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TO BELIEVE OR NOT TO BELIEVE – INVESTIGATING THE EFFECT OF COMMERCE-ORIENTED MEDIA REVENUE MODELS ON CONTENT CREDIBILITY

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Abstract

Many content providers still struggle to establish viable revenue models on the Internet and thus try to tap new sources of income. Using content to drive sales of related products or services such as in affiliate marketing or content-driven commerce appears to be a promising solution for this issue. However, these commerce-oriented revenue models may cast doubt on the credibility of the content, which is an important success factor for the providers. Drawing upon credibility concepts and information processing theories from communication science, we conducted a vignette-based online experiment to investigate whether content credibility is affected by the provider's revenue model. Participants in the experiment were shown a screenshot of a website, which was monetized either by advertising, affiliate marketing or content-driven commerce. Our results indicate that content credibility in the affiliate marketing scenario was higher than in the content-driven commerce or the advertising scenario. A mediation analysis revealed that this effect was mediated by the content provider's trustworthiness. Our findings shed light on the relationship between credibility and monetization of content on the Internet. Moreover, they are helpful for practitioners in the media industry in designing optimal revenue generation strategies.

Keywords: Content credibility, Revenue models, Content-driven commerce, Affiliate marketing.

1 INTRODUCTION

The Internet has fundamentally changed the competitive landscape for media companies, which we also refer to as content providers. Digital communication and ubiquitous connectivity have not only lowered information dissemination costs and offered new distribution opportunities, but also challenged previously stable revenue models. A lower willingness to pay for content in online formats compared to offline formats and the fear of losing customers to free competitors have urged many content providers to refrain from charging and to rely on advertising revenues instead (Berger et al. 2015; Pauwels & Weiss 2008). However, the advertising market on the Internet also differs substantially from its offline counterparts. On the one hand, performance-based pricing models and new advertising formats have been introduced (Kursad et al. 2012; Matteo & dal Zotto 2015). On the other hand, publishers and broadcasters face competition from platform providers such as Facebook and Google, which can target their ads much more precisely and thus dominate the online advertising market (eMarketer 2015; Hess 2014; PricewaterhouseCoopers 2015).

In search of new revenue sources, many content providers try to profit from sales of non-content items (Gallaughier et al. 2001). To do so, they may either refer their recipients to a merchant's store in return for a commission, as is the case in affiliate marketing, or they sell non-content items themselves, which is called content-driven commerce (Berger & Hess 2015). These commerce-oriented revenue models are particularly attractive for providers of special interest content (e.g. fashion, travelling, or motoring), which is consumed prior to purchase decisions. Alexander and Parsehian (2014) distinguish between two kinds of content in this regard: product-related content such as reviews or images of a specific product to be sold and contextual content, which concerns whole product categories or situations involving the use of offered products (e.g. shopping guides or how-to videos).

Apart from the revenue opportunities revealed by commerce-oriented revenue models, concerns have been raised regarding the credibility of content used to induce sales (Firnkes 2014). Because media companies are generally perceived as more credible than other product information sources, they have a high influence on consumers' attitudes (Cheng et al. 2014; Flanagin & Metzger 2007; Wang 2005). Content providers could be expected to take advantage of this position and alter their content to drive sales. Such an inference may be drawn in particular for providers of product-related content due to the close link between source of income and content. This may decrease the providers' credibility and thus ultimately their profitability, since credibility is an important predictor of popularity among Internet users (Du 2014).

Previous research has investigated differences in credibility perceptions between commercial and independent sources (Flanagin & Metzger 2007; Lee et al. 2011), advertising formats (Lord & Putrevu 1998; Tutaj & van Reijmersdal 2012), and sources of product recommendations (Luo et al. 2013; Willemsen et al. 2012). However, to the best of our knowledge no studies have examined if and how the credibility of product-related content is affected by the provider's revenue model. Consequently, our study seeks to answer the following research question:

RQ: How do content providers' revenue models affect the credibility of their product-related content?

In response to our research question, we conducted a vignette-based online experiment. Participants were randomly assigned to three different groups and shown a screenshot of a website with a notebook review. The revenue model of the website provider was manipulated and differed between each group. Subsequently, we asked respondents to judge the credibility of the review as well as the website provider's trustworthiness. The hypotheses underlying our experimental design were derived from source credibility theory and credibility evaluation models well established in communication science. Our study is the first to examine the relationship between these concepts and media revenue models and therefore contributes to a better understanding of content credibility evaluation on the Internet. Furthermore, our findings have important implications for practitioners regarding the balance between commercial interests and the perceived trustworthiness of content providers.

