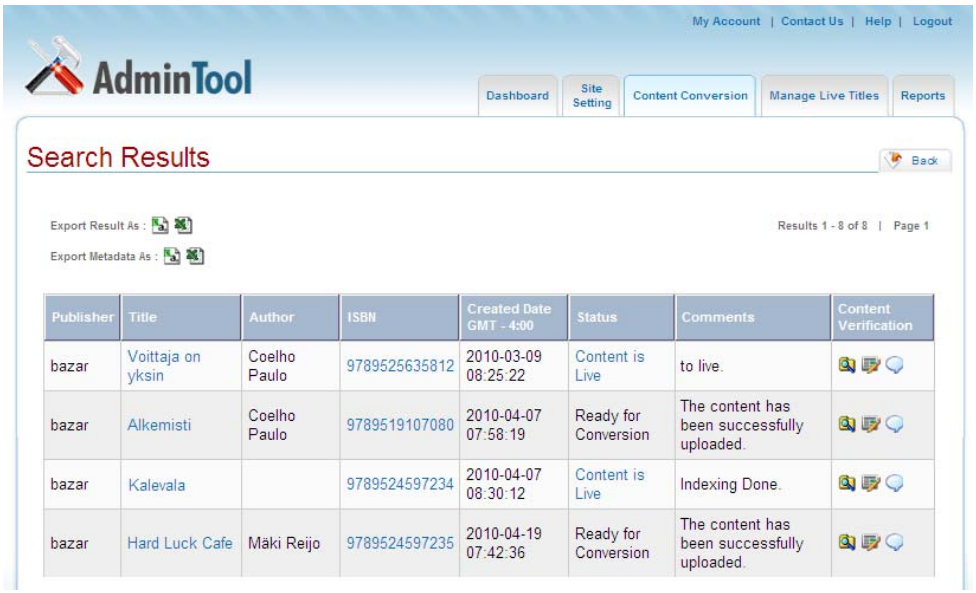

Figure 28. *Listing of publisher's available e-book titles in Admin Tool*

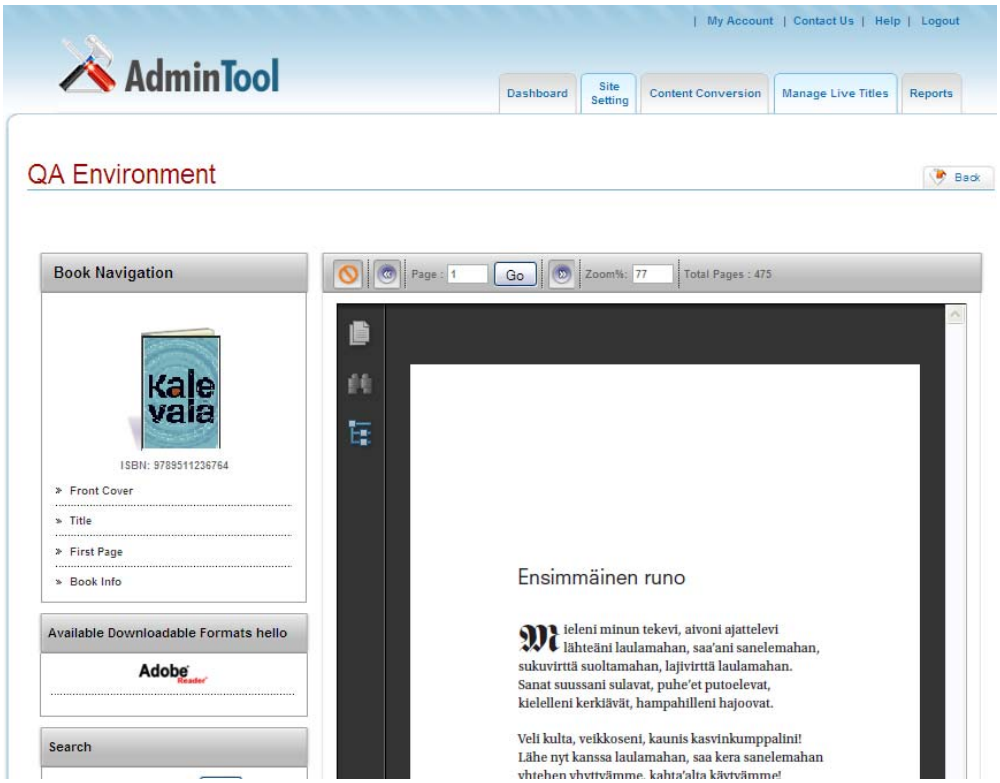

Figure 29. *QA environment screen for previewing content*

6.3.2 Platform administration

For the administrator of the platform the Admin Tool offers the same functionalities as for publishers. In addition, it allows managing publisher accounts, user credentials as well as all content and metadata on the platform. The screen for managing publisher accounts is presented in Figure 30. In Figure 31, a screen for creating a new publisher account is presented.

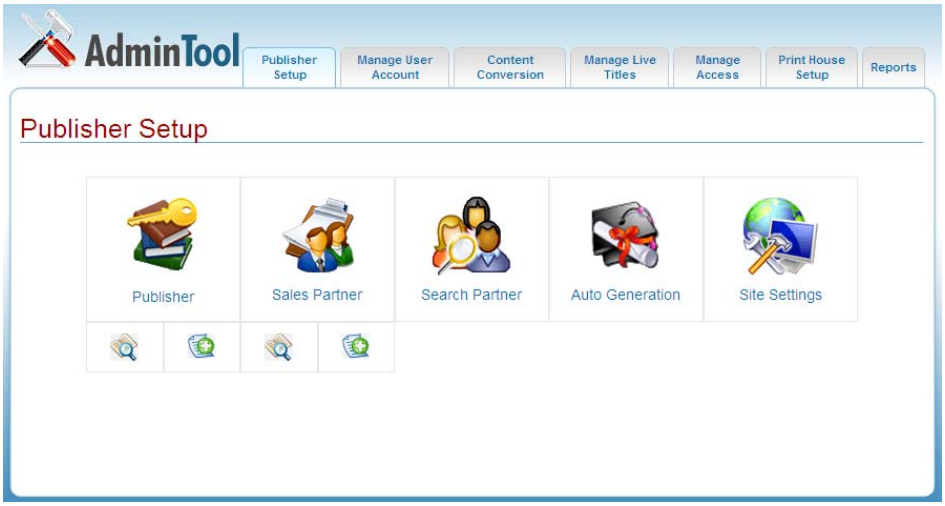

Figure 30. *Admin Tool for the administrator for managing publisher accounts*

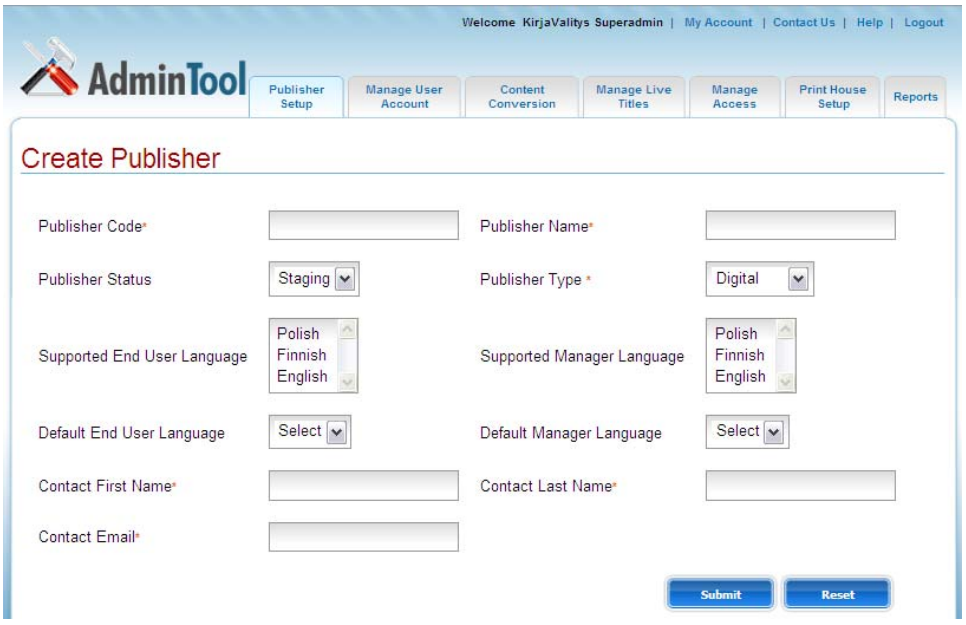

Figure 31. *Screen for the administrator for creating a new publisher account*

6.3.3 E-book delivery process

The ContentStore web store offered a comprehensive consumer interface for searching and browsing, previewing, and buying e-books and audio books. The web store offers a search functionality that can be used for listing e-book titles, as seen in Figure 32. By clicking the e-book cover the user can preview the content (Figure 33). The preview window offers search inside functionality that lists all appearances of a search word in the text (Figure 34). There is also a My Bookshelf functionality that the user can use to manage his or her purchases and to download them (Figure 35). After downloading a title the e-book opens up in Adobe Digital Editions and is available for reading (Figure 36).

