Presentation, Technology, and Content – Studies on Consumer Behaviour in Journalism

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Abstract/Zusammenfassung

The goal of this thesis is to extend the understanding of the effects the presentation and visuality of journalism can have on users and consumers. Further, this thesis makes a case that a focus on the presentation and visuality of journalism is a possibility for audience orientation without compromising journalistic quality. The visual presentation of journalism has become very important because of technological developments that make the reproduction of design, pictures, layout and any other relevant presentation modes so much easier. While practitioners are handling this on a daily basis, management researchers are just starting to empirically investigate related phenomena, especially in the context of journalism.

Along five empirical studies conducted in the journalism field, this thesis establishes links between the presentation, technology and content of journalism and consumer behaviour. It further identifies frameworks to approach the presentation of journalism and theoretically explains how the presentation can provide a possibility for audience orientation without compromising content. Thereupon, this research derives recommendations for theory and practitioners in order to uphold the business viability of news production.

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For my children and my godchildren,
and for a good future with journalism that matters.

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1 Synopsis

1.1 Introduction

If journalistic content should not be altered in a way that suits market logics (Ferrucci, 2018; Gentzkow et al., 2014; McManus, 1994; Mullainathan & Schleifer, 2005; Tandoc & Thomas, 2015) then what can companies in the journalism field do to remain competitive? Especially in view of the fact that they need to do something, as the economic viability of news production has decreased in efforts to meet the digital challenge (Chyi & Tenenbaum, 2019; Picard, 2014; Royal et al., 2020; Siles & Boczkowski, 2012) and public solutions through government regulations are not established fast enough (e.g. Nielsen & Selva, 2019). Interestingly, the management literature has not yet looked at those news components that are less connected to the content and more connected to its visuality: *the way* journalism looks and is presented. It is not just the content any longer, that is important for the success of a journalistic product, but also the way it 'looks' and 'works' (Bell & Davison, 2013). This goes as far as what *The Economist* describes to be "the content of the news (…) is less important than how it is packaged" (Delhi et al., 2019).

Hence, I empirically research the presentation and visual parts of content and technology in the field of journalism and their effects on consumers. I suggest that one answer for media companies to remain competitive can be found *in the presentation mode of news, editorial content design and the visual parts of technology*. Following they will be called *presentation properties*, because properties has been the term utilized in previous media consumer literature instead of the term characteristics (Valkenburg et al., 2016). Overall, presentation properties can be placed at the micro-level of market-driven journalism (Cohen, 2002), the micro-level of media effects theories (Valkenburg et al., 2016) and can be subsumed as product-based factors of journalism (O'Brien et al., 2020; Sommer & von Rimscha, 2013) or as media properties (Valkenburg et al., 2016). Presentation properties are concepts of practical and scientific relevance, play a role in different academic disciplines with certain overlaps in their definitions, but one commonality no matter from which direction presentation properties are looked at, is that they are financially relevant and that they represent important conceptual and measurements tools for investigating the effect of presentation on consumers.

Despite decades of research in the management of journalism, research has largely neglected the influence of media presentation properties on consumer behaviour as well as on media-bias and thereby market-driven journalism. In journalism studies as well as in management research

about journalism, focus was placed on the production and impact of text mainly (Boomgaarden et al., 2016; Machin & Polzer, 2015). Researchers Machin and Polzer (2015) raise the question whether journalistic production has been misrepresented because of an "emphasis on content in a text-and-information sense" (p. 168) only, even though the presentation of content forms the mediation just as much as the content itself does. In general management studies, there is a slowly growing recognition of so-called visual management studies (Bell & Davison, 2013). Visuality is key to economic success: 'the look', content and technological advancements are all crucial for consumers' decision to adopt media products (e.g. Schoenbach & Lauf, 2002). After all, they are one of the primary ways to attract and also retain the readers' attention. In detail, very little work has been done to understand consumer behaviour in this regard; Consumer behaviour can be measured in various way of which I have chosen but a few, such as consumer's willingness to pay (WTP) for journalism and impact on sales and technology acceptance.