2 THEORETICAL FOUNDATIONS

2.1 Credibility Concepts and Credibility Evaluation

The concept of credibility has been subject to manifold investigations in both persuasion research, media science, and information systems (IS). In the literature on persuasion, credibility is perceived as a source-related concept. Accordingly, O’Keefe (2002, p. 181) defines credibility as “the judgement made by a perceiver (e.g. a message recipient) concerning the believability of a communicator.” Source credibility is commonly understood as a multidimensional construct and several factor-analytic studies have tried to establish measurement scales for source credibility (Ohanian 1990). There is a consensus that the dimensions expertise and trustworthiness identified by Hovland et al. (1953) are the main components of source credibility. Both are attributes ascribed to the communicator by the receivers. Specifically, trustworthiness describes the source’s motivation to communicate truthfully, whereas expertise is determined by the source’s ability to make valid assertions. Other source credibility dimensions such as dynamism (Berlo et al. 1969), attractiveness (Ohanian 1990), or goodwill (McCroskey & Teven 1999) have been proposed but are rather context-dependent and less widely applied. At this point, it should be noted that there is no unified conceptualization of the term source (Sundar & Nass 2001). The perceived source of a message can be its originator (e.g. a book author), its endorser (e.g. a celebrity in an advertisement), or the media channel on which the message is presented (e.g. a TV station).

In contrast to persuasion research, which treats credibility as a prerequisite for persuasiveness and focusses on attitudinal changes, media science is interested in the credibility of communication per se. Apart from source credibility, two further credibility concepts have evolved in this research area. Firstly, media credibility refers to the relative degree of trust that people have in different mass media such as newspapers, magazines, television, or radio (Metzger et al. 2003). Secondly, message credibility “is an individual’s judgement of the veracity of the content of communication” (Appelman & Sundar 2015, p. 5). Research on media credibility has been conducted since the 1960s (Carter & Greenberg 1965; Westley & Severin 1964). In contrast, the message credibility concept has evolved rather recently in the context of news perception on the Internet (Flanagin & Metzger 2007; Sundar 1999). Despite their importance in digital communication, the investigation of credibility concepts in IS is mostly limited to the contexts of decision support systems, recommendation agents, and website design (Lowry et al. 2014; Rieh & Danielson 2007; Xiao & Benbasat 2007). This is also because the concept of trust is much more widely applied. Though some scholars use trust and credibility interchangeably (e.g. Kohring & Matthes 2007), we agree with Tseng and Fogg (1999) in that trust describes the overall dependability of a person or an information system, whereas credibility is concerned with the believability of the information. In fact, source credibility has been shown to be an important predictor of trust in online environments (Lowry et al. 2014).

All in all, we can distinguish between credibility concepts at three different levels: source, medium, and message (Lucassen & Schraagen 2012; Metzger et al. 2003). Because our paper deals with online content providers, which do not differ by medium, we focused on source and message credibility. In accordance with our research question, we framed the content communicated on a website as the message and the content provider running the website as the source of this message. Moreover, the content provider’s credibility was exclusively examined in terms of trustworthiness, since it is not the ability to provide unbiased content (i.e. the expertise) but the willingness to do so, which might be affected by their revenue models.

The existence of credibility concepts at different levels raises the question which of these receivers actually evaluate. The most prominent frameworks that explain credibility assessment are the Elaboration Likelihood Model of Persuasion (ELM) by Cacioppo and Petty (1984) and the Heuristic-Systematic Model (HSM) by Chaiken (1980). In spite of differences in the details, both models propose that the processing of communication can be described by a continuum between two routes.

On the central route, receivers spend a lot of cognitive effort evaluating the message's arguments and their validity. The resultant attitudes are supposed to be relatively persistent and predictive of the receivers' subsequent behavior. On the peripheral route, receivers derive their attitudes from non-content cues and heuristics. These attitudes are less stable over time and exert less influence on the receivers' actions. Whether receivers tend to the central/systematic or the peripheral/heuristic route depends on their motivation and cognitive ability to process the reasoning of a message, which is called elaboration likelihood. The elaboration likelihood is influenced by several factors such as the receivers' prior knowledge about the topic of the message, its personal relevance to the receivers, or distractions during its processing.

In online environments, the receivers' burden of credibility evaluation has increased because much of the information published on the Internet bypasses professional gatekeeping processes and therefore lacks traditional authority indicators (Metzger & Flanagin 2013). In conjunction with the short time that users spend at a website and their limited cognitive capacity, this probably leads to an increased application of heuristics. Thus, theories that specifically describe online information processing have been put forward. Wathen and Burkell (2002) suggest that users first assess the surface characteristics of a website based on its appearance, usability, and organization, before judging the credibility of its source and content. Only if these evaluations are positive, will users actively deal with the information provided. Fogg's (2003) Prominence-Interpretation Theory states that the perceived credibility of a website depends on which elements of the website are actually noticed by the users (prominence) and how they evaluate these elements (interpretation). Since credibility assessment plays a focal role in our experiment, we drew upon these models and theories when formulating our hypotheses.

2.2 Media Revenue Models

In comparison to credibility concepts, revenue models are widely discussed in IS literature. A revenue model is part of a company's whole business model and describes how a company's value creation activities lead to earnings (Amit & Zott 2001; Osterwalder et al. 2005). The value creation of media companies consists of the selection, collection, compilation, and distribution of content, which is why they are also called content providers (Hess 2014; Wirtz et al. 2010). To monetize these activities, content providers can employ two kinds of revenue models. Direct revenue models are based on payments by customers of the content and include subscriptions, usage-related fees, licensing, and content syndication (Gallaughner et al. 2001; Ha & Ganahl 2004; Zerdick et al. 2000). In contrast, advertising and affiliate marketing are indirect revenue models, in which content providing is financed by third parties paying for access to recipients. Advertising rates were traditionally calculated based on reach or impressions, but on the Internet cost-per-click pricing is possible as well (Kursad et al. 2012). In affiliate marketing, the content provider is reimbursed depending on the actions a user takes after being transferred to a merchant's website via an affiliate link or banner. Several compensation models including cost-per-lead (if users register at the merchant's store or sign up for a newsletter), cost-per-conversion (if users become customers), or revenue sharing may be employed (Gallaughner et al. 2001; Libai et al. 2003).