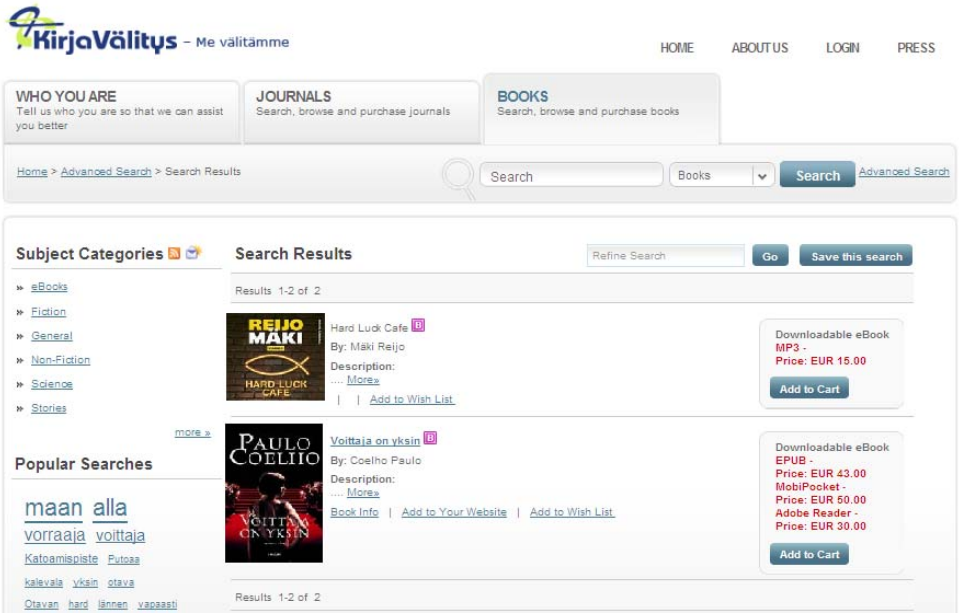

Figure 32. *Listing of e-books based on a search in ContentStore web store.*

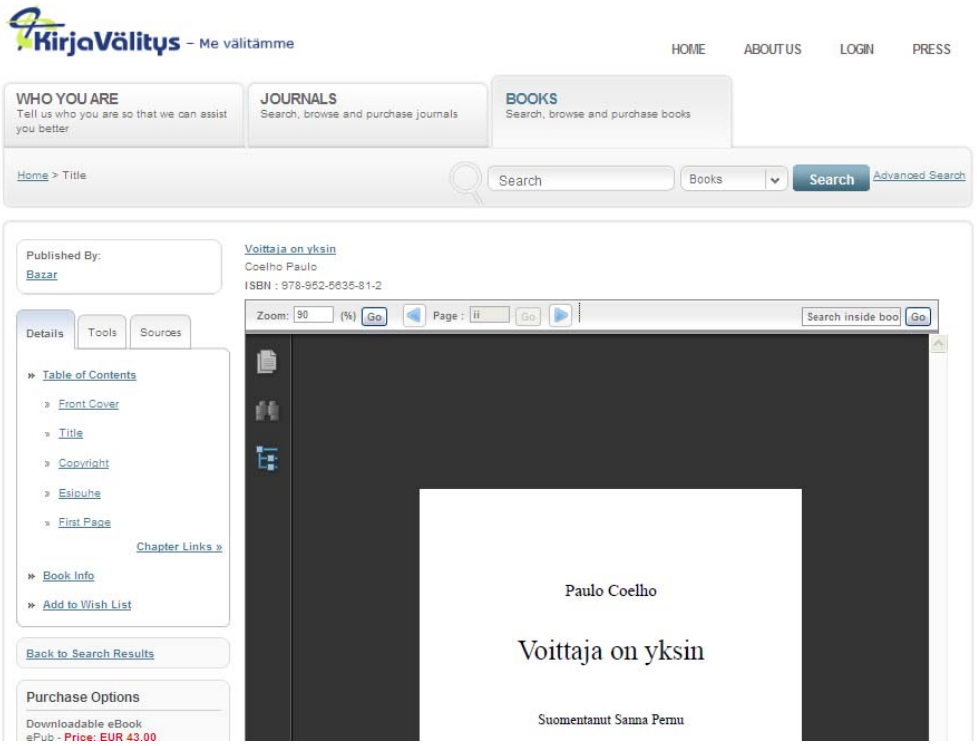

Figure 33. *E-book preview window in ContentStore web store*

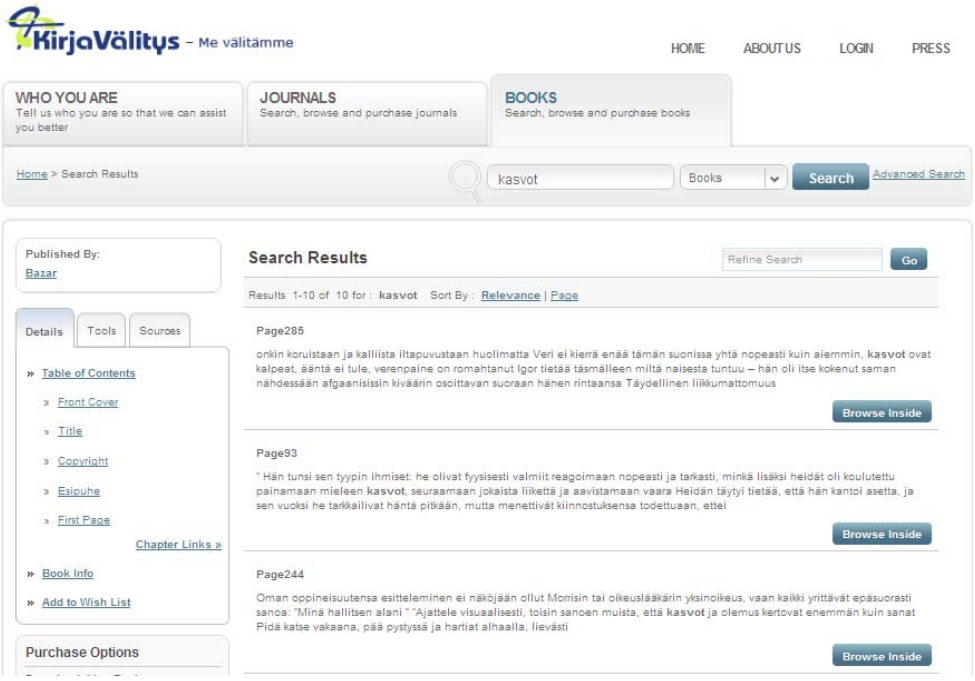

Figure 34. *Search inside function in ContentStore*

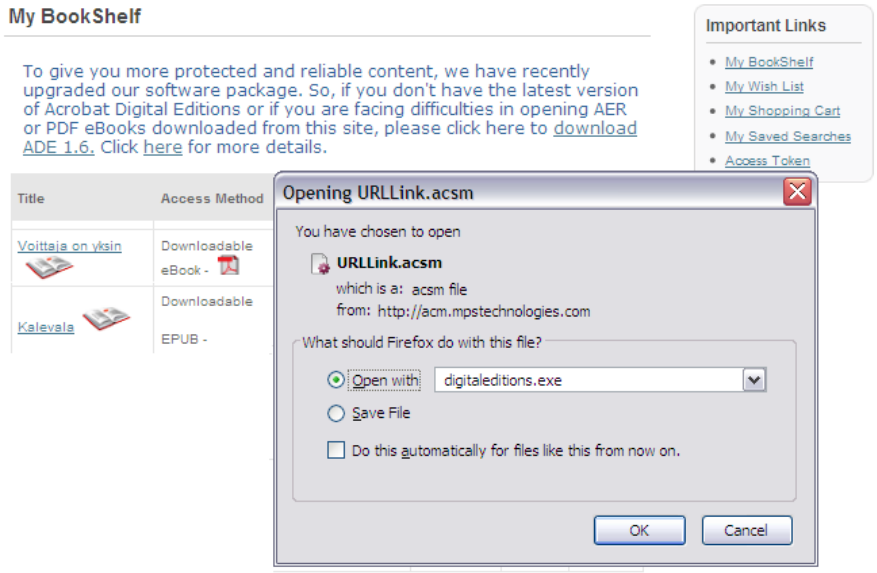

Figure 35. *My Bookshelf lists the user's e-books and provides the download links*

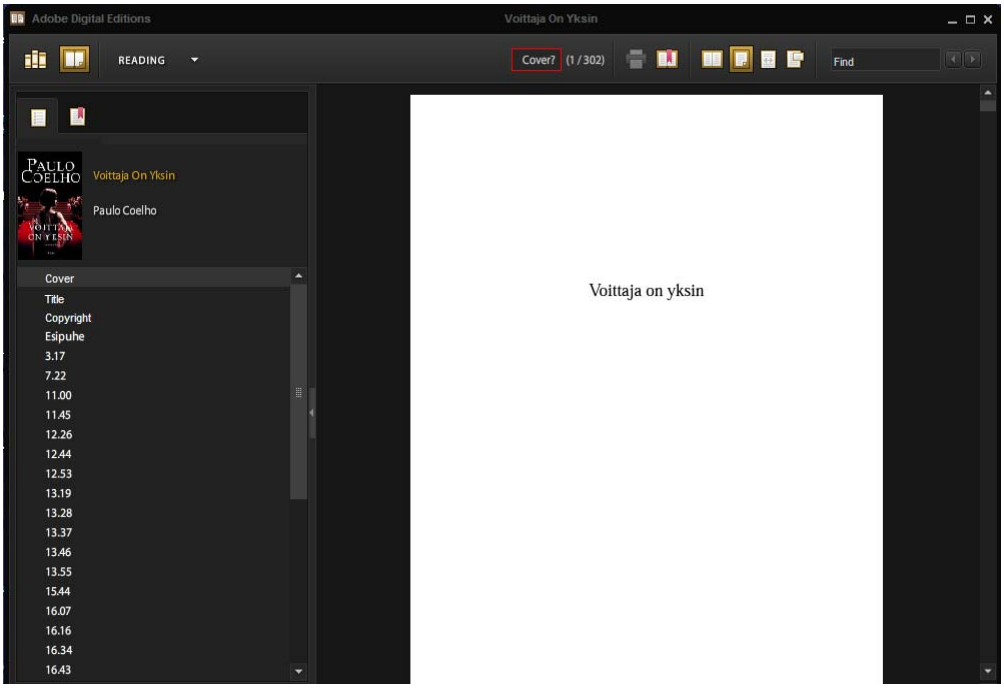

Figure 36. *E-book opens up in Adobe Digital Editions after download*

The process for delivering e-books to Kirjaväylä web store was presented in Figure 24. A simple interface for searching and buying e-books was implemented in Kirjaväylä end, but the download link to the purchased e-book was provided through the MPS e-fulfilment service. The service validates all requests to ensure they are coming from an

authorized retailer. After that the correct protection technology is applied to the e-book and the download link is created and sent. After receiving the download link the Kirjaväylä web store offers it to the customer by placing it to the user's bookshelf. When the user clicks the download link the e-book is delivered from MPS database to the consumer's computer.

7 RESULTS

7.1 Questionnaire

7.1.1 Background questions

There were 9 respondents to the questionnaire: seven women and two men. The majority were aged between 29 and 38. In addition, there was one respondent who was 46 and one who was 52. The respondents were also asked what their title or work task was. There were four Sales Managers, of which one was targeting bookstores, one was targeting schools, and two were targeting publishers. There was also one Selection Manager who works with publishers, one Information Service Assistant who works with metadata related tasks, and one Customer Service Manager. In addition, there were two respondents that worked with the IT department: one System Manager and one System Specialist.

Because a ”Don’t know” answer option was given to every question in addition to the neutral option (number 3), all “Don’t know” answers were discarded from the analysis at it was assumed the test user did not test that specific functionality.

7.1.2 Questions of Admin Tool for publisher role

Admin Tool usability

The answers given to the questions regarding the Admin Tool usability are listed in Table 6.

Table 6. *Questionnaire answers to the Admin Tool usability questions*

Questions		*Respondents*					
		A	*B*	*C*	*D*	*E*	*F*
2.1	*The structure (navigation) was understandable*	*2*	*4*	*4*	*2*	*4*	*6*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know						
2.2	*Evaluate the comfort of use of the platform*	*2*	*3*	*4*	*4*	*4*	*4*
	1 = Inconvenient, 2 = Quite inconvenient, 3 = Not inconvenient or comfortable, 4 = Quite comfortable, 5 = Comfortable, 6 = Don't know						
2.3	*Evaluate the usefulness of the platform*	*3*	*5*	*4*	*4*	*4*	*6*
	1 = Completely useless, 2 = Quite useless, 3 = Not useless or useful, 4 = Quite useful, 5 = Very useful, 6 = Don't know						
2.4	*Evaluate the usability of the platform*	*2*	*4*	*4*	*4*	*3*	*6*
	1 = Very difficult to use, 2 = Quite difficult to use, 3 = Not difficult or easy to use, 4 = Quite easy to use, 5 = Easy to use, 6 = Don't know						
2.5	*Evaluate the operation of the platform*	*3*	*4*	*4*	*4*	*3*	*6*
	1 = Did not function properly, 2 = Mostly did not function properly, 3 = Functioned moderately, 4 = Functioned pretty well, 5 = Functioned well, 6 = Don't know						
2.6	*The platform communicated of the success or failure when performing the tasks*	*2*	*2*	*4*	*2*	*4*	*6*

	1 = Never, 2 = Sometimes, 3 = In about half of the tasks, 4 = Mostly, 5 = Always, 6 = Don't know

From the answers is can be seen that the answers given by Respondent A are all somewhat more negative than the answers given by other respondents. Respondent A selected the Likert-scale option 2 for questions 2.1, 2.2, 2.4, and 2.6 and option 3 for questions 2.2 and 2.5. The reason for these negative answers might be that this respondent would have required instructions and more guidance. This can be seen also from the open questions (discussed later in this chapter). Another reason might be the job role. Most of the problems that were encountered were related to metadata import. This respondent works with metadata related tasks and probably tested Admin Tool from that perspective, and therefore ran into problems more often than others did.

