

# German Book Publishers' Barriers to Disruptive Innovations: The Case of E-Book Adoption

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**Abstract** To succeed in a period of change, German book publishers need to adopt innovations, e.g., implement e-books into their product portfolio. Yet, in the book industry, the adoption of new technologies is not commonplace: Despite being the second biggest book market worldwide, only 1.2 % of all published books in Germany are available as e-books. This problem leads us to investigate the factors that determine whether publishing companies decide in favor or against entering the e-book market. Based on a standardized survey of more than 240 German publishing houses, barriers to innovation adoption are examined from a micro, meso and macro perspective. Our main findings show that individual characteristics of management and the company's corporate culture strongly predict adoption. Also, organizational communication seems to be critical. Taking this into account, the key resource to enable innovation seems to be information underlining the necessity of communities of practice.

**Keywords** Adoption · Corporate culture · Creative disruption · German book publishing industry · E-books · Innovation · Management survey · Organizational structure

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## Introduction

One of the most significant discussions in the media industry is currently the challenge of technological innovations, understood as doing new things or doing things in new ways enabled by new technology. The speed of technological development has never been faster in media organizations while, at the same time, the established players are forced to “sail against the [*Schumpeterian*] wind of creative destruction” [55, 62]. Yet, the adoption of new technologies—often referred to as the “decision to make full use of an innovation as the best course of action available” [60]—is not commonplace.

A considerable amount of literature deals with this need for change in media companies (e.g., [13, 17, 41]). This research gives insights into the barriers to implementing new products, organizational structures, processes or technologies. To date, however, only a few studies focused on the barriers to the adoption of “disruptive innovations” in the book industry [6, 9, 26, 39, 51, 52, 64]. Fewer studies took a holistic approach to barriers to innovation adoption. In the majority of publications, influence factors are examined at a single level of analysis without combining individual, organizational and environmental factors [14, 15, 34]. After all, without knowing how much certain barriers influence adoption, managers in the book industry will be unable to allocate resources in an efficient way and to lead organizational change processes successfully. Hence, analytical studies are needed to quantify the relevance of the barriers identified in the literature.

The aim of this paper is to focus on the implementation of e-books in German book publishing organizations in order to examine multi-level barriers to disruptive innovations. Using a survey study of managers, we compare various limiting factors and point out their impacts on the adoption process. For this purpose, we develop a conceptual analysis framework and describe the methods used to explore our primary research question:

RQ: According to which factors do German book publishing companies decide in favor of or against entering the e-book market?

## Case: The German Book Publishing Industry

The book publishing industry has long been—as [18] puts it—an “agent of change” that brought about political and social transformations. Today however, the industry itself is driven by transformations [25, 31, 54]. Debated since the late 1990s, the most important discussion—the “multibillion dollar query”, as [24] calls it—focuses on e-book technology. E-books are electronic books as well as digital versions of printed books that are generally downloaded from the Internet and then read on a screen (e.g. Computer, Tablet, Smartphone or specific E-book reader) [48]. While opinions diverge, as to if and when e-books will replace printed books [11, 24], there is agreement that publishers have to decide whether to adopt or to reject this disruptive innovation—since it is increasingly difficult to ignore [24, 64, 75].

Traditionally, technological trends have often developed faster in the United States than in Europe. The same applies to e-books: [Amazon.com](http://Amazon.com) reports to have sold more e-books than hard-copy versions by July 2010 on the US market [2]. Also, big publishers like *Random House* and *Barnes and Nobles* are now claiming e-books as a source of significant revenues [58]. In Germany however, despite being the second biggest book market worldwide with sales of 9.73 billion Euros in 2010 [8], only 1.2 % of all published books are available as e-books [53]. Furthermore, 22 % of the German publishing houses do not plan to enter the e-book market in the near future and another 25 % are continuing to postpone investments [4]. In this regard, the current adoption of e-books in the German publishing industry lags far behind its potential [30, 43–45].