Instead of referring users to external online shops, a content provider may also sell non-content items on its own, which is referred to as content-driven commerce (Berger & Hess 2015). Condé Nast, for example, has decided to transform its editorial website Style.com into an e-commerce platform (Abnett 2015). Although it is not the content that is paid for, content-driven commerce is a direct revenue model as the revenues stem from the recipients rather than third parties. One might argue that content-driven commerce actually constitutes a whole new business model, because the integration of commerce alters the value creation of the content provider. Nevertheless, we will summarize affiliate marketing and content-driven commerce under the term commerce-oriented revenue models for the sake of space in this paper. Our study investigates whether the credibility of product-related content differs between these commerce-oriented revenue models as well as in comparison to advertising, which is the most common media revenue model online and thus serves as a baseline.

3 DEVELOPMENT OF HYPOTHESES

3.1 The Effect of Revenue Model on Source Trustworthiness

Early experiments in persuasion research showed that a forewarning of the persuasive intent of a message reduces its persuasiveness owing to increased counterargumentation (Hovland et al. 1953; Petty & Cacioppo 1979). Consequently, sources that are suspected to be manipulative are judged as less credible. This persuasive intent heuristic also holds in online environments and is also triggered by commerciality cues. Flanagin and Metzger (2007) found that providers of commercial websites were rated significantly less credible than those of news websites, while Xiao and Benbasat (2007) proposed that users will trust product recommendation agents offered by independent providers more than those offered by vendors. Participants in qualitative studies regularly express concerns regarding the credibility of commercial sources either (Hilligoss & Rieh 2008; Metzger et al. 2010).

The high credibility ascribed to most content providers is rooted in their perception as independent third parties (Flanagin & Metzger 2007). They are supposed and believed to pursue an objective stance and keep editorial content free from commercial interests. The independence of content providers from vested interests is a prerequisite for their trustworthiness (Moore et al. 1989). However, if content providers employ commerce-oriented revenue models, their income depends on the sales induced through their content. This incentivizes them to create editorial content that is supposed to increase the number of sales. Therefore, their motivation to communicate truthfully is lowered. Given that recipients are able to discern these conflicts of interests, the perceived trustworthiness of content providers as information sources will be affected (Folkes 1988).

Based on this reasoning and the previous research findings we hypothesize that the credibility of content providers will vary depending on their revenue model due to changes in their trustworthiness. Specifically, the higher their interest in realizing sales, the lower the trustworthiness of content providers will be. This interest should be lowest if the content provider relies on advertising, which is independent of sales. Among the commerce-oriented revenue models, content-driven commerce should elicit a higher commercial interest than affiliate marketing, because the sales risk lies with the content provider instead of an external merchant. Accordingly, we propose the following hypotheses:

H1a: Content providers employing affiliate marketing are less trustworthy than those employing advertising as a revenue model.

H1b: Content providers employing content-driven commerce are less trustworthy than those employing affiliate marketing as a revenue model.

3.2 The Effect of Revenue Model on Content Credibility

The literature uniformly confirms the central role played by source credibility in the interpretation and evaluation of messages (McCroskey & Teven 1999). Information from highly trustworthy sources is generally perceived as more reliable and credible than information from sources regarded as low in trustworthiness (Pornpitakpan 2004). This relationship has been proved to hold in multiple contexts: the persuasiveness of a message advocating a political stance is higher if it stems from a credible communicator (Hovland et al. 1953); consumers respond more favorably to promotional information if the sources appear less commercial (Lord & Putrevu 1998; Salmon et al. 1985; Tutaj & van Reijmersdal 2012; van Reijmersdal et al. 2005); and at work, advice from a colleague is perceived as more useful if this colleague is credible (Watts Sussman & Schneier Siegal 2003).

The degree to which source credibility influences the perception of a message depends on its processing by the receiver. In the end, source credibility serves as a nominal cue that allows to assess information based on a simple heuristic (Sundar 2008). According to ELM and HSM, the lower the receiver's elaboration likelihood, the more influential this heuristic will be. Because content

consumption on the Internet is rather cursory, the receiver's motivation and ability to systematically process content online is likely to be low (Fogg 2003). Thus, Internet users will draw inferences about the content from cues that are immediately available to them. Several researchers have noted that the source of content on the Internet may be hard to determine for receivers, since content can easily be copied and shared and credentials are often missing (Metzger & Flanagin 2013; Sundar 2008; Sundar & Nass 2001). Nevertheless, first studies on the evaluation of message credibility in online environments found evidence for the reliance on source cues (Flanagin & Metzger 2007; Lucassen & Schraagen 2012; Xu 2013).

