

Consumers' Attitudes to Digital Rights Management (DRM) in the German Trade eBook Market

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Abstract—In relation to the German trade eBook market, this paper presents results from an exploratory survey into eBooks consumers' attitudes to Digital Rights Management (DRM). Thereby, this paper illuminates the effects of DRM implementation on usability and the resulting marketability of eBooks. Findings suggest that eBooks are perceived as being generally useful, although there is a considerable difference in the evaluation of free (unprotected) and purchasable (protected) eBooks.

Keywords—eBooks; Digital Rights Management (DRM); Consumer Attitudes

I. INTRODUCTION

“Will the future of reading be digital? Is the printed book dead?” Questions like these have been found in various newspapers reporting on the Frankfurt Book Fair 2009. The emergence of the electronic book (eBook) is once again the predominant discussion topic in the book industry. The topic is not new. The emergence of the eBook has been intensively discussed for almost a decade now. But a sustainable market for digitally distributed literary content has not yet been established.

Although people have become increasingly accustomed to reading texts on a screen and have gained more experience with eCommerce over the last decade, the number of persons with any eBook experience is still low according to market reports [e.g., 1]. A new generation of dedicated eBook readers offering enhanced reading experiences may change this situation by addressing consumers' needs. Yet, only little is known about eBook consumers.

The developments in other content industries such as music or film indicate the importance of understanding consumers' needs and distributing purely digital content. The music industry complains of significant revenue losses caused by unauthorized music distribution via the Internet [2; 3]. Fighting against piracy and P2P-networks, the music industry has procrastinated the establishment of business

models that match consumers' expectations. New players such as hardware manufacturers and Internet service providers have entered the industry and outpaced the traditional industry players in the creation of new business models for digital music. Why should the situation in the book industry be different?

Admittedly, the situation of the book industry is not (yet) fully comparable to the music industry. The book industry revenue is stable, and there are no significant losses attributed to illegal distribution of content via the Internet [4]. This may be explained by the low volume of digitally available book content and the tediousness that is needed to create a digital version from a traditional printed book. Consequently, the threat of pirating printed books has been relatively low.

However, as with all eContent, eBooks can be copied without any loss of quality and be distributed at costs close to zero [5; 6]. Like the music industry (used to do), the book industry generates most of its revenues from direct content sales, not from advertising. Hence, illegal and any legal mass-scale low-price ‘production’ and distribution of content should constitute a significant threat – similar to the music and other content industries [7].

In its efforts to generate profits with eBooks, the book industry now faces a dilemma: It tries to popularize eBooks and to develop the eBook market, but, at the same time, it needs to curb large scale unauthorized distribution and usage of eBooks.

A major measure is the visible or hidden implementation of Digital Rights Management (DRM) to protect and subsequently monetize the rights to the valuable content. However, rights holders and content distributors are still uncertain about the impact that implementing DRM will have on consumers' usability, and what the resulting marketability of eBooks will be. Also unknown are the consequences that massive DRM implementations in the eBook market will have on the development of the industry structure.

In this context, this paper aims to make the following contribution: It investigates consumers' attitudes to DRM in the German trade eBook¹ market.

II. RESEARCH CONTEXT

A. eBooks

In the press and in the literature, the term eBook is used ambiguously. It refers either to dedicated eBook readers such as Amazon Kindle, or to digital content. The glossary published by the Open eBook Forum [8, p. 6] captures the term eBook as “[a] literary work in the form of a digital object, consisting of one or more standard unique identifiers, metadata, and a monographic body of content, intended to be published and accessed electronically. [eBook] may also refer to the hardware devices created for the purpose of reading eBooks”. It seems necessary to distinguish between the digital content and the hardware and software that enable readers to access and use it [9]. We use the term eBook exclusively for the digital content and apply the term eBook reader for dedicated devices designed for the purpose to display eBooks.