The respondents working with IT found Admin Tool to be quite good. Respondent B selected option 4 often. For the question 2.3 regarding the usefulness of the platform, respondent B selected option 5 and therefore probably has a quite positive approach to the whole platform. However, for the question 2.6 this respondent answered 2, expressing that the platform communication of success and failure was quite poor. Respondent C selected 4 for all these questions. The season why the IT respondents' views were more positive than those of Respondent A might be that because they work in technical roles they accept and tolerate inconveniences better than people who are not that technology oriented. The IT people often have a system perspective whereas non-IT people often have a user perspective.

Also the two respondents working with sales gave quite good evaluations. They both selected option 4 for the most part. Regarding the structure and communication of success and failure, these respondents had differing opinions. Respondent D selected 2 when asked about the structure of the platform and the communication of success and failure. Respondent E, however, selected 4 for these questions. It might be that Respondent E is more experienced in using IT or at least feels more comfortable using IT than Respondent D. Overall, the sales personnel gave higher scores than other respondents, which might be because they did not pay attention in details as much as other respondents, but evaluated how suitable the platform would be for offering the e-book services to publishers.

Respondent F answered "Don't know" for all questions except one. Therefore, it can be assumed that this respondent did not use the platform at all (or only a little) and therefore was not able to answer the questions. Regarding the question 2.2, the option 4 is well in line with the other respondents' answers.

It can be concluded that the structure and navigation and the communication were the most poorly evaluated parts of the platform. Structure and navigation was evaluated higher by the respondents more accustomed to IT. The comfort of use and usability of the platform was evaluated to be lightly better than the structure and communication, but still received a couple of negative answers. Operation of the platform was rated as quite good, and the usefulness received the most positive evaluation.

Table 7. *Answers to the questions of Admin Tool metadata management*

Questions		*Respondents*					
		A	*B*	*C*	*D*	*E*	*F*
2.7	*Uploading metadata in an Excel sheet to the platform was easy*	*1*	*4*	*2*	*6*	*6*	*6*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know						
2.8	*Updating metadata by hand was easy*	*4*	*5*	*4*	*6*	*6*	*6*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know						
2.9	*I would rather send metadata sheets by email than upload them to the platform*	*5*	*2*	*3*	*6*	*1*	*6*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know						
2.10	*For uploading metadata to the platform I prefer ..*	*1*	*2*	*3*	*3*	*3*	*3*
	1 = Using Admin Tool by hand, 2 = Uploading an Excel sheet to the platform, 3 = Don't know						
2.11	*Searching and viewing product information in the platform was easy*	*4*	*5*	*4*	*4*	*4*	*6*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know						

The answers to the metadata questions are listed in Table 7. From the answers of the respondents A, B, and C, it can be seen that uploading metadata with an excel sheet was found more difficult than uploading metadata by hand. The reason might be that test users encountered several error messages and parsing errors when uploading the excel sheets. Respondent B considers both uploading options easier than respondents A and C. This might be because Respondent B was involved in implementing the pilot and therefore is more acquainted with the platform. As Respondent B was the only one giving a high score in question 2.7, it can be concluded that people not familiar with the platform consider uploading metadata in an excel sheet to be difficult or very difficult.

Answers given by Respondent A were again quite negative. The reason why Respondent A selected 1 in question 2.7 might be that this test user spent most of the time testing metadata uploading and therefore encountered more problems than others. Regarding the question 2.9 Respondent A would rather send metadata sheets by email than upload them to the platform. This might again be because of the problems encountered in metadata sheet uploads. Also Respondent C gave a negative score in question 2.7, which might explain the 3 given in question 2.9 (for the same reasons than for Respondent A).

As a conclusion, those respondents that found uploading of excel sheet to be difficult, wanted to use email instead. Other respondents were not that eager to use email for excel sheet uploading. Thus, improving the uploading functionality is necessary and might encourage all users to use the platform for excel sheet uploading tasks.

In the question 2.10 it was asked which metadata uploading option was preferred: filling Admin Tool metadata form by hand or uploading metadata in an excel sheet. For this question only two answers were received. Respondent A preferred filling the form by hand and Respondent B preferred uploading an excel sheet. The answer given by Respondent A is consistent with answers in other questions. However, Respondent B prefers uploading an excel sheet even though filling the form by hand was easier. The reason for this can be that because Respondent B finds the platform extremely useful (see question 2.3), they also understand that filling the metadata form separately for all titles is a slow task and does not utilize the functionalities offered by the platform.

As a conclusion it is clear that filling the metadata form by hand is quite easy. However, uploading metadata in an excel sheet to the platform is difficult but still preferred over sending it my email.

Question 2.11 asked whether searching and viewing product information in the platform was easy or not. All respondents gave positive answers, also Respondent A, so it can be concluded that this functionality is satisfactory.

Answers to the content management questions of Admin Tool are listed in Table 8.

Table 8. *Answers to the questions of Admin Tool content management*

Questions		*Respondents*					
		A	*B*	*C*	*D*	*E*	*F*
2.12	*Uploading content files to the platform was easy*	*4*	*4*	*6*	*3*	*6*	*6*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know						
2.13	*I would rather send content files by email than upload them to the platform*	*5*	*2*	*2*	*4*	*1*	*4*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know						

The answers given by Respondent A are contradictory. The respondent feels that uploading content files to the platform was quite easy, but when asked if they would rather send content files by email, the respondent selected 5 “Strongly agree”. Also respondents D and F preferred sending content files by email, whereas respondents B, C, and E preferred uploading files to the platform. Because of the “Don’t know” answers given by respondents C, E, and F to the question 2.12, it is not clear that their answers would have remained the same if they had tested content file uploading in the platform.

As presumed before, the respondents A and D might not be very familiar with using IT in their work, and this can be the reason why they prefer using email rather than the platform. They did, however, give quite positive answers to question 2.12. The respondents B, C, and E might be more technically oriented (as seen already before), and prefer using the platform.

As a conclusion, uploading content files is quite easy, at least easier than uploading metadata excel sheets. However, it is not as easy as updating metadata by hand. This suggests that some improvements should be done for the content file uploading functionality.

Because only few answers were received to the content management questions, it is not clear whether sending content files by email is in fact preferred or not. Furthermore, because those respondents who preferred using email still reported that uploading content files to the platform was not difficult, it is not clear whether improving the uploading functionality would make these respondents change their preference. The reason why these respondents preferred the email is not clear either.

Improvements to the platform

In the open questions respondents were asked how the Admin Tool could be improved and made easier to use, and what requirements the platform should fulfill in the future. Those respondents that are not that familiar with technology gave suggestions that would enhance the usability of the platform. Especially adding guidance and instructions was considered important.

> "In Finnish, instructions e.g. as a separate link, platform only for e-books [not for articles], mandatory [metadata] fields must be marked"

It was interesting that a Finnish translation was suggested. It implies that the Finnish book industry has not developed as quickly as other industries have, and that they are not that dynamic or open to change.

Enhancing the structure and navigation was also mentioned more than once. The reason why the platform was considered to be unclear or complicated was the fact that there were many functionalities and menus that were not used, and this was confusing to many test users.

> *"Layout could be clearer, although it was a demo version."*

> *"The users should be offered only those menus that they have a right to use. Too much surfing makes the platform complicated. "*

> *"Hiding the unnecessary sections of the Admin Tool."*

There was also a suggestion from the IT perspective. The platform would be more useful and easier to use if it would be integrated more tightly to Kirjavälitys' existing systems and services.

> *"By combining [the MPS platform] to Kirjavälitys' existing services, i.e. having some functionalities in the Kirjavälitys platform and other in the MPS platform."*

Summary

Regarding Admin Tool general usability, the most important improvement areas were structure and navigation, and platform communication of success and failure. Based on the open questions the structure and navigation could be improved by disabling or hiding those functionalities and menus that are not in use. The communication could be improved by adding more information and instructions that would be visible to users at the time when performing the tasks. In addition, also more extensive instruction documentation is needed. Regarding the comfort of use and usability of the platform many respondents felt that translating the platform into Finnish was important.

Most problems were encountered in the metadata management functionalities. Uploading metadata in an excel sheet was considered to be difficult but preferred over manual input of metadata fields. Thus, improving the uploading functionality is necessary. In the open questions the respondents suggested that this functionality could be improved by defining the metadata fields more precisely, especially marking which fields are mandatory. In addition, more extensive instructions regarding the sheet were considered to be valuable. This might also increase the comfort of use and usability of Admin Tool. Another possibility to make metadata uploading easier would be to manage the metadata in a separate product management system and integrate the data automatically to the Admin Tool platform.

Uploading content files was considered to be adequate or quite easy, thus some improvements should be done. However, it is not easy to specify those improvement areas as there were only few answers to those questions and these respondents didn't explain their answers in more detail. Because some respondents preferred sending content files by email (although stating that uploading them to the platform was not difficult), it might be necessary to communicate the benefits of using the platform.

It was also discovered that by integrating the whole e-book platform tightly to Kirjavälitys' existing systems and services, the platform would become even more valuable by providing a more seamless service interface to Kirjavälitys' customers.

7.1.3 Questions of Admin Tool for Kirjavälitys personnel role

Reporting

Table 9. *Admin Tool question of reporting*

Questions		*Respondents*		
		B	*C*	*D*
2.17	*Retrieving and downloading reports from the platform was easy*	*4*	*4*	*2*

	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know

Admin Tool was also used for administrating publishers and gathering reports. There were three test users that tested Admin Tool in administrator role and their answers to the question 2.17 are listed in Table 9.

From the IT point of view (respondents B and C) the reports were quite easily collected from the platform. Respondent D selected answer option 2, “Disagree”. These answers are well in line with the previous questionnaire answers: the technically oriented people find the platform easier to use. However, as there were only three answers to this question it is difficult to make definite conclusions. As no one selected 5, it might be that gathering reports can be made easier. There were no mentions in the open questions or comments regarding the reporting, which is why defining the improvements would require further discussion with the test users.

Improvements to the platform

Also administrator test users were asked how Admin Tool could be improved and what requirements it should fulfil in the future. Some administrator tasks were difficult to do because of poor user error tolerance. It was reported that creating new publisher accounts was difficult and the user would easily make errors. However, the platform did not handle these situations as the user expected and the user had to start from the beginning. Another task that was difficult for test users was updating the existing user accounts. Test users felt that the platform should support adding new accounts better by making it more automatic. Now the user had to update every single account when creating a new publisher account.