In the light of these results it is reasonable to assume that credibility of content on the Internet is affected by the credibility of the provider. Following Fogg (2003) and Wathen and Burkell (2002), recipients will probably integrate the provider's revenue model as a commerciality cue in their evaluation of the content, because advertisements, affiliate banners or product offerings are usually placed within or next to the actual content on a website. This cue should be especially present if the products offered are the subject of the content presented. Therefore, we hypothesize:

H2a: Product-related content monetized by affiliate marketing is less credible than product-related content monetized by advertising.

H2b: Product-related content monetized by content-driven commerce is less credible than product-related content monetized by affiliate marketing.

3.3 The Mediating Role of Source Trustworthiness

Although the influence of source credibility on the perception of information has been demonstrated by many experimental studies, little is known about the simultaneous effects of external cues on both source and content credibility as well as the interaction between these. This might be due to a lack of measures to assess content credibility as a separate construct from source credibility (Appelman & Sundar 2015). Flanagin and Metzger (2007) found a joint effect of website genre on website, message, and source credibility, but did not investigate the interaction between those. In their study on online recommendations, Luo et al. (2013) modelled source credibility as a moderator between the characteristics and the credibility of a recommendation. In contrast, we evaluate the credibility of content independently from its specific characteristics. Because revenue models are a source-related concept, it is reasonable to suggest that their influence on content credibility will be mediated by source trustworthiness. Previous findings by Lucassen and Schraagen (2012) and Willemsen et al. (2012) support this rationale. Hence, our final hypothesis is:

H3: The negative effect of commerce-oriented revenue models on credibility of product-related content is mediated by source trustworthiness.

4 METHOD

4.1 Experimental Design

To investigate the hypothesized effects of commerce-related revenue models on trustworthiness of content providers and credibility of their product-related content, we conducted a vignette-based online experiment. In vignette studies, participants are confronted with fictitious scenarios or objects (vignettes) before being asked to make judgements or decisions in reaction to these vignettes (Aguinis & Bradley 2014). Our vignettes consisted of carefully arranged screenshots of a fictitious website with product-related content. These were preceded by a short textual description of the provider of that website. This methodology was fit for the purpose of our study for two reasons. Firstly, we were able to exclude unwanted influences on the participants' credibility evaluation process by designing vignettes that were identical except for the hints of the content provider's revenue model. This allowed

us to examine precisely the effects we hypothesized and ensured internal validity. Secondly, presenting a website screenshot in an online survey, which participants answered on their own devices within their regular environment, closely mimics actual content consumption and thus should lead to higher external validity compared to laboratory experiments. While this comes at the cost of a hypothetical setting and a simplified representation of a website in the form of a screenshot, previous research has shown that individuals' reactions to scenarios induced by vignettes are similar to those constructed in laboratory experiments (Dennis et al. 2011; Shaw et al. 2003) and that screenshots can serve as realistic vignettes (Jeong & Kwon 2012; Lowry et al. 2014).

Consequently, our online experiment had a 3-group between-subject design with manipulations of revenue model (advertising vs. affiliate marketing vs. content-driven commerce). The questionnaire was answered by German students and comprised the following steps: On the first page, participants were welcomed and instructed to answer all questions thoroughly. The subjects were then randomly assigned to one of the three experimental groups and introduced to their vignette scenario. A short text asked the participants to imagine that they would be searching for a new notebook on the Internet. During this search they had encountered the website 'Bits&Bytes', which publishes content on consumer electronics such as professional product reviews, rankings or shopping advices. 'Bits&Bytes' was supposed to have been established for several years and accordingly well-known. The participants were then told they would be shown a screenshot of that website on the next page and asked to read the article depicted in that screenshot carefully. To ensure a minimum amount of engagement with the screenshot, participants were required to stay on the page with the screenshot for at least one minute. After leaving this page, the post-experimental survey began. Returning to any of the previous pages of the questionnaire including the vignettes was not possible. The survey proceeded in the following order: independent variables, specific control variables, and demographics.

4.2 Manipulation of Independent Variables

The screenshots of the 'Bits&Bytes' website were modelled after existing consumer electronic websites and contained header, center column, right-hand column, and footer (see Figure 1). A self-created 'Bits&Bytes' logo, the navigation bar, and a login link made up the header. The article the participants were supposed to read was a notebook review and displayed in the center column of the website. Beside the main text it featured a short abstract, a small box with a summary of the review results and four images of the notebook from different angles. Several boxes with links to the most read notebook reviews, the most popular notebooks, and the 'Bits&Bytes' forum as well as a tag cloud with the topics addressed most on 'Bits&Bytes', were placed in the right-hand column. The footer consisted of a reduced sitemap and the common links to the website's imprint, privacy policy and terms of use. All these elements were exactly the same in every vignette.