However, even the specification of an eBook as digital content raises several issues, for instance, whether the term eBook is limited to the electronic version of a printed book or whether it refers to any digital text. Reference [10, p. 12] defines an eBook as “any content that is recognizable ‘book-like’ regardless of size, origin or composition, but excluding serial publications, made available electronically for reference or reading on any device (handheld or desk-bound) that includes a screen”. Of 37 eBook definitions examined by [11], the majority contains analogies to the printed book such as the ‘electronic equivalent of a conventional printed book’ [12]. To account for technological developments, [11, p. 363] condense and expand on existing definitions when they propose: “An e-book is a digital object with textual and / or other content, which arises as a result of integrating the familiar concept of a book with features that can be provided in an electronic environment. (...) E-books typically have in-use features such as search and cross reference functions, hypertext links, bookmarks, annotations, highlights, multimedia objects, and interactive tools”. We follow that definition; however, for all practical purposes, we distinguish between eBooks as the digital content, and eBook readers as the dedicated devices that display eBooks.

B. Digital Rights Management (DRM)

The main purposes of DRM and the related Digital Rights Management Systems (DRMS) are the management and the enforcement of rights [13] in order to support the emergence of a vital marketplace for eBooks [14]. In contrast to copyright law, DRM is capable of providing an ex-ante protection against copyright law violations [15].

Furthermore, identification measures as part of DRM help copyright holders to detect and prosecute copyright law infringements.

Further, the implementation of DRM enables alternative business models in a digital environment [16; 17]. DRM can introduce new transaction models, secure content integrity, protect and manage intellectual ownership throughout the whole value chain, and increase consumer choices [14; 18; 19]. The implementation of DRM along the value chain builds a ‘trust infrastructure’, where content rights are respected and enforced. Such trust between authors and consumers is considered essential for establishing and maintaining a sustainable market place for eBooks and for making eBooks commercially exploitable goods [14]. However, the application of DRM can limit the valuation of content from a consumer perspective [15].

DRM is considered as a “vital building block of the emerging electronic (eBook) market” [14, p. 26].

III. RESEARCH BACKGROUND

A. DRM and Consumer Attitudes: Selected Conceptual Foundations

Although eBooks and eBook readers have been available for more than a decade, they are still an innovation. The research field on adoption and diffusion of innovations in the digital environment has gained broad interest [20]. Generally speaking, the insights are applicable to the eBook market.

The Technology Acceptance Model (TAM) [21] is one of the most frequently used models in the field of assessing the acceptance of IT-related innovations. The fundamental determinants of user acceptance are perceived usefulness and perceived ease of use. In the context of online shopping, [22] expand the TAM by integrating trust as a factor to explain online-purchasing intentions. Similarly, [23] suggest that trust is essential for consumers' online purchase decisions. Even though other factors also have an impact on consumer acceptance [20; 24], we consider perceived usefulness, perceived ease of use, and trust for investigating the acceptance of commercial eBook distribution platforms. We also examine that the willingness-to-pay for eBooks as the intention to buy or pay for eBooks typically precedes or at least complements the corresponding acceptance [25]. We assume that the prevalent application of DRMS in commercial eBook distribution platforms influences the acceptance of trade eBooks in Germany.

Research on the acceptance of DRM protected eBooks in Germany is still limited. The INDICARE (INformed DIalogue about Consumer Acceptability of DRM Solutions in Europe) project [26], which ran from 2004 to 2006, was initiated to highlight consumer and user issues of DRM solutions. In the following, we elaborate on selected issues which serve as basis for our research hypotheses.

Access and usage control: DRM has to define access and usage control mechanisms. According to the access control, consumers might be concerned with the duration of access rights. Furthermore, the employment of DRMS

¹ Trade eBooks are intended for the sale to general public and have to be distinguished from educational, professional and scholarly eBooks. The most common genres for trade eBook content are fiction, general interest non-fiction, guidebooks, and children literature.

curtails usage rights. Consumer organizations such as the Electronic Freedom Frontier argue that consumers should enjoy the same rights in the case of digital products as they do in the case of the physical products, as copyright law grants most of the aforementioned usage rights [27]. DRMS might not be capable of dealing with both: the right for a private copy and the one to resell digital content. Hence, consumers might feel restricted in their usage of digital content.

Transparency and fair contract terms: Transparency is an important factor regarding the consumer perception and awareness of DRM. Consumers need to understand to what extent the usage of the digital content might be restricted and whether these restrictions are in line with the consumer rights granted by copyright law [28].