> *”When creating a new publisher account, if there are several administrative user accounts that has to be able to manage this new publisher account it is very laborious to update all such accounts separately. When creating a new publisher account, all previous administrative user accounts should be automatically updated.”*

> *”The new publisher account should be automatically added to the rights of the existing administrative user accounts (now the user has to remember to do that by hand).”*

Also communication and guidance should be improved. Some respondents reported that in order to do a task, they had to discover a way to do it by first making many mistakes. Thus, there should be clear instructions and the terms and key words should be made easier to understand.

> *”Ease of use, instructions could be added to each task. The terms used [in the user interface] should be explained (e.g. it was difficult to understand the*

difference of a Publisher and a Member Publisher. Clearly expressing after each operation whether it was a success or not."

Summary

Based on the questionnaire answers the reporting functionality could be improved, but it is not clear what actions are needed. This would require further discussion with the test users.

In the Admin Tool there were problems regarding publisher account and administrative user account management. Test users encountered several problems especially when creating new publisher accounts and when updating existing administrative user accounts. Therefore, clear instructions and guidance is required, especially explaining the roles of publishers.

It was also discovered that the user account management should be made more automatic, so that every time a new publisher account was created, all existing administrative user accounts would be updated. In addition, the platform should tolerate user errors better thus making it easier to complete a task.

7.1.4 Questions of ContentStore web store

Usability

Answers to the ContentStore usability questions are listed in Table 10.

Table 10. *Answers to the questions of ContentStore usability*

Questions		*Respondents*							
		A	*B*	*C*	*D*	*E*	*F*	*G*	*H*
3.1	*The web store communicated of the success or failure when performing the tasks*	*2*	*2*	*4*	*4*	*4*	*2*	*4*	*4*
	1 = Never, 2 = Sometimes, 3 = In about half of the tasks, 4 = Mostly, 5 = Always, 6 = Don't know								
3.2	*Using the Dummy Retailer for performing the tasks was difficult*	*5*	*2*	*3*	*3*	*2*	*6*	*2*	*2*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know								

The majority of respondents reported that the communication of success or failure was quite good. However, no one selected 5, and three respondents selected 2, so there might be a place of improvement there.

When asking whether using the ContentStore was difficult, most respondents disagreed. However, two respondents selected 3 "Neither agree nor disagree" and Respondent A selected the option 5 "Strongly agree". This respondent has had differing opinions of the

platform compared to others. Thus, the extremity of this answer can be disregarded, still noting that improvements are needed to the ContentStore platform.

Buying and downloading

Table 11. *Answers to the questions of ContentStore buying procedure*

Questions		*Respondents*							
		A	*B*	*C*	*D*	*E*	*F*	*G*	*H*
3.3	*Searching product information in the web store was easy*	*4*	*2*	*4*	*5*	*4*	*4*	*5*	*5*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know								
3.4	*Previewing content in the web store was easy*	*4*	*4*	*5*	*5*	*4*	*3*	*5*	*5*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know								
3.5	*Buying a product in the web store was easy*	*1*	*4*	*5*	*2*	*5*	*5*	*4*	*5*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know								

Overall the answers to the questions of ContentStore buying procedure (Table 11) are quite positive, at least compared to the previous questions. Respondents C, E, F, G, and H selected primarily options 4 “Agree” and 5 “Strongly agree”. Some respondents rated buying a product as the easiest task, whereas one respondent felt that buying was not as easy as other tasks. However, the differences are minor.

Respondents A and D rated buying a product as the most difficult task, selecting options 1 “Strongly disagree” and 2 “Disagree”. For the questions 3.3 and 3.4 they selected options 4 “Agree” and 5 “Strongly agree”, which implies that they encountered some problems when buying products. Thus, the buying task should be made easier.

Respondents B and C reported that searching product information was the most difficult task. Although their opinions were not as extreme as those of respondents A and D, it still implies that the search functionality might need improvements.

Answers to the questions of ContentStore downloading procedure are listed in Table 12.

Table 12. *Answers to the questions of ContentStore downloading procedure*

Questions		*Respondents*							
		A	*B*	*C*	*D*	*E*	*F*	*G*	*H*
3.6	*Downloading a product to a computer was easy*	*3*	*4*	*5*	*5*	*5*	*5*	*5*	*5*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know								
3.7	*Downloading a product to an e-reader was easy*	*3*	*2*	*4*	*4*	*6*	*6*	*5*	*2*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know								

Almost all respondents reported that downloading a product to a computer was easy. The majority selected 5 “Strongly agree”. Respondent A reported somewhat more negatively which is in line with the previous questions.

In contrast, downloading a product to an e-reader is not quite easy, as several respondents selected 2 “Disagree” or 3 “Neither agree nor disagree”. Respondent G selected 5 “Strongly agree” but had written a comment “once you first learn it with Adobe Digital Editions”. This suggests that Respondent G had experienced some difficulty as well and it can be concluded that downloading a product to an e-reader is difficult for most users, at least in the beginning.

Improvements

In the open questions respondents were asked how the ContentStore web store could be improved and what requirements an e-book selling web store should fulfill in the future.

The respondents desired improvements to the user interface. Several respondents reported that the interface was unclear and complicated. There were also surprisingly many respondents who wanted the platform to be translated into Finnish.

> *”Making the layout clearer and if possible, translating it into Finnish.”*
>
> *”Stating more clearly where each functionality can be found. Instructions also in Finnish.”*
>
> *”Now the web store was very confusing both in usability and layout. ”*

The last response was given by Respondent A, which might explain the answer in question 3.3.

Buying a product was considered to be somewhat inconvenient because the process required many steps. Many respondents desired that the buying would be made faster, so that the user would have to use as few clicks as possible.

> *”I tested this only a bit, but the possibility to buy without having to put the item first in the Wishlist [would make it better]”*
>
> *”Easy, quick, and effortless to use, consumer should be able to get the book with as few clicks as possible.”*
>
> *”Making the purchasing easier and offering clear instructions, as few clicks as possible.”*

The first response has been given by Respondent D, which might explain the answer in question 3.3.

Another difficulty that respondents encountered was finding the shopping cart. Many reported that it was not always easy to find.

"Shopping cart must be easier to find."

"The web store sould be easy to use, the shopping cart easily "available" and during the purchasing process clear instructions should be given about the required information."

The metadata search functionalities were also found to be inadequate. Respondent C explained that it was not possible to do searches based on title name or format. Some respondents also felt that the metadata should me more comprehensive in order to contribute to the consumer's buying decision.

"Searching functionality should be improved, it was not possible to use search terms such as title, format, etc."

"Enough descriptive information of the content for assisting the user when making the purchase decision."

It was also stated that all available formats of a certain title should all be easily visible.

In addition to the shopping cart, also the bookshelf was difficult to find at times. The functionality was not adequate either. Especially categorizing and sorting titles was considered poor but important. One respondent explained that when the user has many titles in the Bookshelf it is not easy to find them because the platform offers no sorting functionalities. It should be possible to sort the list at least by author, title name, and purchase time. One respondent also reported that after a title was purchased and added to the user's Bookshelf, the product metadata was no longer available to be viewed. If the user wanted to view it, they would have to go to the web store e-book search and find the same title there.

When asking what are the most important things that need to be taken into account when selling e-books to consumers, the most frequently mentioned issues were the suitability of different formats to different devices and DRM. These issues were considered to be problematic for consumers and that they would require good, comprehensive, and clear instructions and guidance. These instructions should be available throughout the buying procedure and as a separate user guide. One respondent stated that it is vital to communicate to the consumers which e-readers support the Adobe DRM, thus determining which e-books can be used with such devices.

Summary

There were differing opinions on whether the ContentStore web store communicated of success or failure adequately. The majority thought the communication was quite adequate, but a few respondents implied there is a place of improvement there. No specific suggestions were made.

Some respondents reported that using the ContentStore web store was not easy. In the open questions they explained that the interface was unclear and complicated. It was not clear where the different user functionalities were. In addition, surprisingly many respondents wanted the platform to be translated into Finnish.

This buying procedure should be improved as well. Many respondents felt that buying a product was inconvenient because the process required many steps. It should be possible to buy an e-book as quickly and easily as possible. It was also difficult to find the shopping cart at times. This should be improved.

Searching product metadata was found to be inadequate and in need of improvement. It was not, for example, possible to do searches based on title name or format. Thus, more search terms are needed to provide the user with meaningful and effective search capabilities. Some respondents also felt that the metadata should be more comprehensive in order to contribute to the consumer's buying decision. Especially the different formats from the same title should be easily visible. The metadata was uploaded as test data so these metadata requirements are therefore not directly related to the platform requirements.

In addition to the shopping cart, also the bookshelf was difficult to find at times. The functionality was not adequate either. The most important improvement was the ability to categorize and sort titles in the bookshelf. Sorting should be possible at least by author, title name, and purchase time. It was also noted that after the purchase when the title is in bookshelf the metadata is no longer available to be viewed. This was considered something that should be corrected. Therefore, there should be a link from the bookshelf title to the corresponding metadata.

Downloading titles to a computer was considered quite easy. However, downloading titles into e-readers was difficult for most users, at least in the beginning. It was also difficult to understand different formats and DRM restrictions as well as the suitability of different kinds of content to different devices. Based on these it is clear that comprehensive instructions and guidance are vital and should be available to consumers throughout the buying procedure.

7.1.5 Questions of Kirjaväylä web store

Usability

Answers to the questions of Kirjaväylä usability are listed in Table 13.

Table 13. *Answers to the questions of Kirjaväylä usability*

Questions		*Respondents*				
		A	*B*	*C*	*D*	*G*
4.1	*The web store communicated of the success or failure when performing the tasks.*	*4*	*2*	*4*	*6*	*2*
	1 = Never, 2 = Sometimes, 3 = In about half of the tasks, 4 = Mostly, 5 = Always,					

	6 = Don't know					
4.2	*Using the Kirjaväylä web store for performing the tasks was difficult*	*3*	*2*	*2*	*6*	*2*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know					

The respondents had some differing opinions of the communication of success and failure. Half of the respondents said that the platform communicated mostly and half said that it communicated only sometimes. When asked about the difficulty in using Kirjaväylä, most respondents said it was not difficult. Respondent A selected the neutral option 3. Overall, Kirjaväylä was quite easy to use, but communication should be improved.

Buying and downloading

Answers to the questions of Kirjaväylä buying procedure are listed in Table 14, and answers to the questions of Kirjaväylä downloading procedure are listed in Table 15.

Table 14. *Answers to the questions of Kirjaväylä buying procedure*

Questions		*Respondents*				
		A	*B*	*C*	*D*	*G*
4.3	*Searching product information in the web store was easy*	*3*	*4*	*5*	*5*	*5*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know					
4.4	*Buying a product in the web store was easy*	*4*	*5*	*5*	*6*	*5*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know					

Kirjaväylä buying procedure was evaluated to be quite good. All respondents agreed that buying a product was easy. When asked about searching metadata, respondents A and B evaluated that it was not as easy as buying. Overall the answers were quite positive. The answers given by Respondent A were slightly more negative than those of others, which is in line with the previous answers.