While this thesis is placed in the business studies, a field in which consumer-orientation is the norm, looking at journalistic products with the lense of business management is a difficult topic and needs to be addressed. The main reason being that the more market-oriented the journalism field operates, the greater the chance that journalism as a public good is sacrificed as too much value is placed on market wants, which means that demand-driven media bias could prevail (Tandoc & Thomas, 2015; Wellbrock, 2011). At the same time, we see in practice, that the title "product owner" has already developed in news rooms (Timm, 2021). Hence, the fact that journalistic content functions like a market commodity experiences upheaval while it is by no means a new phenomenon (Beam, 2003; Lee et al., 2014; McQuail & Deuze, 2020). In order to meet this challenge between consumer and business research on the one hand and societal meaning on the other, it is important to acknowledge concerns raised in other disciplines outside of the management research. Hence, this research is particularly placed in media management research, as it is a field ranging from journalism studies to general management (Picard & Lowe, 2016; Rohn, 2018) and thereby provides exactly the constructive combination of research fields answers can be found in. The field of study – and thereby also this thesis – allows to regard journalism with its embedment as a 'product', that has an effect on individuals in terms of its communication quality (e.g. knowledge transfer, Valkenburg et al., 2016) and in terms of economic effects (e.g. willingness to pay, WTP, Berger et al., 2015). This thesis thereby asks for a change of perspective – or puts bluntly, what has been the case in news rooms anyway, which is to think of journalism as a product (Royal et al., 2020).

Bearing this in mind, in a series of studies, I attempt to contribute towards a better understanding of the *effects of presentation properties on consumer behavior and behavioural intention for journalistic products* to help finding revenue models in the news and journalism sector. The resulting overarching *research question* reads:

(1) What is the role of presentation properties on consumer behavior and behavioural intention in journalism?

The overall aim of this thesis is to understand whether presentation properties provide a possibility for audience orientation without compromising journalistic quality.

The studies are comprised of a total of five independently carried out, but thematically connected papers.

(A) and (B) These studies provide a platform-independent framework for measuring and categorizing presentation modes in (digital) journalism. Based on a systematic literature review and a quantitative content analysis of jury protocols of the German online journalism award "Grimme Online Award", these articles explore how presentation modes are constructed and further develop a framework for a categorization of presentation modes.

(C) Measurement of presentation modes' intriguing qualities can also be done via assessment of users' perceived immersion levels. However, previous work did not regard technology independent from content. We reply to this research lack and empirically explore content vs. technology as drivers of immersion through a 2 x 2 experimental study design, incl. dependent variables such as willingness to pay.

(D) Presentation modes of journalism are closely integrated with technology. This paper integrates presentation properties into the Unified Theory of Acceptance and Use of Technology 2 and seeks explanations for use and willingness to pay for journalism. To this end, we refer to a representative survey of the German online population (n = 4240) and estimate effects within the framework of a structural equation model.

(E) In this paper, I propose a research framework to evaluate the effect of content design on sales. I, along with my co-author, first derive a set of related success factors from several literature streams. We then conduct a content analysis of over 500 magazine covers and relate this data to retail sales figures via OLS regression.

The main findings of the studies will be associated to answer to the overall dissertation research endeavor that is based in market-driven journalism as a theoretical framework and examines to which extent the presentation properties of news could be a vital component of journalism's economic success and can help to reconcile commercial and public interests at the micro-level.

The studies in this thesis show concrete evidence that media presentation properties generate a financial and economic difference. Presentation properties can therefore be an area in which professional standards and audience expectations can meet and become "isomorphic" (Beam, 2003, p. 383) (which means they morph into a similar form). In other words, the results of this thesis are production-oriented and still serve audience needs (Nelson, 2021). In reply to the overall aim of this thesis, presentation properties can thereby provide an avenue to reconcile market demands while upholding journalistic quality. Thereby, the findings have implications for how we conceive and study visual media properties and offer a solution for a critically informed design of market-driven media content.

The remainder of the thesis is structured as follows: Chapter two positions this research in its field, because this highly influences the choice and variety of research design. Chapter three provides an overview of relevant literature and concepts and identifies the research lack. Chapter four provides an overview of the research articles that contributed to this thesis and will jointly help in answering the overall research questions. The research articles are summarized and briefly discussed in the context of the thesis. Chapter five identifies overarching themes, discusses overall contributions to theory and management and shows how this thesis enables further research. Chapter six puts forward a conclusion and further remarks. Lastly, chapter eight to twelve comprise the original research articles.

1.2 Research Field Positioning and Research Timing

It is especially important to position this study within its greater research context because the necessary multitude of research methods and theories is informed through this positioning. Overall, this thesis is associated with the discipline of media and technology management, that can be understood as a subdiscipline of both general management studies and communication science (Rohn, 2018). Elements from information systems research and computer-mediated communication (CMC) additionally make up this research context (Liu & Hsu, 2020; Valkenburg et al., 2016), because "technology is central to communication" (Picard & Lowe, 2016, p. 6). Especially the former two subdisciplines suggest fields of tension, presuming management to aim for profit and communication science to focus on communication purposes only, which can lead to an incommensurability (Küng, 2016; Scherer, 1998). This is mirrored in journalistic companies' conflict of objectives (Buschow & Wellbrock, 2014; Wellbrock et al., 2020). At the same time, it would be a simplification to place those disciplines and goals at two ends of a spectrum (Rohn, 2018). Rather, in media management research, they can be used as two approaches to understanding a given subject matter and inform solution-oriented