Why is this? An analysis from a market-perspective reveals some hints. Medium-sized companies that are often owner managed in traditional ways characterize the German publishing industry. 80 % of all publishers generate annual sales of less than 1 million Euros [72]. This predominance of small and medium-sized publishers may lead to the fact, that innovation adoption is hindered by both small financial resources and a strongly traditional management policy [51]. Furthermore, publishers may not yet see the need to change their traditional ways because of relatively low market pressures: In 2010, they were even able to slightly increase their sales by 0.4 % [5]. With respect to the demand side, possible reasons for a weaker demand for e-books, compared to the US, might be rooted in the lower tablet and e-reader penetration, fixed book prices and the infrastructure of bookstores. Yet, for the future it is assumed that pressures coming from digitalization, competition and cost will extensively increase market concentration [30].

## Conceptual Framework

The process of innovation adoption has been scientifically investigated since the early 1960s, driven mainly by Rogers book “Diffusion of Innovations” [60]. Rogers explains adoption basically on the individual level with regard to people’s attitude towards innovations. Based on Rogers’ assumptions, case studies were conducted with physicians, farmers or customers (e.g., for e-book readers see [32]), but usually not with organizations. Later on, his research was consequently expanded on the basis of psychological and behavioral theories. Naturally, this approach pays little attention to supra-individual or cultural determinants.

In recent years, a large and growing body of literature has also considered organizations as the unit of analysis [16, 71, 74]. In these studies, organizations are regarded as (“corporate”) actors [10]. Adoption in organizations is in fact a multi-level process: For example, [14, 15] increased diagnostic value of their analysis (in the sense of variance explanation) by integrating factors not only from the individual micro but also from an organizational meso and environmental macro level.

Because of these findings, we argue that the adoption of e-books in German publishing companies may be similarly determined by factors on these three levels. In the following, we develop a holistic framework that identifies barriers to adoption

from the micro, meso and macro perspective. This model allows us to empirically compare and quantify the relevance of barriers to adoption.

### Micro Perspective

From the individual micro perspective, our approach focuses on managers of publishing houses. This is the traditional perspective of adoption research. Because the management—in the long run—does make decisions, executives' (a) demographic characteristics, (b) attitudes and (c) innovativeness are widely considered to be important determinants [3, 14, 63, 69].

Damanpour and Schneider [14] suggested that a manager's age may play a central role in the adoption of technologies. As the age of the management increases (equaling years of service with the company), their openness to innovation decreases.

Previous studies also reported that “a person's general feeling of favorableness or unfavorableness” [1] for an innovation may have an impact on the willingness to adopt, because attitudes influence actions (e.g., the support for strategies) [26, 59, 60, 65]. The same can apply to a person's general innovativeness [23, 37, 38, 46].

### Meso Perspective

The meso perspective research focuses on factors within the organization itself, because the organizational (a) structures, (b) resources, (c) culture and (d) communication shape everyday organizational behavior [70].

In general, organizational structures find their expression in the company's size and in its stage of development in terms of the organizational life-cycle [12]. Findings are mixed: Both smaller as well as larger companies may succeed in adopting innovations—due either to higher flexibility or larger resources [14].

According to [46], the resources mentioned can be classified into tangibles—financial and technological resources—and intangibles—expertise in general management, in market research, in innovations etc. The more resources a company can access and put into use, the more likely it will adopt innovations. This is especially true for financial resources.

Moreover, corporate culture—a concept brought forward especially by [61] and defined as the sum of a company's norms, beliefs and values—is an important influencing factor. A corporate culture based on traditional processes and routines—as is often the case in media companies [42]—is frequently related to resistance to change [19]. Consequently, this culture could be an important barrier to the adoption of e-books. In addition, culture is developed and shared through communication—therefore, the amount of internal communication might also be a relevant determinant of innovation adoption [29].

Nevertheless, organizations are not closed systems, but only exist within a broader framework, the so-called environment. Hence, the external communication of the organization also possibly influences innovation adoption [20, 35]: “...exchange of information with the environment and extra-organizational activities can help managers [...] improve their knowledge of environmental events

and events in order to initiate change and propose new ideas for adoption.” [14, p. 220].

### Macro Perspective

The macro perspective research concentrates on the environmental factors that influence the organizational adoption of innovations [36, 67]. Environmental factors are either (a) market or (b) stakeholder based [14, 46].