Privacy is an urgent consumer concern regarding DRM protected digital content. DRMS technologies can enable content providers to monitor the actual usage of the digital content. Information about what a person is reading might be personal and could be misused. From a consumer perspective, it is important to know where personal data are stored and who gathers information about one's actual consumption of digital content.

Interoperability describes the possibility of using digital content in multiple ways and on multiple devices [27]. Proprietary DRMS can be used by content providers to create a lock-in effect. This is especially effective if complementary hardware is provided in addition to the digital content, and if consumers are dependent on one system. Furthermore, consumers might be concerned with the interoperability of acquired content with future hardware or software solutions.

Software and hardware issues may arise if the DRMS is not compatible with the software or hardware installed on the consumers PC or laptop. Most DRMS require the download and installation of specific software. Compatibility issues can arise if the required software does not work with the installed operating systems. For example, Adobe Digital Editions does not work on Linux operating systems.² Also, a DRMS may be disabling or changing a consumers' security software systems.

Diverse business models, referring to the basic logic of profit generation [29], are possible for digital content. Concerning pricing and bundling, the most prominent versions for digital content seem to be pay-per-download, subscription, and rental models [6; 30]. A mix can be interesting to consumers, so that content acquired via a subscription is compatible with the content purchased by another distributor.

Pricing and Product Diversity: Prices for DRM protected content should reflect potential usage restrictions. Consumers may fear that DRMS help to establish monopolistic market structures, which might have a negative effect on the product diversity and the prices of digital content.

In summary, several consumer concerns may arise regarding the implementation of DRMS in the context of digital media content, and especially eBooks. These concerns may affect consumers' acceptance of eBooks. Access and usage restrictions influence the perceived usefulness of eBooks, a determinant that is central to users' value experience of mobile applications [31]. Due to additional software and non-transparent usage terms, the complexity of buying eBooks increases. Hardware and software issues might have a negative effect on the compatibility of DRM protected eBooks and thus negatively influence the perceived ease of use. Moreover, the concerns regarding the permanence and the duration of access and the usage of personal data might influence the trust in eBook distribution platforms. Overall, consumer reservations may lower their willingness-to-pay for eBooks.

B. DRM and Consumer Attitudes: Selected Empirical Studies

There are only a few studies that exclusively investigate the impact of DRM on the consumer acceptance of digital media content. The existing studies refer mostly to digital music usage. Nevertheless, the results might deliver insights on the potential influence of DRM on the acceptance of commercial eBook distribution platforms.

Within the *INDICARE project* [26] two empirical studies were conducted, one regarding digital music and one regarding digital video [32; 33]. The survey '*Digital Music Usage and DRM*' was conducted in 2005 among seven European countries with 4,852 participants, of whom 69% had experience with digital music. It indicated that knowledge about copyright law and DRM was low among consumers. 80% of the users of online music stores did not know whether the purchased content was DRM protected. 57% of the respondents did not care if music was copyrighted, nor did they know what copyright meant [34]. 63% of the respondents had never heard of DRM, and an additional 23% did not exactly know what DRM was. Privacy issues were relatively unknown; 50% of the respondents who had heard of DRM technologies did not know that DRM had the potential to monitor their actual usage. Interoperability between devices was a core criterion for consumers' willingness to pay; 86% of all respondents were willing to pay €1 for a song that would run on all devices, while only 14% chose the alternative of buying a song for €0.5 that would run on only one device. The ability to share content was also important, as 56% of respondents were willing to pay €1 for a song that could be forwarded to family and friends, while 44% would spend €0.5 for a song that could not be shared. Alternative business models such as subscription or streaming were not widely accepted, consumers were skeptical about watermarks (i.e., information embedded into a digital signal that is difficult to remove), and they perceived DRM to help the music industry to increase profits.