However, the area below the article in the center column and the top box of the right hand column differed from vignette to vignette. In the advertising scenario, two ads of a German bank were presented at these positions. We opted for a bank as advertiser because the company is well-known and obviously not related to the content of the article. Thus, participants had no reason to believe that the notebook review might be biased in favor of the product. In place of the bank advertisements, offers from three different online shops to buy the notebook reviewed in the article were pictured in the affiliate marketing vignette. Both manipulated areas contained the logos of the three online shops, their price quotes, and three buttons labelled '*To the Shop*'. Above the affiliate offers were headings that recommended these offers in the name of 'Bits&Bytes'. Finally, the vignette for the content-driven commerce scenario depicted the option to order the notebook from 'Bits&Bytes'. Similar to the affiliate vignette, a heading suggesting to buy the notebook from 'Bits&Bytes' was placed at the top of each manipulated area. A price quote and an '*Add to Shopping Cart*' button were prominently positioned below in both manipulated areas. Furthermore, information on shipping costs and availability was provided. In the center column the key facts of the hardware specifications were added, as is done by most online shops selling consumer electronics.

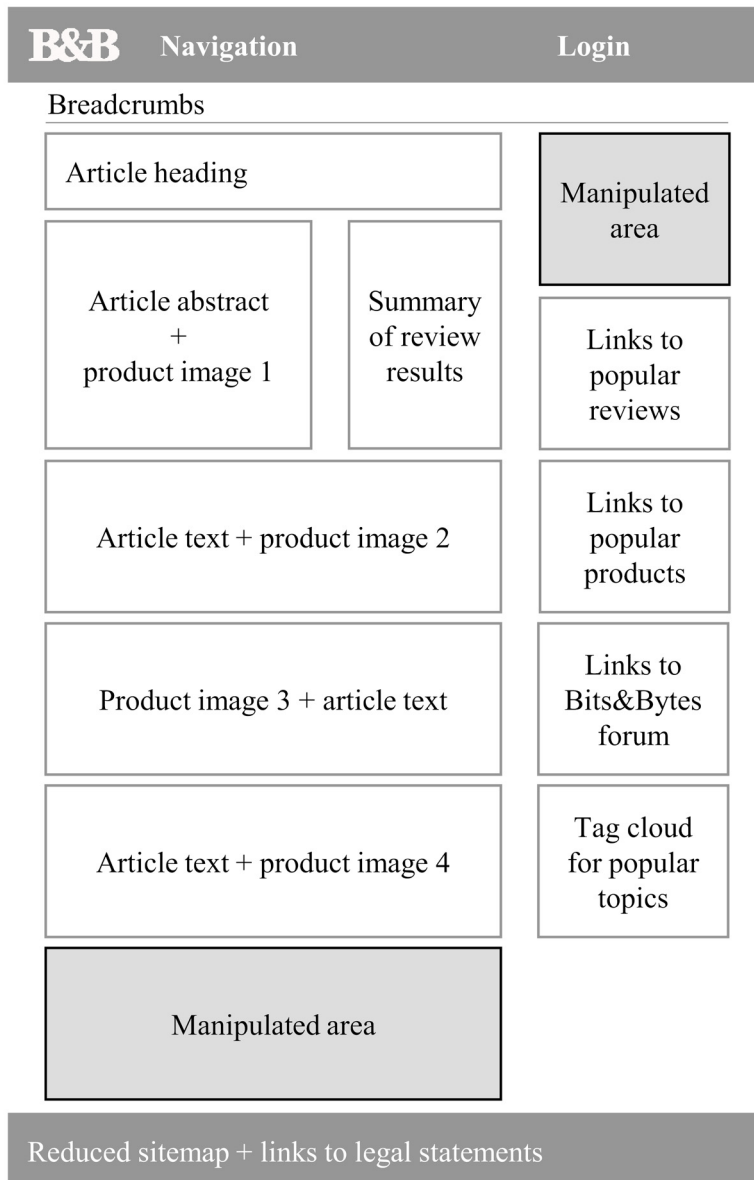


Figure 1. Structure of the website shown in the vignettes

We chose a notebook as the topic of the product-related content and the product offered in the vignettes of the commerce-oriented revenue model scenarios for several reasons. Firstly, we wanted to ensure that all participants in the experiment were familiar with the product category and had a basic level of knowledge about it. This is very likely to be the case for notebooks because nowadays almost every student owns a notebook for study purposes. Secondly, given that students have limited budgets, buying a new notebook is a large investment for them. Therefore, decision involvement is high and the purchase is likely to be preceded by an information search on eligible products as suggested in our scenario. With this in mind, we selected a mid-priced notebook to be reviewed in the vignette articles. Thirdly, as many students will have encountered the situation of buying a notebook in the past or are likely to do so in the future, the realism of the scenario and the participants' motivation to immerse themselves in the task, should be high. In sum, both the choice of notebooks as focal topics of our vignettes as well as the use of a student sample were appropriate for our study.

4.3 Measures

In the post-vignette survey of our questionnaire we drew upon previously established constructs and adapted these to the context of our online experiment. For our two dependent variables source trustworthiness (TRUS) and content credibility (CRED) we adopted the trustworthiness dimension from Ohanian's (1990) widely cited source credibility scale and the reflective items from the recently developed message credibility construct by Appelman and Sundar (2015). Besides, we implemented several control variables. Because topic involvement and knowledge can affect how the credibility of a message is evaluated (Petty & Cacioppo 1984), we controlled for product involvement (Zaichkowsky 1994) as well as for product class knowledge (Smith & Park 1992). Similarly, we examined the participants' propensity to trust (Mayer & Davis 1999) and perceived intrusiveness of online ads based on the scale by Li et al. (2002). Whereas source trustworthiness and product involvement were measured by seven-point semantic differential scales, the items of the remaining constructs were rated on seven-point Likert-type scales anchored at 1 (strongly disagree) and 7 (strongly agree). For our group comparisons we used summated scales based on the average scores of each multi-item construct (Zhu et al. 2012). All items were carefully translated into German. A back-translation by a person unrelated to the research project ensured that the meaning of the items was not altered. Apart from the constructs, we asked participants how much time they spent on the Internet for personal purposes on an average day and how often they ordered something online for personal use. Participants' age, gender, education, occupation, and income were also collected in order to control for a homogeneous distribution with regard to these demographics across the experimental groups.