Table 15. *Answers to the questions of Kirjaväylä downloading procedure*

Questions		*Respondents*				
		A	*B*	*C*	*D*	*G*
4.5	*Downloading a product to a computer was easy*	*3*	*5*	*5*	*6*	*5*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know					
4.6	*Downloading a product to an e-reader was easy*	*3*	*4*	*4*	*6*	*5*
	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know					

Downloading a product through Kirjaväylä was evaluated similarly as for ContentStore. Most of the respondents felt that downloading a product into a computer is easy and downloading a product to an e-reader is quite easy. Respondent A had a more negative opinion as others, selecting 3 “Neither agree nor disagree” for both questions.

In both Kirjaväylä and ContentStore downloading a product to a computer was rated easier. The product has to be downloaded to a computer first and only after that it can be transferred to an e-reader. Because of this, downloading to an e-reader requires more work. Especially for DRM protected content transferring e-books to an e-reader may be quite problematic as was discussed also earlier.

Other comments

In the open questions, there was discussion on the problems that selling e-books to book stores might cause. One respondent stated that because book stores sell e-books to end users in their physical stores delivering the download link by email does not seem reasonable. However, if the content is DRM protected, this is the only way to deliver the download link. It is not possible to download the e-book to the consumer's device in store. This is a problematic issue and will certainly cause difficulties when consumers want to buy e-books in a physical store.

Another problem is that if the book store has purchased the download link from Kirjaväylä, that link remains in their order history (and is not available to the end user). If the end user's device breaks down, they would like to download the title again, but might not be able to find the original download link. Therefore, the download links should be maintained in Kirjaväylä in the book store's order history with a linkage to the end user. This way the book store could discover the original link and send it to the end user when needed.

Summary

Kirjaväylä was considered to be quite easy to use, but communication should be improved. It was also stated that searching metadata was somewhat more difficult than buying, which suggest that the metadata search needs to be improved. Most of the respondents felt that downloading a product into a computer is easy and downloading a product to an e-reader is quite easy. These results are in line with the ContentStore web store evaluations. This makes sense, as the technical implementation of these features is equivalent.

The integration between Kirjaväylä and MPS e-fulfilment service was build for testing the e-fulfilment service and not end user functionalities. Therefore, the end user communication and functionalities were simple which may have been the reason for poor scores. The specific requirements for improvement must be collected separately after the whole service to book stores has been implemented. The requirements gathered for ContentStore can be used as guidance also for Kirjaväylä.

Some challenges regarding Kirjaväylä were also discovered. End users might find it difficult to understand why the e-book download link is sent by email even though they are purchasing the e-book in a physical store. Therefore, end user guidance and instructions are important.

It was also stated that the download links should be saved into the book store's order history in Kirjaväylä with a linkage to the end user. This way in case the end user loses their copy the book store can resend it from Kirjaväylä.

7.1.6 General questions

Preview and pre-listen functionalities

Answers to the questions of preview and pre-listen functionalities are listed in Table 16.

Table 16. *Answers to the general questions*

Questions		*Respondents*								
		A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*
5.1	*How necessary do you consider is the possibility to preview the content before it is published?*	*4*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
	1 = Unnecessary, 2 = Quite unnecessary, 3 = Not unnecessary nor necessary, 4 = Quite necessary, 5 = Very necessary, 6 = Don't know									
5.2	*How necessary do you consider is the possibility to preview/prelisten the content before purchasing?*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
	1 = Unnecessary, 2 = Quite unnecessary, 3 = Not unnecessary nor necessary, 4 = Quite necessary, 5 = Very necessary, 6 = Don't know									
5.3	*If an audio book has been divided into several files, which downloading option would be more pleasant for the consumer?*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
	1 = Downloadin all files in one zip file and unzipping it using a computer, 2 = Download each file separately, 3 = Don't know									

All respondents agreed that previewing and pre-listening are extremely important functionalities for publishers before publishing content as well as for consumers before making a purchase. It can be concluded that these are vital functionalities and must be working well.

When asked about the different possibilities to offer audio books to consumers, all nine respondents preferred the downloading of all files as a zip file.

Challenges for consumers

Respondents were quite unanimous when asked what challenges the new e-book market poses to consumers. Understanding different formats was the most important issue. Respondents said that consumers should be provided clear instructions and guidance on different formats and their suitability to different devices. Also the implications of DRM protection should be clearly communicated to consumers. It affects many things, such as which devices can be used as well as what the user can do with the content. It is important that consumers understand all aspects before making a purchase.

"Content protection (DRM), which format suits which e-readers."

"How consumers get the e-books into their e-readers."

"Downloading e-book files into e-readers, understanding different formats (which formats are suited to which e-readers)."

It was also suggested that the platform should focus on the most common formats, because the majority of e-readers support them. Two respondents also stated that Apple devices are very popular in Finnish markets and therefore the content should be available to those devices also.

"The device base is not currently stabilized, and there are no established forma for e-books. The file format should be as versatile as possible, so that is would be usable also with Apple devices. There is a lot of discussion about e-books in the marker, but no party has made any decisions on device standards and file formats."

Challenges for publishers

For publishers selecting the appropriate protection and possibly determining the suitable DRM parameters were considered challenging. The protection technology affects the end user rights and therefore they should not be too restrictive. On the other hand, low protection might enable piracy.

"Selecting the content protection style. This decision will affect the consumers a great deal."

"Content protection: unprotected e-books are easy to use, but enhance piracy."

Another challenge is selecting the formats that will be produced from the e-book titles and determining the appropriate prices for e-books.

Two respondents stated that modifying the author-publisher contracts for e-book publishing and delivery is challenging, especially now that the markets have not yet started. One problematic issue is the division of revenue. One respondent also stated that as Finnish publishers are not very dynamic or innovative they might prefer to wait until the markets have stabilized more. This might result in a situation where the low supply of Finnish literature enables international content producers to take over the market and define the market rules.

Challenges for Kirjavälitys

When it comes to Kirjavälitys, many respondents stated that defining and building a functional business model is the biggest challenge. They should be able to serve all their customers and still be flexible enough to adapt to possible changes that the new business might require.

"Defining a profitable business model so that the service concepts remain flexible and meet the needs of customers."

"In order to make e-book distribution an economical business model to Kirjavälitys, the platform should be launched quickly. The platform should serve all customer groups easily and quickly. Uploading, delivering, and buying content should be as simple as possible. In other words, Kirjavälitys should have simple platforms for publishers, book stores, web stores, libraries, and schools."

One respondent felt that in order to stay dynamic and be able to adapt to change KV should manage their web services and platform on their own. This would allow them to make modifications to the platform without needing to involve a third party vendor.

Serving libraries was considered to be especially challenging. This might be because the role of libraries for delivering e-books is still somewhat unclear due to the copyright issues (see Chapter 3.2). One respondent stated that Kirjavälitys should ensure that the product information and metadata database functions properly, thus making the product information service reliable and comprehensive.

It was also mentioned that KV should offer their customers something that others cannot. As an example a free content bank was suggested.

In order to build a seamless service to customers, KV should integrate the e-book delivery service together with print book delivery service, so that print books and e-books could be ordered simultaneously.

7.2 Focus group interview

The focus group interview was conducted as defined in Chapter 6.1. Although some participated very actively, there were also those participants who did not take (or took only little) part in the discussion. The most likely reason is that those participants did not have much time to do the testing. The same can be concluded from the questionnaire answers. The issues, comments and recommendations are discussed below.

7.2.1 The MPS Admin Tool platform

The navigation and structure was considered to be illogical at times and therefore difficult to use. It was not always clear where certain tasks should be conducted. The layout was also complicated because the platform contained many functionalities and menus that were not used.

The functionalities for administrators were a bit simple. When creating new publisher accounts all previous administrator user accounts needed to be updated which required more work and was prone to errors. It was also discussed that in the future where there would be tens (or even hundreds) of publisher account and tens of administrator users, this would not work. It was suggested that the platform could be modified so that every time a new publisher account was created all previous administrator accounts would get updated automatically.

A few bugs and error messages were encountered especially when uploading metadata and content files. There were also some error messages that appeared but did not have to be taken into account. This was very confusing to the test users. Test users also felt that the error messages would have to improve so that the user can easily understand how to recover from them. This might explain why some respondents felt that the platform communication of success and failure was not adequate or correct at times.

From the publisher perspective, test users felt that the status of the products should be made more clear and transparent. It should be easy to see if a content file for a specific title has bee uploaded to the platform or not, if the product is in processing or if it is already for sale. This might be the reason why some of the respondents gave somewhat negative answers to the content uploading question 2.12.

Defining preview rights to end users was also difficult and restricted. The basic functionality did not allow publishers to define the exact pages that were available for preview. It was only possible to define how many pages the user could see and the page where the preview started. It was also discovered that the preview restrictions could be bypassed by using the search inside function with a common word. The preview results page listed all pages in the e-book that had the search word in it, and also allowed access to that page.

7.2.2 Consumer and DRM related issues

Consumers must be able to manage their bookshelves in the web stores. Sorting the list with different parameters is necessary in order to find the titles, especially when there are over ten or twenty titles in the list.

The different e-book formats must be clearly represented and information of the supporting e-readers must be available to consumers in the web stores. This is extremely important because if the consumers are unsecure they will not purchase e-books.

Consumers want to be able to create categories to their e-readers (especially if storing hundreds of books). This kind of title management is often provided by the e-book reading software, but it might not allow the different categories to be used in e-reader. The interviewees noticed that Sony Library software does enable categorizing e-books and that those categories are available also in Sony eReader device. However, using the

Sony Library software was possible only for unprotected content and did not work with Adobe DRM protected content.

Previewing abilities are extremely important when making the purchase decision. For audio books the same can be achieved by offering a pre-listen functionality. This was considered to be even more important for audio books as the reader (or the style of reading) matters a great deal. It was also discussed that at least the table of contents should be available for preview. This is because it contains a lot of information of the whole title, and thereby affects the consumer purchase decision.

The test users found that transferring e-books into e-readers is not always straightforward or easy (especially for Sony eReader). Therefore, consumers should be offered clear information of the possible alternatives as well as guidance on how to overcome the most common problems. User guidance should be offered in all web stores (and other places) where e-books or e-readers are sold.

7.2.3 The future of e-book industry

Due to the different e-book standards, formats and DRM restrictions available it is extremely important to create a simple, common practice for the Finnish markets. This would encourage publishers to start releasing their e-book titles as the available formats would be defined. If all Finnish publishers would use common DRM and content protection parameters, it would make it easier for the consumers to select those e-books they want to buy without having to do extensive comparing of different publishers' content.

7.3 Reliability of results

As the test user base was quite small it is difficult to draw reliable conclusions. As all test users did not test all parts of the platform the result base was even lower for some questions. From the ten test users nine answered to the questionnaire and six participated in the interview. Because the base was so small it would have been important to get answers from everyone. However, if the reason why the one test user did not answer to the questionnaire was that they did not have time to do the testing, then receiving those answers would not have made any difference.

It might have been valuable to get more test users to test the platform, including Kirjavälitys' customers like publishers and resellers. Also having different kinds of people from outside of Kirjavälitys to test the consumer parts of the platform would have been valuable.