The second survey within the *INDICARE project*, '*Digital Video Usage and DRM*', was conducted in 2006 among five European countries with 2,731 participants, of whom 61% had first-hand experience with digital video. It

2 See www.adobe.com/products/digitaleditions/systemreqs.

demonstrated a comparable situation regarding the awareness of DRM and usage restrictions as that found in the earlier music survey. 83% of respondents had never heard of DRM, nor did they know exactly what it meant [34]. The evaluation of usage rights of digital video depended on the type of video content. For recent movies, consumers were mostly willing to pay extra for the right to burn, share, and transfer the content [34]. The majority of the respondents agreed that technological protection measures should be implemented by content providers for the protection of minors (79%), to reward the creative work of artists (65%), and to protect valuable content from illegal distribution (62%). Overall, the INDICARE project found interoperability and sharing to be crucial for the willingness-to-pay for digital content, while they reported that overall awareness of the implications of copyright law and DRM was low.

Fetscherin [27] examined the implications of DRM on the demand for digital content. He conducted an empirical study regarding digital content, music, film, and game usage with 174 Swiss students. Results showed that encryption, the requirement for specific software and hardware, and limited playability distracted potential consumers from buying content. Limitations to transfer content to mobile devices and to burn content to CD were not perceived as being obstacles to legally downloading digital content. Consumers were willing to pay for digital content even if pirated content was available for free.

Based on a conjoint analysis with 683 participants, [35] studied the impact of DRM on the willingness-to-pay for digital music. They showed that the degree of DRM protection strongly impacted the perceived product utility. With a rising degree of DRM protection, the willingness-to-pay for digital music decreased significantly.

Overall, the empirical studies demonstrate that the application of DRM significantly influenced the willingness-to-pay for digital media content.

IV. EMPIRICAL INVESTIGATION

A. Hypotheses

Based on the selected conceptual considerations and empirical studies found in the literature, we propose the following hypotheses to assess the consumer attitudes towards downloading and paying for trade eBooks:

H1: Consumers perceive the characteristics of eBooks as being useful (Perceived Usefulness).

H2: Consumers are not satisfied with the current eBook purchasing processes (Perceived Ease of Use).

H3: Consumers are concerned with the permanence of eBook purchases and the usage of their private data (Trust³).

H4: Consumers are not content with the current eBook pricing (Willingness-to-Pay).

³ Trust has been operationalized in TAM studies in many ways [22; 36] also referring to the the outcome being fair to all parties involved over a longer period [37; 38; 39].

B. Research Approach

Questionnaire Design: We developed an online questionnaire that was divided into several webpages instead of providing one scrollable webpage. A bar at the bottom of each page showed the progress. The first page provided a short introduction to the topic and the purpose of the survey. We avoided using the term DRM throughout the questionnaire, in order not to influence the respondents. The first section of questions dealt with the current usage of eBooks. We asked consumers for how long they had been reading eBooks, how many eBooks they had downloaded in the last three months, and how many they had bought in the same period. We also asked which literary genre consumers preferred, what their sources for eBooks were, and which devices they used for reading eBooks. We then asked about the usage of eCommerce solutions for printed books. The final sections consisted of 25 statements derived from the literature and market research studies to be rated on a five-point ordinal scale. The statements referred to the perceived usefulness of certain eBook features, the perceived ease of use of obtaining and using eBooks, the trust in eBook purchases, and the willingness-to-pay for eBooks. Further, we allowed for open-ended comments. Most of the free answers referred to experiences regarding DRM. Finally, few socio-demographic questions were asked that referred to age, gender, and professional background. The questionnaire in the German language is available upon request.

Sampling and Data Collection: The identification of eBook users in Germany was difficult, as no studies had yet been conducted on eBook users. The surveys published by [40] and [41] showed overall limited interest in eBooks.

Hence, we decided to address eBook readers directly. We assumed that the possession of a dedicated eBook reader was strongly correlated with downloading and reading eBooks for private purposes. We identified four German eBook discussion boards (see Table I) and supposed that the members of these online discussion boards represented German eBook users.