4.4 Data Collection

Before the experiment was carried out, we conducted a pre-test to ensure that the vignettes were manipulated according to the experimental design and to ensure the comprehensiveness of the questionnaire. We obtained feedback from twelve respondents including practitioners, researchers, and students and revised the vignettes as well as the wording of the questionnaire accordingly. The final experiment took place at the beginning of 2016. Students were invited to participate using the mailing list of a large public university in Germany and university groups on social networks. As an incentive, five shopping vouchers worth €30 each were announced to be drawn in a lottery among all participants. Overall, 233 subjects entered and 184 subjects completed the questionnaire. Three participants had to be excluded because their answers did not show any variance or because they had finished the survey in less than four minutes (the average time was around six and a half minutes). The average age of the remaining 181 respondents was 24.59 (SD=6.52) years, 62% of them were female, more than 90% held a high school diploma, and 89% were students. The average reported personal Internet use per day was 2:46 (SD=1:30) hours and 66% of the subjects stated to shop online at least once a month.

5 RESULTS

5.1 Control Variables

To test whether subjects were distributed homogeneously across the experimental groups with respect to the categorical demographic and control variables, we applied Fisher's exact test. No significant differences ($p > 0.1$) between groups across gender, education, occupation, income, and online shopping frequency were found. Furthermore, a series of one-way analyses of variance (ANOVA) revealed no significant group differences in terms of age ($F = 0.551$, $p > 0.1$) or the continuous control variables product involvement ($F = 0.501$, $p > 0.1$), product class knowledge ($F = 1.040$, $p > 0.1$), propensity to trust ($F = 0.433$, $p > 0.1$), ad intrusiveness ($F = 0.577$, $p > 0.1$), and internet use ($F = 0.127$, $p > 0.1$). Consequently, we concluded that the effects of our experimental manipulations were not confounded by group differences in demographics or task-relevant attitudes.

5.2 Measurement Validation

Because both source trustworthiness and content credibility had been established by previous research, we conducted a confirmatory factor analysis (CFA) in SmartPLS 3 to validate our scales (Levine 2005; Ringle et al. 2015). The results of the reliability assessment are provided in Table 1. Internal consistency reliability was evaluated using Cronbach's alpha (Cronbach 1951) and composite reliability. In both cases, values above 0.7 are satisfactory (Nunnally & Bernstein 1994). The alphas and composite reliabilities of our constructs exceeded 0.8 and 0.9 respectively. The items are regarded as reliable if their standardized factor loadings are higher than 0.7 (Hair et al. 2011). The lowest observed factor loading in our data was 0.854. Thus, all constructs were reliable.

Latent Construct	Items	Range of Factor Loadings	Cronbach's Alpha	Composite Reliability (ρ_c)
Source Trustworthiness (TRUS)	5	0.854 – 0.915	0.939	0.953
Content Credibility (CRED)	3	0.884 – 0.930	0.893	0.933

Note: Reported factor loadings are standardized. All factor loadings were significant at the $p < 0.01$ level.

Table 1. Construct reliability assessment: factor loadings and internal consistency criteria

Moreover, we evaluated the validity of our constructs. The average variance extracted (AVE) was used as a measure for convergent validity. The AVE values of both constructs exceeded 0.5 by far, which means that the variance in the indicators accounted for by their constructs was larger than the variance due to measurement error (see Table 2). Therefore, convergent validity was given. To assess discriminant validity we drew upon the Fornell-Larcker criterion, which says that for each construct the square root of the AVE has to be larger than the variance shared with other constructs (Fornell & Larcker 1981). This condition was met in our data. As a result, the measurement of our constructs was valid.

Latent Construct	TRUS	CRED	AVE
Source Trustworthiness (TRUS)	<u>0.896</u>		0.803
Content Credibility (CRED)	0.696	<u>0.908</u>	0.824

Note: Underlined diagonal elements in the correlation matrix are the square root of AVE. The Fornell-Larcker criterion requires these values to be higher than the off-diagonal inter-construct correlations.