Regarding the market, [14] identified its growth and stability as important determinants. They also highlighted the market’s competitive pressure as an explanatory variable [14], which indeed is important, but can more likely be attributed to the stakeholder perspective.

Porter’s five forces analysis [57] can be used to identify the relevant stakeholders within the industry. By doing this, it appears that competitors (e.g., their pricing strategies), suppliers (new power of authors), customers (target groups) and new competitors (especially hardware producers such as *Apple*, *Sony* or *Amazon* [in terms of *Kindle*]) have to be taken into account.

### Overview of the Research Questions

As the primary question of our investigation we predetermined:

RQ: According to which factors do German book publishing companies decide in favor of or against entering the e-book market?

Having theoretically examined factors of certain levels of analysis, we may now specify this question with regard to micro, meso and macro perspectives (Fig. 1). The derived sub-research questions are:

SRQ1: According to which factors from the individual micro perspective do German book publishing companies decide in favor of or against entering the e-book market?

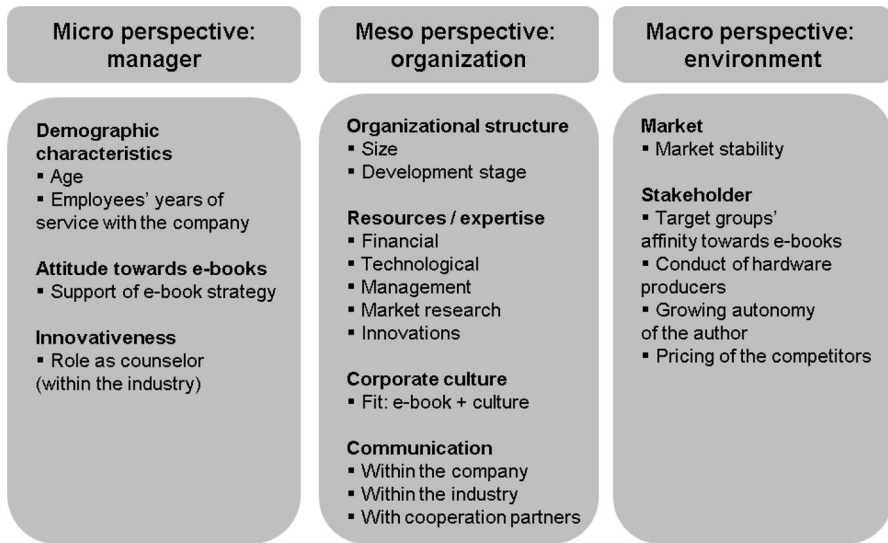
SRQ2: According to which factors from the organizational meso perspective do German book publishing companies decide in favor of or against entering the e-book market?

SRQ3: According to which factors from the environmental-macro perspective do German book publishing companies decide in favor of or against entering the e-book market?

SRQ4: What is the relative influence of each factor as a predictor for the decision of German publishing companies whether or not to enter the e-book market?

### Method

To investigate barriers to disruptive innovations in organizations, we conducted a standardized online survey of decision makers in German publishing houses from



**Fig. 1** Depicts the developed conceptual framework with its explanatory variables used in the empirical investigation

May to June, 2011. Although criticized in the past (e.g., [47], surveys of managers as key informants is an approved method of studying adoption in organizations since “...managers are generally expected to be more knowledgeable about their firm’s activities than their employees from lower levels” [73].

Based on the register of the International Standard Book Number (ISBN),<sup>1</sup> we contacted a random sample of 1.679 publishers of the German-speaking book market<sup>2</sup> via personalized e-mails. A follow-up e-mail was sent 2 weeks after the first recruitment. At the end of the survey period, 568 publishing houses had anonymously participated, leading to a response rate of 34 %. After eliminating incomplete and unusable responses, 242 questionnaires were included in the analysis—197 of them representing the answers of decision makers who claimed to be working in executive or middle management.

The questionnaires comprised 25 questions addressing the micro, meso and macro perspective. In some cases, data was aggregated using unit value indices whose internal consistency was measured by Cronbach’s Alpha ( $\alpha$ ). Theoretical assumptions described above were tested against empirical evidence on the basis of a confirmatory factor analysis [7, 28]. Table 1 presents a summary of the items identified in the conceptual framework as well as their operationalization and the steps of data management.