TABLE I. ADDRESSED EBOOK DISCUSSION BOARDS

Discussion Board	URL	Members	Posting Date
e-reader-forum	www.e-reader-forum.de	741	09/03/09
Mobile Read	www.mobileread.com/forums	n.a.	09/03/09
Sony Reader Club	reader-club.sony.de	n.a.	09/03/09
Xing	www.xing.com/net/ereader	136	09/03/09

Before we placed the link to the web-based questionnaire on the discussion boards, we asked the administrators for permission. We received permission from all four boards; the board administrators even actively promoted the questionnaire. The questionnaire was available for two weeks in September 2009. In total, 125 persons started the questionnaire and 89 persons completed

it. The mean of the answering time was eight minutes. *Data Interpretation:* To assess whether respondents agreed or disagreed with the individual statements in spite of the low number of responses received, we calculated the mean for a first indication. Further, we analyzed the relative frequency of respondents who agreed (indicated either 4 or 5 on the scale) or disagreed (indicated either 1 or 2 on the scale) with a statement.

C. Results

Demographics: The majority of respondents were male (70%). This is in correspondence with the findings of the GfK survey [40], which shows that men are especially interested in eBooks. The majority of eBook users were between 30-49 years (63%); 16% were above 50 years. 70% of the correspondents were full-time employees, while 15% were students.

eBook Usage: All respondents read eBooks in their leisure time. Almost half of them (47%) had used eBooks for more than a year. 32% had used eBooks for about three to six months. Asked about the number of eBooks downloaded over the last three months, 63% had downloaded more than ten eBooks. Nevertheless, only 17% of the respondents had bought more than ten eBooks within the last three months, while 30% indicated that they had not bought a single eBook within this period (Figure 1).

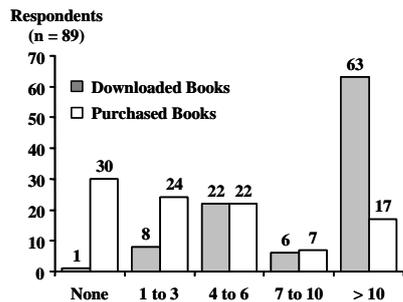


Figure 1. eBooks Downloaded and Purchased within the Last Three Months

eBook Sources: 34% of the respondents used free platforms, such as Gutenberg.de, as their primary source for eBooks; 39% determined commercial distribution platforms, such as Ciando.com or Thalia.de, to be their primary source. Most did not use one exclusive source, but searched for a mixture of free downloads and commercial eBooks platforms. Eight percent used P2P-networks as the primary source. Among students (n=13), P2P-networks as primary sources accounted for 30%. Libraries' and publishers' websites played only a minor role in obtaining eBooks. No respondent reported that friends or family were their primary source for eBooks, and only three percent used the friends and family source at all.

Concerning the hypothesis that *consumers perceive the characteristics of eBooks as being useful (H1)*, Table II summarizes the statements and shows the means. A strong agreement to the first four statements (PU1-PU4) shows that the respondents perceive eBooks to be useful. The agreement concerning the usefulness of eBook usage on

different devices is a little lower. Nevertheless, 52% of the respondents fully agree that it is useful to transfer eBooks to multiple devices, such as dedicated eBook readers, personal computers, and mobile phones or handhelds (PU5). 75% of users indicate that it is important to them to treat an eBook as being comparable to a printed book (PU6). The respondents do not find that the offer of eBooks in Germany is satisfying (PU7). Only four of the 89 respondents (5%) are satisfied. This result puts the positive evaluation of eBook advantages into perspective, as advantages are not exploited if the offer is inadequate.

TABLE II. STATEMENT EVALUATIONS – PERCEIVED USEFULNESS (N=89)

Statement	Perceived Usefulness – Statements	Mean
PU1	It is useful that I have instant and ubiquitous access to eBooks.	4.53
PU2	It is useful that I can adjust eBooks to my individual reading preferences.	4.57
PU3	It is useful that I can load many eBooks on my reading device.	4.75
PU4	It is useful that there is a broad supply of free eBooks.	4.32
PU5	It is useful to use eBooks on several different devices.	4.06
PU6	It is important to me that I can treat a purchased eBook comparable to a printed book. (lending, selling, give away)	4.09
PU7	The current offer of eBooks in Germany is satisfying.	1.91