Table 2. Construct validity assessment: average variance extracted and correlation matrix

5.3 Hypothesis Testing

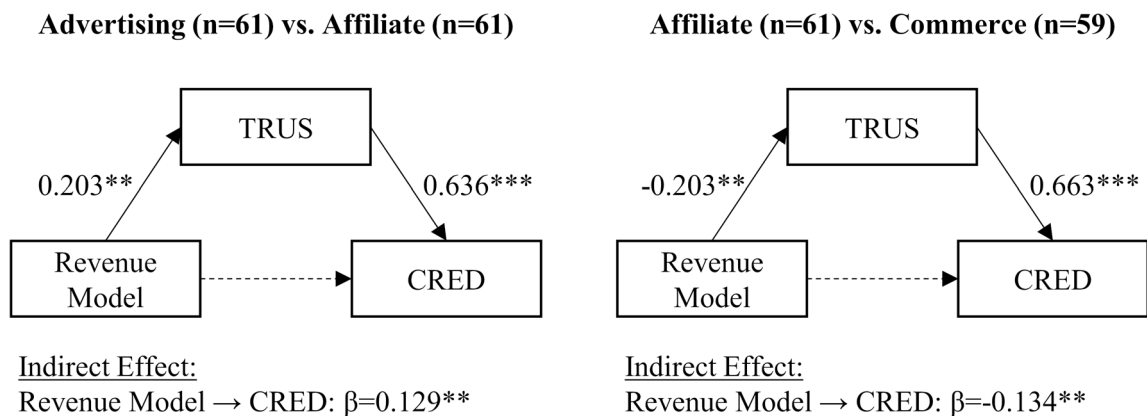
We tested our hypothesis by conducting one-way ANOVAs with planned contrast tests in IBM SPSS Statistics 23. The tests revealed significant main effects of revenue model on source trustworthiness ($F=3.222$, $p < 0.05$) and content credibility ($F=3.196$, $p < 0.05$). Participants of our experiments in the affiliate marketing scenario judged the content provider significantly more trustworthy than the participants in the advertising and in the content-driven commerce scenario. Hence, H1a was rejected and H1b supported. Likewise, the article was rated significantly higher in credibility with affiliate banners positioned next to it than with regular advertising being displayed or the opportunity to order the product reviewed in the article being offered by the content provider. These results supported H2b but not H2a. In a post hoc contrast analysis we additionally compared the mean differences between the content-driven commerce and the advertising group for all independent variables. No significant differences between these two groups were found.

Independent Variables	Mean Values for Groups			Mean Differences between Groups	
	Advertising (AD) n=61	Affiliate Marketing (AF) n=61	Content-driven Commerce (CO) n=59	AF - AD	CO - AF
TRUS	5.007	5.433	4.993	0.426**	-0.440**
CRED	5.153	5.530	5.006	0.377*	-0.524**

Note: ***p<0.01; **p<0.05; *p<0.1 (two-sided)

Table 3. Group means, mean differences between groups and significance levels

In response to H3 and to generate further insights on the mechanism behind the effect of revenue model on content credibility, we conducted a mediation analysis. To do so, we set up a partial least squares structural equation model in Smart PLS 3 (Ringle et al. 2015). A component-based structural equation modelling approach was preferred because in contrast to covariance-based approaches lower requirements on sample size and the distribution of the underlying data are imposed. Along with our theoretical considerations, the model included content credibility and source trustworthiness as dependent and revenue model as a dichotomous independent variable (see Figure 2). This allowed us to investigate the effect of a change in revenue model from advertising to affiliate marketing (left-hand side) as well as from affiliate marketing to content-driven commerce (right-hand side).



Note: Dashed lines indicate non-significant paths; ***p<0.01; **p<0.05; *p<0.1

Figure 2. Mediation analysis for the effect of revenue model on content credibility

The reflective measurement model has already been evaluated in our CFA. We also assessed whether collinearity was an issue in our structural model. All variance inflation factor (VIF) values were far below the critical threshold value of 5 (Hair et al. 2011). To test the significance of path coefficients, we applied a complete bootstrapping with 10,000 subsamples, bias correction and two-tailed tests. Significant paths from revenue model to source trustworthiness and from source trustworthiness to content credibility were found in both cases. In contrast, the direct effect of revenue model on content credibility were insignificant owing to the inclusion of trustworthiness in the model, suggesting an indirect-only mediation (Zhao et al. 2010). As a consequence, H3 was supported. With an adjusted R^2 for content credibility of 0.402 in the left-hand and 0.463 in the right-hand mediation analysis our model also exhibited a good predictive accuracy. In other words, using revenue model and source trustworthiness as predictors, we were able to explain more than 40% of the variance in content credibility.

6 DISCUSSION

The purpose of this study was to determine whether there is an effect of content providers' revenue models on the credibility of their product-related content. Our findings confirmed the existence of such an effect and its mediation by providers' trustworthiness. According to the results of our experiment, participants relied, at least partially, upon a source heuristic to judge the credibility of the notebook review and considered the revenue model cues positioned next to the article in their source evaluation. This behavior is in line with existent models describing information processing on the Internet (Fogg 2003; Wathen & Burkell 2002).

We furthermore argued that the effect of commerce-oriented revenue models on source trustworthiness would be triggered by considerations regarding the content provider's interest in selling the product that was reviewed in the article. Following this logic, source trustworthiness and content credibility should have been higher in the advertising and lower in the content-driven commerce scenario compared to the affiliate marketing scenario. While this was true in the latter case, the opposite effect was found in the comparison of advertising and affiliate marketing. Apparently, revenue models do not exclusively operate as a commerciality cue. We may think of two explanations for this finding.