<sup>1</sup> Depending on the source, the total of book publishers in Germany ranges between 1.800 (members of the German Publisher Association Börsenverein) and 2.840 (VAT-registered) companies [72].

<sup>2</sup> Germany, Austria and Switzerland.

**Table 1** Operationalization and data management

Variable	Description (source)	Cronbach's alpha ( $\alpha$ )
Micro perspective: manager's...		
... age	Continuous variable, single item	n/a
... years of service with the company	Continuous variable, single item	n/a
... attitude towards e-books	Semantic differential [56], five items > unit value index	.940
... support of e-book strategy	5-point Likert-type scale from 1 ("does not apply at all") to 5 ("applies completely"), single item	n/a
... role as counselor (within the industry)	5-point Likert-type scale from 1 ("does not apply at all") to 5 ("applies completely"), single item	n/a
... innovativeness	Domain-Specific Innovativeness Scale [23] + General Innovativeness Scale of the Kirton Adoption-Innovation Inventory [46] (total of six selected items) >unit value index	.786
Meso perspective: organizational.../organizations'...		
... size	number of employees, continuous variable, single item	n/a
... development stage	companies' age, continuous variable, single item	n/a
... financial resources	5-point Likert-type scale from 1 ("not available at all") to 5 ("completely available"), single item	n/a
... technological infrastructure	5-point Likert-type scale from 1 ("not available at all") to 5 ("completely available"), three items >unit value index	.823
... expertise in digital publishing	5-point Likert-type scale from 1 ("not available at all") to 5 ("completely available"), six items >unit value index	.848
... expertise in general management techniques	5-point Likert-type scale from 1 ("not available at all") to 5 ("completely available"), five items >unit value index	.902
... implementation of market research	5-point Likert-type scale from 1 ("not available at all") to 5 ("completely available"), single item	n/a
... fit: E-book strategy and corporate culture	5-point Likert-type scale from 1 ("not available at all") to 5 ("completely available"), single item [27, p. 472]	n/a
... internal communication	5-point Likert-type scale from 1 ("not available at all") to 5 ("completely available"), six items >unit value index	.819
... communication within the industry	5-point Likert-type scale from 1 ("does not apply at all") to 5 ("applies completely"), three items >unit value index	.600
... communication with cooperation partners	5-point Likert-type scale from 1 ("not available at all") to 5 ("completely available"), single item	n/a
Macro perspective: environment		
Market stability	5-point Likert-type scale from 1 ("plays no role at all") to 5 ("plays a major role"), eleven items >unit value index	.915
Target groups' affinity towards e-books	5-point Likert-type scale from 1 ("plays no role at all") to 5 ("plays a major role"), single item	n/a
Conduct of hardware producers	5-point Likert-type scale from 1 ("plays no role at all") to 5 ("plays a major role"), single item	n/a
Growing autonomy of the author	5-point Likert-type scale from 1 ("plays no role at all") to 5 ("plays a major role"), single item	n/a

**Table 1** continued

Variable	Description (source)	Cronbach's alpha ( $\alpha$ )
Pricing of the competitors	5-point Likert-type scale from 1 (“plays no role at all”) to 5 (“plays a major role”), single item	n/a

### Sample Structure

On average, the participants were 47 years old ( $M = 47.0$ ,  $SD = 10.9$ ) and have been working for more than 11 years at their current company ( $M = 11.4$ ,  $SD = 8$ ). Just like almost everywhere in decision-making positions, women might be underrepresented within the management board of German publishing companies. Hence, it is no surprise that more than 60 percent of the interviewees were male. Our respondents work in various executive positions (managing director, CEO, chairman) (61 %) as well as in middle management (21 %) or are employed as assistants to the top management (4 %) or in other clerical positions (14 %).

We compared our sample to an industry survey conducted by GfK-Panel Services [4]. According to this reference study, our sample achieved an appropriate representation of the German publishing industry (see Table 2).