Concerning the hypothesis that *consumers are not satisfied with the current eBook purchasing processes (H2)*, Table III summarizes the statements and presents the means. The ease of finding and downloading free eBooks (EOU1) is evaluated as being slightly higher than the ease of buying and downloading eBooks (EOU2). 73% of the respondents agree that transferring free eBooks to multiple devices is easy (EOU3). Concerning the ease of transferring purchased eBooks to multiple devices (EOU4), the mean is 2.74. Differences between consumers' evaluation of the interoperability with multiple devices concerning ease of use – especially with regard to the transfer of eBooks to other devices – are recognizable (see Figure 2). Comparing purchasing eBooks to ordering books online (EOU5), 52% of respondents perceive the online ordering of a book as being easier than the purchase of an eBook. However, 21% of respondents find purchasing an eBook easier than ordering a book online. Purchasing DRM protected eBooks requires downloading certain software to decrypt and display the downloaded works. Such requirement of additional software is not discerned as being a major barrier to purchase eBooks (EOU6).

TABLE III. STATEMENT EVALUATIONS – PERCEIVED EASE OF USE (N=89)

Statement	Perceived Ease of Use – Statements	Mean
EOU1	It is easy to find and download free eBooks.	3.71
EOU2	It is easy to buy and download eBooks.	3.49
EOU3	It is easy to transfer free eBooks to multiple devices.	4.12
EOU4	It is easy to transfer purchased eBooks to multiple devices.	2.74
EOU5	It is easier to buy an eBook than ordering a book online.	2.50
EOU6	It is laborious to download and install additional software in order to use eBooks.	2.88
EOU7	It is easy to find the titles I am interested in.	2.58

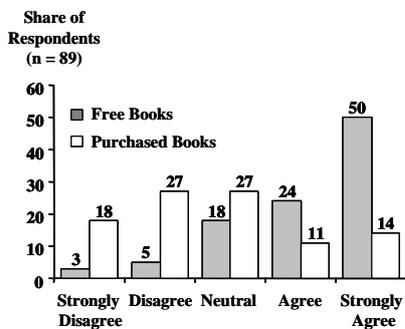


Figure 2. Perceived Ease of Transferring eBooks to Different Devices

Next, we investigate the hypothesis *that consumers are concerned with the permanence of eBook purchases and the usage of their private data (H3)*. Table IV summarizes the statements and the respective means. The future usability of purchased eBooks (TR1) is a matter of concern for 26% of the respondents who strongly agreed with the statement. However, the mean of 3.23 shows that, in total, the respondents are rather ambiguous, with 20% strongly disagreeing. The threat of viruses and spyware is not perceived as being relevant (TR2). Only 9% of the respondents fear obtaining viruses or spyware by downloading eBooks, while 52% strongly disagree with the statement. Of the eight respondents who state file-sharing networks as main sources for eBooks (see above), only one person is worried about viruses or spyware. Control over eBooks (TR3) is assessed neutrally. 17% are worried; 27% who strongly disagree indicate that they do not perceive control over their eBooks as being a problem. Overall, respondents are not particularly worried about the usage of their personal data (TR4). This applies to both: respondents who buy eBooks from online vendors and to those who obtain eBooks from free sources. 73% agree that it is important to obtain eBooks from a legitimate and trusted source (TR5).

Finally, we analyze the hypothesis *that consumers are not content with the current eBook pricing (H4)*. Table V shows the mean for each statement.

TABLE IV. STATEMENT EVALUATIONS – TRUST (N =89, TR1: N=88)

Statement	Trust – Statements	Mean
TR1	I am worried that I cannot use my bought eBooks in the future	3.23
TR2	I am worried that eBooks contain viruses or spyware	1.84
TR3	I am worried that I do not have full control over my eBooks.	2.91
TR4	I am worried about the usage of my personal data.	2.93
TR5	It is important to download eBooks from legal sources I have trust in.	4.06

TABLE V. STATEMENT EVALUATIONS – WILLINGNESS-TO-PAY (N=89)

Statement	Willingness-to-Pay – Statements	Mean
WTP1	I am generally up to paying for eBooks.	4.47
WTP2	It is important that authors are compensated for their intellectual work.	4.67
WTP3	The current prices for eBooks are reasonable.	1.82
WTP4	Usage restrictions ‘punish’ lawful customers.	4.24
WTP5	I do not buy any eBooks with usage restrictions.	3.15
WTP6	Renting eBooks is an attractive alternative to buying usage restricted eBooks.	4.03