Although there were only a few test users, they were extremely suitable as those people are the ones working with the e-book service in Kirjavälitys. Especially the people working with metadata and IT will be using the platform in their work. The sales people

were involved because they have the insight on publisher demands and were able to test the platform from the publisher perspective.

Overall, it can be concluded that the answers and thereby the results received from the questionnaire and interview analysis are quite accurate as the test users were in fact those people who will be using the platform, or selling the platform as a service to customers.

In some questions, the results were somewhat vague. In question 2.12 it was found that uploading content files needs improvements. However, it was not possible to specify those improvement areas as there were only few answers to those questions and these respondents did not explain their answers in more detail.

In question 2.17 the respondents gave differing opinions and because there were only three answers altogether, it was impossible to draw any conclusions. No one explained their view in more detail or commented the issue in the open questions or comment sections. Therefore, it was not possible to define the improvements that should be made. It would require further discussion with the test users.

Regarding the Kirjaväylä questions it was not meaningful to ask the same questions as were asked of the ContentStore web store. The reason was that in Kirjaväylä only the integration to the e-fulfilment service was implemented. The main objective was to get the download link delivery to work properly. Only after implementing the Kirjaväylä customer functionality, it is meaningful to study the functionality with user testing.

7.4 Suggestions and modifications

7.4.1 Admin Tool

It was discovered that the Admin Tool structure and navigation, usability as well as communication should be improved. It is therefore recommended that the structure would be simplified by disabling or hiding those functionalities and menus that are not in use. Each user role (publisher, administrative user, etc.) should have only those functions and menus available that they are allowed to use. To make the platform easier to use more guidance and instructions should be provided. In addition to general user guides, also platform communication should be improved. Instructions should be visible to the users when performing the tasks. For example, tooltips could be used. In addition, translating the platform into Finnish would improve the usability and comfort of use.

There are also requirements regarding metadata management. Excel sheet uploading functionality should be improved by defining the metadata fields precisely, especially marking the mandatory fields. In addition, more extensive instructions regarding the excel sheet should be provided to the users. Another option to enhance the metadata

management would be to deploy a separate product management system and integrate the data automatically to the Admin Tool platform. This would eliminate the need to use an excel sheet.

Although content file upload was evaluated to be adequate, a few modifications were elicited. The content status should be made more transparent so that it would be easier to see the state in which the content file is; whether it has been uploaded, processed, or already live. This could be done by re-defining the old statuses and possibly defining some new statuses. In the title listing page in Admin Tool, all titles and the status of the corresponding content files should be visible. As it might be necessary to make also other modifications (that were not discovered here) it might be valuable to discuss this further with the test users.

For the administrative users improving the reporting functionality is important. It was not possible to elicit the specific requirements or modifications, and therefore the matter should be discussed further with the test users. Publisher account management functionality should be improved by updating the existing administrative user accounts every time a new publisher account is created. In addition, clear instructions and guidance should be provided to users, especially explaining the different roles of publishers.

To make the platform more useful it should be integrated to Kirjavälitys' existing systems and services. Thereby Kirjavälitys would be able to provide a more seamless service interface to their customers.

7.4.2 ContentStore web store

MPS ContentStore web store was used to pilot the consumer part of the e-book delivery process. Because in the Finnish model all consumer facing web stores will be those of the existing Finnish book stores (and not MPS web store), there were no requirements for the ContentStore web store to meet, only to give a tool to discover the future requirements for Finnish web stores. The modification requirements to the ContentStore are discussed below. Based on these the functional requirements for web stores are listed in Chapter 7.5.

The ContentStore web store interface was found to be unclear and confusing. Therefore it is recommended that the interface would be restructured to make it more clear and intuitive. It was difficult to locate the different functionalities. As already defined in the previous chapter, the platform should be translated into Finnish in order to improve the usability and comfort of use.

The searching function was not adequate, as it did not offer many search terms. It should be possible to search e-book titles at least by author, title name, format, price, and protection. It would be also beneficial if the user could select their e-reader from a list and get all titles that can be read on that specific device. In the metadata of a title it

should also be visible which other formats of that same title are available. After all, they each represent the same literal piece and it is not sensible to handle them as separate products.

The shopping cart and bookshelf were difficult to locate at times, which made the whole buying process somewhat inconvenient. These functionalities should be available to users at all times and the platform should provide a shortcut to these in every page. The buying process should be shortened so that it would require as few clicks as possible for the user to purchase an e-book. Regarding the bookshelf a useful sorting functionality is required. The user should be able to sort the list at least by author, title name, and the time of purchase. In addition to the download links, the bookshelf should also provide the user the possibility to view the title metadata. This could be done by implementing a link from the title name in the bookshelf and have it point to the metadata of that title in the web store catalog.

Previewing textual content was provided by the ContentStore and functioned well. However, no pre-listening feature was available to audio books. Based on the questionnaire and interview analysis it is extremely vital and should be implemented. Regarding the downloading of audio books, it is suggested that all files are offered as a single zip file download.

7.4.3 Metadata and content requirements

Comprehensive metadata and product information is important because they can determine whether a consumer purchases an e-book or not. It also affects the search functionality and the result correctness. Therefore, the extensiveness and correctness of metadata is vital. As mentioned in the previous chapter, it is important for the user to be able to see which different formats are available for a particular title. This is something that needs to be taken into account when determining the metadata fields to be used.

Common practises are needed to enable a quick and smooth e-book launch in Finland. Therefore, the e-book platform should focus on supporting only the most common formats and content protection techniques. Regarding the formats, it is clear that PDF and ePub are the most commonly used and supported. The Apple iPad supports ePub, which makes it clear that ePub should be supported. For audio books the most commonly used format is mp3.

Common practises are needed also when selecting the content protection techniques and possible DRM options. Kirjavälitys should discuss these together with publishers and try to determine the appropriate parameters to ensure usability of content as well as to discourage piracy. Determining the appropriate prices for e-books is also something that should be commonly discussed.

7.4.4 Consumer

The most significant challenge for consumers is probably to understand different formats and DRM restrictions. It is also laborious to discover which formats are supported in which devices. Therefore, it is highly important to offer consumers clear instructions and guidance on the possible implications of DRM protection and the supporting devices. As many users might buy the device first, all book stores that sell e-readers must provide enough information to the users so that they can make a suitable decision. After all, the device determines which e-books the user can read with it. As suggested in Chapter 7.4.2 it might be highly valuable to offer consumers the possibility to select their e-reader from a list and see which titles are available to that specific e-reader.

There are some additional challenges to consumers when buying DRM protected e-books from a physical book store. It is not possible to download the title to the user's device in the store, but the user has to do it with their own Adobe Digital Editions software. The download link has to be sent to the user's email address. As the book store cannot offer a bookshelf functionality to users, they should preserve the download link and provide it to the user in case the user's device is broken.

7.4.5 Kirjaväylä

The integration between Kirjaväylä and MPS e-fulfilment service was build for testing the e-fulfilment service and not end user functionalities. Therefore, the end user communication and functionalities were simple which may have been the reason for poor scores. The specific requirements for improvement must be collected separately after the whole service to book stores has been implemented. The requirements gathered for ContentStore can be used as guidance also for Kirjaväylä.

As suggested already in Chapter 7.1.5 Kirjaväylä should save the download links in the book store's order history together with end user information, so that the original download link can be discovered.

7.4.6 Actions for publisher and Kirjavälitys

Publisher

The Finnish publishers are suggested to release their e-book titles as soon as possible. This would enable the Finnish e-book market to launch and acquire experience of the industry as well as test the possible new business models. After this it is easier to determine the common practises regarding the formats, DRM, and prices. In case international players enter the Finnish markets they might start to create the market rules and it might create difficulties for Finnish publishers for example by introducing lower prices.

Kirjavälitys

Kirjavälitys needs to define appropriate business models and services for all their customers. Therefore, it is suggested that they keep the e-book platform as simple as possible supporting only the common industry practices. This way they can serve the whole book industry effectively and be flexible at the same time. After gaining experience in the market, it is easier to add functionalities one by one when necessary and adapt to other kinds of changes as well.

As the Finnish e-book market is launching as we speak, taking the pilot platform into production is justified, especially if the vendor supports the required modifications. The platform should also be integrated together with Kirjavälitys' existing systems to provide a seamless and comprehensive service to Kirjavälitys' customers.

As extensive, correct, and centralized product metadata is part of the Kirjavälitys' services, also e-book metadata should be added to the service. This would be an advantage that only Kirjavälitys could offer. In order to do this, new e-book metadata fields must be defined. If this new e-book metadata service is deployed a separate product management system is needed. Publishers should be able to provide e-book metadata in a similar way than for print books. The product metadata can then be automatically integrated to the MPS platform by creating a more seamless and simple service to publishers.

7.5 Functional requirements for the future

Based on the previous chapter the use cases defined in Chapter 5.1 are evaluated and adjusted to better respond to the e-book market situation in Finland. New use cases are listed in Table 17. Those use cases that remained in the list have the same id as before. The wording has been specified. New use cases have a different kind of id so that they can be separated more clearly.

As discussed in Chapter 5.3.5, Adobe DRM is the suggested DRM technology for the Finnish e-book industry, and therefore it has been clarified in the use cases as well.

Table 17. *Adjusted use cases for the Finnish e-book platform*

Use cases		
Role	**Id**	**Name**
Publisher	P1	Upload e-book files (PDF, ePub) and audio book files (mp3)
	NP1	View title status (uploaded, in preview, live)
	P2	Add and edit basic product metadata
	P3	Add and manage product related material
	For e-books	

	NP2	Define protection/DRM options, and exact preview pages
	P4	Preview before publishing
	For audio books	
	NP3	Provide pre-listen file
	NP4	Pre-listen before publishing
Aggregator	A1	Deliver metadata from several publisher to several resellers
	A2	Deliver content from several publishers to several resellers
Consumer	C1	Search products from catalog (author, title, format, protection type, e-reader)
	C2	View product information (basic metadata, available formats, protection type)
	C4	Order digital product (e-book or audio book)
	Bookshelf	
	NC1	Sort titles in bookshelf (author, title name, time of purchase)
	NC2	Find download links of purchased titles in bookshelf
	NC3	View metadata of purchased titles in bookshelf
	For e-books	
	C3	Preview before purchase
	C5	Download e-book to computer (unprotected PDF, Adobe DRM protected DRM, watermarked PDF, unprotected ePub, Adobe DRM protected ePub, watermarked ePub)
	C6	Download e-book to e-reader (unprotected PDF, Adobe DRM protected DRM, watermarked PDF, unprotected ePub, Adobe DRM protected ePub, watermarked ePub)
	For audio books	
	NC4	Pre-listen before purchase
	NC5	Download audio book to computer (mp3 files as one zip download)
	NC6	Download audio book to device (mp3 files as one zip download)

8 DISCUSSION

8.1 Answers to research questions

8.1.1 Challenges and opportunities of e-books

Based on the e-book SWOT analysis presented in Chapter 3.4 the challenges and opportunities for e-books can be summarized as follows.