### Results

We analyzed adoption at a nominal level of data, dividing the sample into adopters (87 %,  $n = 210$ ) and non-adopters (13 %,  $n = 32$ ) [14, p. 215, 16]. A linear discriminant analysis (LDA) was conducted “which is concerned with the relationship between a categorical variable and a set of interrelated variables” [50]. Our aim was to predict factors that discriminate between the two groups of adopters and non-adopters and, thus, reveal the drivers and barriers to e-book adoption. The 22 items derived from theory were used as predictor variables. Statistical assumptions of LDA were satisfactory, except for deviation from normality. However, LDA is generally quite robust against this [33].

A stepwise procedure was used to select the “best subset” [50] of variables (with  $p < .05$ ) predicting group membership. Stepwise LDA is an iterative process that adds predictors sequentially according to their power of discrimination. The Wilks' Lambda test was used to test the significance of the obtained discriminant function ( $Wilks' \text{-} Lambda = .419$ ,  $p < .001$ ).

The discriminant function revealed a significant association between groups and 16 predictors accounting for 58 percent of variation in the grouping variable (squared canonical correlation coefficient, see Table 3). The cross-validated classification showed that 95.5 percent were correctly classified.

Table 4 shows the standardized discriminant coefficients ( $b$ ) and, hence, provides an indicator of the relative importance of each predictor determined by the size of



**Table 2** Benchmark of sample structure

	n	Valid percent (%)	GfK sample (%) <sup>d</sup>
Small publishers <sup>a</sup>	140	67	71
Middle-sized publishers <sup>b</sup>	42	20	19
Big publishers <sup>c</sup>	26	13	9

N = 208, differences due to rounding errors

<sup>a</sup> Number of employees = 1–10

<sup>b</sup> Number of employees = 11–50

<sup>c</sup> Number of employees >50

<sup>d</sup> Referring to a survey from the German market research institute GfK Panel Services conducted among German publishing houses in January, 2011 (Börsenverein des Deutschen Buchhandels e.V. & GfK Panel Services Deutschland [4])

**Table 3** Discriminant analysis results

Function	Eigenvalue	% of variance	Canonical correlation	Wilks' Lambda	Sig.
1	1.386	95.5	0.762	.419	.001

N = 197 after listwise deletion of cases with missing data; stepwise linear discriminant analysis; *Source* own research

the coefficient. ( $\pm$ ) indicates the direction of the relationship: Drivers of adoption (i.e., predictors for group membership “adopters”) are highlighted in bold letters. Table 4 not only shows the drivers of adoption, but inversely also its key barriers.

## Discussion and Outlook

The main goal of this study was to identify multi-level barriers to disruptive innovations in media organizations. For this purpose, an empirical case study on the implementation of e-books in German publishing houses was used. The three key results of the study are (see Table 4):

1. Individual characteristics of management and corporate culture stand out as factors strongly predicting adoption.
2. In addition, organizational communication within the industry and with cooperation partners is also a relevant predictor for adoption.
3. Surprisingly, non-adopters are characterized by high levels of innovativeness and expertise in digital publishing. Hence, these findings are difficult to interpret.

### Individual characteristics

Given the empirical evidence, a manager's attitude towards e-books is the strongest predictor and, at the same time, the biggest barrier ( $b = .581$ ). Since we measured

**Table 4** Standardized discriminant function coefficients, adoption of e-books in German publishing companies

	Function 1
<i>Standardized discriminant function coefficients</i>	
Micro perspective: Manager's...	
... attitude towards e-books	<b>.581***</b>
... support of e-book strategy	<b>.358***</b>
... role as counselor (within the industry)	<b>.068***</b>
... innovativeness	–.210*
... age	–
... years of service with the company	–
Meso perspective: Organizational.../Organizations'...	
... communication within the industry	<b>.320***</b>
... fit: E-book strategy and corporate culture	<b>.162***</b>
... communication with cooperation partners	<b>.127***</b>
... expertise in general management techniques	<b>.082**</b>
... professionalism of process management	<b>.055***</b>
... financial resources	<b>.028*</b>
... implementation of market research	<b>.011*</b>
... expertise in digital publishing	–.268***
... technological infrastructure	–
... size	–
... development stage	–
... internal communication	–
Macro perspective: environment	
Growing autonomy of the author	<b>.174**</b>
Target groups' affinity towards e-books	–.085**
Pricing of the competitors	–.070**
Conduct of hardware producers	–.065***
Market stability	–
<i>Functions at group centroids</i>	
Adopters	<b>.450</b>
Non-adopters	–3.039