On the one hand, the respondents may have actually perceived the content provider's interests as vested, which would explain that source trustworthiness ratings were lower in the content-driven commerce group than in the affiliate marketing group. At the same time, a strongly negative attitude towards advertising could have superimposed the commerciality effect and caused the lower trustworthiness of providers employing advertising compared to those relying on affiliate marketing. Many consumers try to avoid online advertisements due to their sheer amount and because it distracts them from their actual purpose of using the Internet (Cho & Cheon 2004). The unabated popularity of ad blockers emphasizes this issue. Advertisements that are completely unrelated to the editorial content presented on a website may thus be perceived as annoying. Respondents could also have inferred that content monetized by advertising is of low quality because it is not charged for or used to realize sales-related revenues. Anyway, the effect of advertisement averseness, if present, would outweigh the commerciality effect between advertising and affiliate marketing and compensate the commerciality effect between advertising and content-driven commerce, since no significant differences between these revenue models were detected in our post hoc analysis.

On the other hand, the subjects of our experiment may have ignored the content provider's conflict of interest between reviewing the notebook objectively and trying to promote its sales. In this case, the significant differences in source trustworthiness and content credibility between the affiliate marketing and the remaining scenarios would have to have a different cause. A higher trustworthiness of the content provider acting as an affiliate could be rooted in the fact that logos and prices of different online shops were displayed in the affiliate banner. Participants may have perceived this as an additional service in the sense of a price comparison. If this were true, the mere information conveyed by the affiliate banner would have dominated its call-to-action in the perception of the participants. This in turn may have strengthened, rather than weakened the impression that the content provider takes an objective stance when reviewing the products offered by the merchants.

Contrasting our results with previous research reveals that there is no consensus regarding the existence of a commerciality effect in recipients' processing of information in online environments. Whereas qualitative studies (Hilligoss & Rieh 2008; Metzger et al. 2010) and the experiment by Flanagin and Metzger (2007) point towards this way of thinking, Senecal and Nantel (2004) were not able to detect such an effect. A possible explanation for these contradictory findings could lie in the differences between the manipulations of the experimental treatments, which were quite explicit in the study by Flanagin and Metzger (2007) and more subtle in our and in Senecal and Nantel's (2004) experiments. Thus, consumers might indeed be critical of content from more commercial sources but do not necessarily become aware of the commerciality of a source when evaluating content credibility.

7 CONCLUSION

7.1 Implications

The results of our study have important implications for both practitioners and researchers. From a theoretical perspective, we provide first evidence of an effect of content providers' revenue models on their trustworthiness as well as on the credibility of their content as perceived by the recipients. Apart from demonstrating the presence of this effect, we were able to conclusively explain the relationships between these variables using a mediation analysis: the effect of content providers' revenue models on content credibility operates through the providers' trustworthiness. Therefore, our study firstly enhances the understanding of the interaction between the well-established source credibility and the more recently explicated message credibility construct. Secondly, we forged an interdisciplinary link between these credibility concepts from communication science and the revenue model concept, which originates from the IS literature. Future research may draw upon these findings as a foundation for further theoretical development.

Likewise, the insights generated in this paper are valuable for decision makers in the media industry. Taking the advertising revenue model as a baseline, we showed that content providers do not have to fear becoming less credible if employing commerce-oriented revenue models as long as the content remains unaffected, which was the case in our experiment. Since we could not unequivocally identify a commerciality effect in the credibility assessment of product-related content, affiliate marketing and content-driven commerce offer promising solutions for the content providers' lack of viable revenue models on the Internet. In fact, content providers may even raise their credibility by becoming affiliates. Which revenue model is most profitable in the end depends on the margins that can be realized and the occurring costs. Both are presumably higher in content-driven commerce than in affiliate marketing. Moreover, different types of content and topics may be more or less suitable for one revenue model or the other.

7.2 Limitations and Suggestions for Further Research

Although we were able to identify effects from revenue models on credibility concepts at different levels, our research is subject to limitations, which offer multiple starting points for future studies. Firstly, we used a student sample for our online experiment. Because students might be more familiar with online shopping and have a higher education than the average Internet user, they might be more likely to understand the differences between the investigated revenue models. Studies relying on all Internet users as population could clarify whether this led to an overestimated effect in our results. Secondly, our findings are limited to product-related content. The credibility of other kinds of content is supposedly less strongly affected by the providers' revenue models since the link between the content's topic and revenue generation is less apparent. Thirdly, we used a search good as product offered in the commerce-oriented revenue models and topic of the vignette article. Previous research has shown that consumers process information about search and experience goods differently (Jain & Posavac 2001). Consequently, future research might investigate whether the effect of revenue models on the credibility of product-related content also holds for experience goods. Fourthly, the results of our study might have been influenced by the specific design of the revenue model cues. It would be especially interesting to see whether affiliate marketing exhibits a different effect on content credibility if the offer of a single merchant is displayed. This would allow further theorizing about the rationales guiding recipients' judgement of a content provider's trustworthiness. Finally, additional revenue models such as subscriptions could be included in the comparison of revenue models' effect on content credibility. However, it should be noted that charging for content may influence its perceived quality and thereby its credibility. Overall, we hope that our study encourages researchers to further investigate the role of revenue models and commercial interests in the evaluation of content credibility.

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