Challenges

As the e-reading devices have not developed enough, they cannot compete with paper when it comes to usability, convenience, and comfort of use. This might affect the adoption of e-reading devices and thereby the adoption of e-books. However, such devices as the Apple iPad might even drive the e-book sales. Therefore, it is important to offer consumers new and innovative devices and content that they find valuable and are willing to pay for. The most valuable content might be such that combines multimedia and text, and offers interactive functions, e.g. instant sharing and messaging, thus further enhancing the value of that content.

The large number of different and incompatible formats of e-books also creates difficulties to consumers. Before buying any devices or content, they will have to make the selection of what e-book platform to use. As this decision restricts the possible places to purchase e-books, and the industry standards have still not been established, consumers might decide to wait until adopting e-books and e-readers.

Content owners are facing challenges as well. The current content protection technologies are restricting the use of content, which affects the usability of the content, thereby lowering the consumer demand. At the same time, content owners are worried that giving up the content protection would facilitate piracy, thus threatening their revenues. The most challenging task for content owners currently is to find a balance between content protection and usability. However, as the current copyright law cannot address the fair uses of digital content the future of e-book industry requires that content owners, content sellers, and consumers define the industry rules together. After that, appropriate content protection technologies can be developed to implement these rules.

Thus, in order to create a stable market for e-books it is important to define common industry practices and standards to ensure interoperability and further enhance the value to consumers. The most important factor in usability is DRM, which is currently used to restrict the usage of content. Therefore, it is crucial to define the copyright issues for digital works so that it would be possible to create technology to support the legal use of content thus making the content more valuable to users. This is also vital for ensuring library business model in the future.

Opportunities

The digital medium offers several advantages, such as increased availability and access through the Internet and the possibility to update content automatically. These advantages offer several opportunities for content producers. For example, they can produce more value to existing content such as automatically updating dictionaries and encyclopedias as well as offering personalized news and other content.

As digital content can combine different media types, existing genres can be enhances by adding additional content and combining text, multimedia, and even print. For example, travel guides can combine a paperback print book with an extensive online site offering videos, maps, and discussion of the destination.

Also new genres and content types may be developed. For example, short stories may become popular. People might read them when they are mobile and have a few minutes to spare. This kind of new genre might even encourage reading and writing among people who normally do not have time to read. This would of course require a new business model and a marketplace, where people can sell their content and buy content from others. This creates opportunities for device manufacturers as they can bundle their devices with such marketplace offering and thereby drive the sales of their devices.

Compared to print books, e-books also offer enhanced accessibility by offering text-to-speech functionality and customization of fonts for the visually impaired, thus allowing them to access the content. There are also a large number of out-of-print books that are currently not available to public. The reason is that the demand for these titles is too low to justify making reprints. The digital medium offers the possibility to digitize them thus making them available to the public again. Although digitizing might be costly there is no cost associated in reproducing new copies of them.

Publishers and other content owners are quite concerned of the new digital medium and are speculating what that might do to their established business models. The digital medium enables piracy which has become one of the biggest concerns of publishers. However, the peer-to-peer networks that are currently used to distribute illegal copies of digital content can also be utilized by the content owners. They can use the large network base to enhance the distribution of legal copies, thus creating more demand and possibly gaining more revenues.

The digital medium offers also the possibility to create versions of the same content. These versions can be priced differently thus creating a wider selection of the same content. This kind of versioning strategy can help content owners to extract more revenue from the market as more users can find an appropriate version for them.

8.1.2 E-book market situation in Finland

In addition to the traditional author-publisher-wholesaler-reseller chain there are also new channels that can be used by some authors, e.g. new authors and those that are not able to get a publisher for their work. These authors can use self-publishing model where they can control the prices and sales terms. These self-publishing service providers offer more appealing revenue sharing than traditional publishers but leave the publishing, marketing, and demand generation tasks to the author. These new actors that are entering the markets are typically trying to take over the publisher and wholesaler and reseller functions. For example Scribd and Smashwords offer publishing services and tools to authors and deliver the content straight to consumers through their web store. Elisa might also take over the wholesaler and reseller functions by offering publishers a direct channel to reach the consumers.

There are a few e-book web stores in the market already, with the widest selection of e-books offered by Ellibs. The number of Finnish titles is quite low as the Finnish publishers have not been eager to release their content. The reason is the lack of common practices and standards and probably also the fact that the publishers have not yet settled the e-book contracts with authors. A few e-book titles are also available in public libraries through their HelMet service.

The sales of e-books in Finland are quite low, about € 130 000. Although the number of published titles has increased during the last years the sales have not. So the whole industry is at a halt. However, it has been reported that also the Finnish e-book markets would start in autumn 2010. The first players have already taken action. Akateeminen Kirjakauppa launched their e-book and e-reader web store in September 2010. The introduction of the Apple iPad to Finnish markets might also create more demand and sales for e-books.

8.1.3 Alternatives for implementing a digital distribution platform

Different alternatives for implementing the e-book platform for Finnish markets are custom development or using a SaaS (Software as a Service) vendor. One advantage of the custom development approach is the ability to implement the customized functionalities and requirements accurately. Another advantage is that the content and data is managed in-house, thus posing no vendor risk. There are drawbacks, however. The software has to be implemented and continually developed in-house. The hardware must be acquired and maintained as well. These in-house activities require large upfront investments as well as produce large operational costs, and take time.

In the SaaS model the software and hardware are developed and maintained by the vendor. The customer can use the software remotely for a service fee. This requires no large investments and the operational costs are also quite low compared to the custom development situation. It is also possible to deploy the service quite quickly. Of course,

it is not always possible to find a vendor that would offer all the necessary functions. In such situations some requirements have to be sacrificed or the support for them has to be discussed with the vendor. Some SaaS providers do custom development to fix minor functional gaps.

Because of the fact that the Finnish e-book market has already started it is suggested that the SaaS model would be deployed as it offers a quick launch. The costs associated with SaaS are significantly lower than those of custom development. In addition, as the e-book market is still young it is not justifiable to make large investments before the business models have established. The SaaS offers a way to do an inexpensive trial and to gain experience of the markets.

8.1.4 Functional requirements for the future platform

In addition to the research questions, the objective was to discover the functional requirements for e-book platform in Finnish markets. These functional requirements were determined by defining use cases that the platform should support. The preliminary use cases were adjusted based on the empirical study and the functional requirements for future are as follows.

The platform must support PDF, ePub, and mp3 formats as well as dynamic watermarking and Adobe DRM. It must be possible to have several publishers and resellers using the same platform so that content and metadata can be centrally distributed. Each publisher should also have their own account for the content and metadata management tool.

The content and metadata management tool must allow publishers to manage their metadata and content. They should be able to upload metadata and the corresponding e-book and audio book files in PDF, ePub, and mp3 formats. In addition to defining metadata the publisher must be able to define the content protection mechanisms and possibly the related DRM restrictions as well as the specific pages that are available for preview.

The title status should be visible, so that the publisher can see whether the content for a certain format has been uploaded, is in previewing, or is live. Before publishing a title, the publisher should be able to preview or pre-listen it to make sure the layout or sound is satisfactory.

For aggregator the platform should provide ways to manage different publisher accounts as well as have access to all metadata and content on the platform.

The web store that sells e-books to consumers need to offer effective searching capabilities, as well as preview and pre-listed functionalities. The consumer should be able to view title metadata and see the available formats and content protection in use.

The purchasing procedure should be as easy and intuitive as possible and allow the user to purchase e-books and audio books in all the supported formats. After purchase, the download links should be added to the user's bookshelf where they can be downloaded. User must be able to download the titles to a computer and to an e-reader or mp3 player. The bookshelf should offer sorting capabilities so that the user can easily find certain titles. At least sorting by author, title name, and the time of purchase should be provided. In addition to the download links, the bookshelf should also offer the user all the same metadata that was available in the web store site.

8.2 Evaluation and future research

In the literature study of this thesis, the challenges and opportunities for e-books were collected and the e-book market situation was evaluated. The study offers insight to the different issues affecting the future of e-books in Finnish markets.

In the empirical part, the objective was to evaluate the pilot platform and gather the shortcomings and improvement areas for the future. These results can be used by Kirjavälitys in case the pilot platform is deployed to production phase. Based on the literature study and the pilot results the empirical part also collected the functional requirements for the Finnish e-book platform that can be valuable for all parties in the e-book market.

Because of the small number of test users, the results obtained were not as comprehensive as would have been desired. It would have been valuable to include also real publishers and consumers in the test user base. Because the pilot platform was not customized for the purpose of this research or for the Finnish market, the suitability experienced by test users was quite poor, thus resulting in several improvement requirements. It would have been valuable to conduct the pilot in two steps, so that the platform would have been customized at the end of the first test round. Having the users test the platform again after these improvements might have produced results that are more accurate.

9 CONCLUSIONS

In the literature part of this thesis, the e-book technologies and markets were studied. The new medium and the related technologies affect the future of e-books. There are many challenges for different actors in the industry that need to be addressed in order to create a successful e-book market in Finland.

The new digital medium offers new possibilities for content owners, content distributors as well as for consumers. The markets for e-books are only starting in Finland and it is quite unclear where the industry is going, thus making it difficult to define the right approaches just yet. However, all actors that strive to be a part of the e-book markets have to make their moves as waiting until the market takes off might prove to be a mistake especially if other actors take over.

Several issues hinder the adoption of e-books. The most relevant challenge for content owners and consumers is the lack of appropriate content protection standards. Consumers want content they can use freely and feel that they should have the same rights to use digital content as they have in the print world. Content and copyright owners want to protect their content from digital piracy and therefore, want to use technological content protection measures. These technologies deteriorate the usability of the content, thereby degrading the value of that content to consumers. Consequently, users feel that this digital content should therefore be priced lower than the printed content as it does not offer the same usage rights.

Thus, the needs of content owners and users do not meet and the industry must strive to develop new rules for digital content. The digital copyright law needs to be revised to better address these issues. Content owners need to work together with device manufacturers, technology vendors, and consumers to implement such content protection technologies that allow the fair use of content. At the end, the users are the ones determining the success of the e-book markets and it is vital to allow them to use digital content the way they want.

As the current content protection technologies do not implement any copyright laws, it is difficult for content owners to offer users the value and usability they require and still protect their content against illegal distribution. Until the digital copyright issues are resolved, the most challenging task for content owners is finding the right balance between content protection and usability.

Another difficulty for consumers is the dispersed file format and device standard base. These formats and standards are incompatible and restrict the users from purchasing e-books and e-reader devices where they want. This issue is also such that cannot be resolved by any one party, but require the whole industry to work together. Therefore, the Finnish e-book industry should strive to define common practices for the future e-book market. As Finland is a quite small market having a natural limit for the potential market size, it is suggested that the Finnish e-book industry should aim to use open file

formats and content protection standards, thus ensuring the compatibility between different devices and content. It might not be valuable for any one to restrict the users from using some devices or content.

For the actors in the traditional book industry, the new digital medium poses some challenges. New actors are entering the markets and taking over parts of the book value chain. Self-publishing service providers can take over the traditional publisher and wholesaler roles by offering authors self-publishing tools and a ready delivery channel to consumers. The traditional actors need to rethink their business models and align them accordingly in order to secure their business.