92% of the respondents indicate being generally willing to paying for eBooks (WTP1) and 95% agree that the compensation of authors is important (WTP2). However, only 6% agree that the current prices are adequate, and almost 50% strongly disagree with that (WTP3). 79% of the respondents perceive usage restrictions as being ‘punishment’ to lawful customers (WTP4). 32% strongly agree that they do not buy any eBooks with usage restrictions; of those who had not bought an eBook within the last three months, 81% agreed with the statement (WTP5). 71% of the respondents could imagine borrowing eBooks as an alternative to buying usage restricted ones (WTP6). 15% had experience with lending eBooks from a library.

Considering the open-ended comments regarding experiences with eBooks, most comments relate to DRM. They concern the complicated shopping process, regional restrictions, and pricing. Most comments are complaints about the eBook market. Although not objective, they indicate that even early adopters who perceive eBooks as being useful are not totally content with the situation and seem to be frustrated with technological and business issues such as pricing and content availability. The following selected citations (translated from German by the authors, originals are available upon request) support this conclusion.

“The current purchasing process is way too complicated. I need special software for my reading device and additional software for the organization of eBooks. This must be improved! Moreover eBooks are too expensive!” [Anonymous questionnaire respondent]

“I wonder why I cannot buy eBooks in the US, although I can order the titles as printed books in the US.” [Anonymous questionnaire respondent]

“I buy only eBooks without DRM! DRM is too dangerous regarding the future usage. Furthermore, eBooks with DRM are overpriced and have a lack of quality.” [Anonymous questionnaire respondent]

V. DISCUSSION AND FUTURE RESEARCH

The empirical investigation reveals implications of consumer attitudes to DRM in the German Trade eBook Market. Whereas eBooks are generally perceived as being useful, there is considerable difference in the evaluation of free (unprotected) and purchasable (protected) eBooks [7]. Consumers find protected eBooks to be less valuable than unprotected ones for two main reasons: They find interoperability between different devices to be essential, and they dislike getting locked-in when purchasing a specific eBook reader and the installed DRM. Hence, they favor unprotected eBooks which are usually delivered for free and can be read on almost every device with some conversion software such as Calibre (www.calibre-ebook.com). Purchasing eBooks is perceived as being complicated. eBook prices are considered to be too high. Uncertainties about the emergence of different systems for DRM protection impede the diffusion.

Our results confirm insights from earlier studies on mobile offerings [31]. For eBooks to become truly successful, we would expect a need for an enhanced consumer value experience with lower technical barriers. Especially senior consumers, who are less tech-savvy but are frequent book readers often with rather deep pockets, are a potential target group for eBook reading, and may be the key for full fledged eBook roll-out.

However, this study provides exploratory data on the German eBook market, suggesting indicative results without statistical validations. The analysis is limited due to the low number of respondents and some issues regarding the representativeness of the sample. Members of eBook reader discussion boards are not fully representative for all eBook consumers in Germany. For instance, members of eBook reader discussion boards were aware of DRM issues treated in several threads on the discussion boards. Further, members' answers to questions touching upon illegal behavior may reflect a bias towards social desirability.

Hence our results need to be backed by further research. One direction for future research could be to compare surveys with larger and more representative samples, perhaps from different continents.

Another direction for future research may be to investigate usage and user attitudes at the verge of technological eBook reader developments. For instance,

when we collected our data in Germany, there were no eBook readers which allowed for wireless downloads to the device. Without such a direct wireless download option, any DRM becomes apparent to users, as they need to install additional software. At the same time, eBooks users in the United States had access to Amazon' Kindle 2 which offered such service. Instead of controlling for such differences across survey sub-samples, future research may choose to collect in-depth panel data.

Finally, future research may want to analyze the relationship between available unprotected eBook content and eBook reader sales. Specific content might have frequently served as incentive for buying a dedicated eBook reader. While such a link is known in the music industry, the causal relationship is still not clear and needs further studies.

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