N = 197 after listwise deletion of cases with missing data; stepwise linear discriminant analysis (*Wilks' Lambda* = .419,  $p < .001$ ); \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$  (two-tailed); – means that an item was included in LDA but had no effect on the prediction; source: own research

adoption following a management's decision, one might argue that this could be—at least partially—a method effect. The high influence then tends to be an *ex post* justification for choices already made (reduction of “cognitive dissonance”—[21]; also see [66]. However, this finding underlines the high relevance of ‘soft’ human factors such as feelings and emotions, reported regarding consumers for example by [60], even in organizational adoption processes. In any case, changing these personal attitudes is extremely difficult.

The requirement of top manager's support of the e-book strategy is prominently highlighted in adoption research as well as in change management projects. Our results confirm these assumptions (with  $b = .358$  as the second strongest predictor). Top management's support, resulting in strong leadership, is critical for the success of the transformation (e.g., [40, 49]). Furthermore, professionalism of process management ( $b = .055$ ) and expertise in general management techniques ( $b = .082$ ) are also predicting the adoption of e-books. We therefore consider professionalization of the management of German publishing houses, especially with regard to methods in change management, to be critical implications for practitioners.

In contrast to Damanpour and Schneider's results [14], we found, while controlling other factors, that age and years of service with the company have no effect on adoption. Hence, also many younger managers in German book publishing companies reject e-books. In view of this situation, the effects of corporate culture come to mind. Presumably, shared views and beliefs may affect attitudes towards adoption, regardless of the management board's age. Corporate culture does not change according to management's orders [53, 61]. Rather, it is shaping norms and beliefs (e.g., regarding e-books) and is—on the other hand—shaped by them through recursive loops [22]. Thus, it is no surprise that the fit of corporate culture and e-book-strategy is a relevant predictor for adoption ( $b = .162$ ).

### External Communication

On the individual micro level, a manager's perceived role as counselor within the industry ( $b = .068$ ) already refers to the external communication. With regard to the organizational meso level, the relevance of external communication within the industry ( $b = .320$ ) and with cooperation partners ( $b = .127$ ) becomes particularly obvious. Besides financial tangibles ( $b = .028$ ), the key resource for adoption simply seems to be information—finding its expression in communication with the environment and benchmarks against competitors.

These results shed some light on the necessity of networks to facilitate the adoption of disruptive innovations. Firstly, our conclusions—especially addressed to the German Publisher Associations—emphasize the development of a specific information policy that helps publishing houses to better understand and thereby more easily accept new technologies.

Secondly, we recommend fostering networks within the industry in order to establish communities of practice [68]. Communities of practice, understood as (open) spaces where learning with regard to some specific topic takes place within and across one's own market borders, function as drivers for innovation as they may force and speed up change by encouraging the members of the community. However, they may also lead to decisions against change if an innovation may not be fully convincing. Nonetheless, managed with sensitivity regarding innovativeness (in terms of e-books), industry-wide communities of practice may possibly bring the benefit of transforming media managers to *Schumpeterian* innovators and change managers.

## Limitations of the Study and Future Research

While the description of the adopters group was successful, our study may not sufficiently characterize non-adopters. Due to the small number of cases within the latter group, the interpretation of these results remains problematic.

We are observing that innovativeness is classified as a strong predictor for non-adoption ( $b = -.210$ ). How can this be explained? In our conceptual framework, we conceptualized innovativeness mainly with regard to technological factors. However, it is probable that managers interpreted this question on a more content-related level since in their daily work they deal with media content rather than media technology. Therefore, they presumably consider the content to be their critical goal [53]. Indeed, German publishing houses are very innovative in this field. This may explain the high scores for innovativeness found among the sample and especially among non-adopters.

Our study quantified the relevance of the barriers to disruptive innovations from a micro, meso and macro perspective. This holistic approach allows future research also on other technological adoptions by media organizations. Learning from different cases may enable traditional publishing houses—once “agents of change” [18]—to recover their former “agency” [22] and to move forward to a successful future.

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