Publisher's central role between production and distribution in the print world is not self-evident in the world of e-books. Publishers need to discover new ways to create value to authors that the self-publishing service providers cannot offer. They will have to strengthen their role in those tasks only a publisher can do, such as cross-media publishing, marketing and branding, and demand generation.

Wholesalers will have to rethink their value to their customers also as the warehousing and delivering e-books is very different than for printed books. For example, format conversions and content protection are new functions in the delivery process, and those functions can be offered by the wholesaler. Another advantage for wholesalers is the extensive information of available titles and the existing relationships to several publishers and resellers.

Physical book stores have traditionally been closest to the consumer and they still have the existing customer base. However, when selling e-books the natural channel is the Internet, not a physical book store. This poses great challenges to book stores as they need to discover new ways to offer valuable service to consumers that Internet web stores cannot offer. Of course, the printed book is still going to have a strong position in the book markets for a long time, so physical book stores are not threatened just yet. However, they should already start to prepare for the future.

There are also advantages and opportunities that the digital medium offers for content owners and consumers. Content owners are able to meet the needs of different users better as they can produce differently priced versions of the same content, offer personalized content and deliver this content directly to the user's device. They can also digitize the out-of-print books that are currently not available to the public.

There are also new ways to address the piracy issue many publishers are concerned with. The peer-to-peer networks in the Internet offer large user bases that could be utilized to increase the demand for e-book titles as well as for offering a large selection for potential users. Although this might not eliminate the piracy altogether, it can remove the casual piracy by making legal content as available as illegal copies currently are.

When it comes to the e-book distribution platform, the pilot was conducted as planned and the future requirements for the platform were collected. The most important functionalities the Finnish e-book platform should offer for publishers are the possibility to upload and manage metadata and content easily and effectively. The formats that the Finnish platform should support are ePub and PDF for e-books and mp3 for audio books. It is also important to have clear statuses for different titles and formats so that publishers can monitor the statuses easily.

In addition, publishers should be able to define the preview rights and content protection parameters for their content. As the Adobe DRM is the most widely used digital rights management standard, it was suggested that the Finnish platform supports this. In addition, also less restrictive protection types are needed as they can be used by some publishers for offering users higher usability. For this purpose it was suggested that also dynamic watermarking needs to be supported.

In order for Kirjavälitys to be able to offer a centrally managed e-book delivery platform to publishers and resellers, the platform needs to support several publisher accounts and allow Kirjavälitys to manage these publishers at the same time. It must be possible to integrate several resellers to the platform also, allowing them to deliver the same e-book content to their customers.

Web stores should offer consumers searching and browsing functionalities, so that they can find e-book titles easily. At least title and author name, format, and content protection type should be offered as search terms. The platform should enable web stores to offer preview and pre-listen functionalities for consumers. Extensive product information and metadata together with preview functionality was considered to be most important for consumers. After the purchase, the e-book titles should be added to the user's bookshelf. The bookshelf should offer at least the functionalities for sorting the titles based on author name, title name, and the time of purchase as well as for viewing the product information and metadata. At last the platform should offer the users a possibility to download the titles into their computers and e-readers. Id the Adobe DRM is supported, it is possible for the consumers to download also DRM protected content into e-readers as most of the current devices support Adobe DRM.

These functional requirements were gathered based on the literature study and the test user questionnaire and interview after the pilot. It was suggested to Kirjavälitys that the e-book markets should be launched by deploying a Software as a Service model instead of developing the platform as custom development. As the pilot platform supports almost all functional requirements and Kirjavälitys already has a relationship to the vendor it was suggested that they would deploy the MPS platform also for the production phase. After a successful launch it is of course possible to invest in a custom platform as using a SaaS model does not restrict this in any way.

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APPENDICES

APPENDIX A: Test user questionnaire

1	**Background questions**		
	1.1	Age	
	1.2	Title	
	1.3	Sex	
2	**Questions of Admin Tool for publisher role**		
	Admin Tool usability		
	2.1	The structure (navigation) was understandable	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	2.2	Evaluate the comfort of use of the platform	1 = Inconvenient, 2 = Quite inconvenient, 3 = Not inconvenient or comfortable, 4 = Quite comfortable, 5 = Comfortable, 6 = Don't know
	2.3	Evaluate the usefulness of the platform	1 = Completely useless, 2 = Quite useless, 3 = Not useless or useful, 4 = Quite useful, 5 = Very useful, 6 = Don't know
	2.4	Evaluate the usability of the platform	1 = Very difficult to use, 2 = Quite difficult to use, 3 = Not difficult or easy to use, 4 = Quite easy to use, 5 = Easy to use, 6 = Don't know
	2.5	Evaluate the operation of the platform	1 = Did not function properly, 2 = Mostly did not function properly, 3 = Functioned moderately, 4 = Functioned pretty well, 5 = Functioned well, 6 = Don't know
	2.6	The platform communicated of the success or failure when performing the tasks.	1 = Never, 2 = Sometimes, 3 = In about half of the tasks, 4 = Mostly, 5 = Always, 6 = Don't know
	Content and metadata management		
	2.7	Uploading metadata in an Excel sheet to the platform was easy	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	2.8	Updating metadata by hand was easy	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	2.9	I would rather send metadata sheets by email than upload them to the platform	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	2.10	For uploading metadata to the platform I prefer ..	1 = Using Admin Tool by hand, 2 = Uploading an Excel sheet to the platform, 3 = Don't know
	2.11	Searching and viewing product information in the platform was easy	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	2.12	Uploading content files to the platform was easy	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	2.13	I would rather send content files by email than upload them to the platform	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	Improvements		
	2.14	How could the Admin Tool be improved?	
	2.15	How could using the Admin Tool be made easier?	
	2.16	If this kind of platform is used for distributing e-book material in the future what requirements the platform should meet when considering publishers and KV administrators?	
	Questions of Admin Tool for Kirjavälitys personnel role		
	Reporting		
	2.17	Retrieving and downloading reports from the platform was easy	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	Improvements		
	2.18	How could the Admin Tool be improved?	

	2.19	How could using the Admin Tool be made easier?	
	2.20	If this kind of platform is used for distributing e-book material in the future what requirements the platform should meet when considering publishers and KV administrators?	
3	**Questions of ContentStore web store**		
	Usability		
	3.1	The web store communicated of the success or failure when performing the tasks.	1 = Never, 2 = Sometimes, 3 = In about half of the tasks, 4 = Mostly, 5 = Always, 6 = Don't know
	3.2	Using the Dummy Retailer for performing the tasks was difficult	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	Buying and downloading		
	3.3	Searching product information in the web store was easy	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	3.4	Previewing content in the web store was easy	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	3.5	Buying a product in the web store was easy	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	3.6	Downloading a product to a computer was easy	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	3.7	Downloading a product to an e-reader was easy	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	Improvements		
	3.8	How could the Dummy Retailer be improved?	
	3.9	How could using the Dummy Retailer be made easier?	
	3.10	What functionalities should an e-book-selling web store offer in the future considering the consumers?	
4	**Questions of Kirjaväylä web store**		
	Usability		
	4.1	The web store communicated of the success or failure when performing the tasks.	1 = Never, 2 = Sometimes, 3 = In about half of the tasks, 4 = Mostly, 5 = Always, 6 = Don't know
	4.2	Using the Kirjaväylä web store for performing the tasks was difficult	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	Buying and downloading		
	4.3	Searching product information in the web store was easy	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	4.4	Buying a product in the web store was easy	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	4.5	Downloading a product to a computer was easy	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	4.6	Downloading a product to an e-reader was easy	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree, 6 = Don't know
	Improvements		
	4.7	How could the Kirjaväylä web store be improved?	
	4.8	How could using the Kirjaväylä web store be made easier?	
5	**General questions**		
	Preview and pre-listen functionalities		
	5.1	How necessary do you consider is the possibility to preview the content before it is published?	1 = Unnecessary, 2 = Quite unnecessary, 3 = Not unnecessary nor necessary, 4 = Quite necessary, 5 = Very necessary, 6 = Don't know

	5.2	How necessary do you consider is the possibility to preview/prelisten the content before purchasing?	1 = Unnecessary, 2 = Quite unnecessary, 3 = Not unnecessary nor necessary, 4 = Quite necessary, 5 = Very necessary, 6 = Don't know
	5.3	If an audio book has been divided into several files, which downloading option would be more pleasant for the consumer?	1 = Downloadin all files in one zip file and unzipping it using a computer, 2 = Download each file separately, 3 = Don't know
	Challenges in Finnish e-book markets		
	5.4	What challenges do you think consumers will face when e-books are launched in Finnish markets?	
	5.5	What challenges do you think publishers will face when e-books are launched in Finnish markets?	
	5.6	What challenges do you think Kirjavälitys will face when e-books are launched in Finnish markets?	

APPENDIX B: Testing tasks

Id	Name	Description	Use case
Admin Tool for publisher			
tp1	Uploading PDF content files	Upload a content file in Admin Tool. Use PDF format.	P1
tp2	Uploading ePub content files	Upload a content file in Admin Tool. Use ePub format.	P1
tp3	Uploading metadata by hand	Create a new product by hand using Admin Tool. Define all the specified fields.	P2
tp4	Uploading metadata with an excel sheet	Create a new product by uploading metadata excel sheet in Admin Tool. Define all the specified fields.	P2
tp5	Modify metadata	Select an existing product and make some change in the metadata fields.	P2
tp6	Viewing product information	List all products by a publisher and select one. View product information of that item in more detail.	P3
tp7	Preview content	Preview content of an e-book that is not yet published.	P4
tp8	Move content to live	Allow content to be published to retailer sites.	P4
Admin Tool for Kirjavälitys			
ta1	Create new publisher account	Create a new publisher account under Kirjavälitys in Admin Tool.	A1, A2
ta2	Create new user account for a publisher	Create a new user account that can manage the content of the publisher account created in test task ta1.	A1, A2
ta3	Create new user account for Kirjavälitys	Create a new user account for an employee of Kirjavälitys. This user should be able to manage the metadata and content of all sub-publishers of Kirjavälitys.	A1, A2
ContentStore for consumer			
tc1	Search products	Search e-books in ContentStore with search criteria of your choice. View product information and preview the content.	C1, C2, C3
tc2	Search products	List all e-books that are in Adobe DRM format. After this, proceed with test task tc6.	C1
tc3	Order product in PDF	Order an e-book in PDF format. Accept the order and make the payment. After this the e-book should appear in My BookShelf.	C4
tc4	Order product in ePub	Order an e-book in ePub format. Accept the order and make the payment. After this the e-book should appear in My BookShelf.	C4
tc5	Order product in mp3	Order an e-book in mp3 format. Accept the order and make the payment. After this the e-book should appear in My BookShelf.	C4
tc6	Order product	Order an e-book in AER (Adobe DRM) format. Accept the order and make the payment.	C4
tc7	Download product from My BookShelf	Download a product that you have purchased into your computer. Use the download link provided in My BookShelf. Copy the e-book into your e-reader and make sure it opens up.	C5, C6
tc8	Download product from email.	Download a product that you have purchased into your computer. Use the download link provided to you by email.	C5
tc9	Download product	Copy an e-book you have downloaded into your e-reader device.	C6
tc10	Browse products in BookShelf	Browse the products in your BookShelf. View product details of some e-book you have purchased.	C2