theorizing, with the goal to "form a body of theory unique to media management" (Rohn, 2018, p. 427). Resulting, this thesis claims an interdisciplinary working method and respects the diversity of relevant research approaches as well as pluralism of knowledge. A focus is further placed on the request to offer a constructive view useable in strategic management (Brown, 2016; Scherer, 1998). Hence, this thesis utilizes a range of methods known in each respective sub-discipline: qualitative, content analysis and quantitative, statistical analysis.

With this interdisciplinary approach, the field of study media management – and thereby also this thesis – allows to regard journalism with its embedment as a 'product', that has an effect on individuals in terms of its communication quality (e.g. knowledge transfer, Valkenburg et al., 2016) and in terms of economic effects (e.g. willingness to pay, Berger et al., 2015). This is a relevant research timing from an economic and communicative point of view. First, the title "product owner" has just recently developed in newsrooms (Timm, 2021) even though it has been around for a while (McManus, 1994). Product-thinking should be taught to each personnel working in a newsroom, claims the Deutsche Presse Agentur (dpa) in a newly developed "Playbook" (dpa, 2021) for innovative thinking in newsrooms. The backdrop of an ever-increasing online competition for attention heightens this request. Second, the visual aspect of journalism has just merely begun to receive attention (e.g. Ferrer-Conill et al., 2021; Machin & Polzer, 2015; McQuail & Deuze, 2020). However, the existing research remains descriptive in nature (e.g. Barnhurst & Nerone, 1991; Cooke, 2005; Ferrer-Conill et al., 2021; Machin & Polzer, 2015; Leslie, 2013; Lester, 1988), and has never established empirical links between presentation properties and consumer behaviour even though visual management research with other products in the marketing field already has somewhat more to offer on visual properties (e.g. Sample et al., 2020).

1.3 Presentation Properties as Research Object in Consumer Behaviour, Intent and Market-driven Journalism

This chapter introduces the necessary theories and keywords for the topic at hand. It will move from the overarching framework, market-driven journalism (chapter 3.1), to the way in which consumer behaviour and intent can fit into it (chapter 3.2), and the connected research gap (chapter 3.5).

1.3.1 Market-driven Journalism and Media Bias

The logic of maximizing return through market-orientation often contrasts or even conflicts with the logic of maximizing public understanding (Gentzkow et al., 2014; McManus, 1994;

Mullainathan & Schleifer, 2005; Gentzkow et al., 2014). The underlying theory is that the principal norm of journalism is public enlightenment, and the more people will use (quality) news media, the better democracy should work (McManus, 1995). Besley et al. (2002) and Curran (2005) describe that the press can make governments more responsive to citizens' needs, when it is free and independent from economic and political constraints. And yet, there is no news organization that orients itself completely independent of a market. Machin and Polzer (2015) recapitulate that all throughout history "news and journalistic work has always been produced for specific markets" (p. 2). Xiang and Soberman (2014) describe that news providers' income is a linear function of demand as reflected through the audience size. Consumer preferences hence guide the market. McManus (1994, 1995) particularizes that journalism's market orientation has risen since the mid-1980s. In his well-established model of commercial news production McManus (1994, 1995) describes that a media firm bears forces influencing news production (news department, organizational culture, newsworkers, news decisions) and that the media firm is at all times in an exchange with four or five other players: 1. News sources, 2. Investors/Owners and the parent corporation, 3. Advertisers and 4. Consumers or the general public. Exchange therefore occurs on four markets, the market for audience, the market for advertising, the market for sources, and the stock market (Ferrucci, 2018). The model overall brings into play micro-economics and thereby, next to other trade-offs, consumer behaviour with journalism (McManus, 1995).

Competition for revenue, funding and attention in the media field is extremely high; A converged media environment (Carpenter, 2010; Cooke, 2005; Merten et al., 1994; Rohn, 2018), moments of media-multitasking (Valkenburg et al., 2016), media profusion (Neumann, 2016) and computer-mediated reception (Valkenburg et al., 2016) describe the current media consumption environment. News organizations, too, find themselves in this environment, competing even with media other than news media for attention, struggle to overcome losses in revenue and face new managerial challenges (Loebbecke & Picot, 2015; Will et al., 2020).

The result and the problem of these forces are news, that are geared towards the market and move away from maximizing public understanding. Types of media bias, unwanted changes in the content or the information itself, can result. For example, Gentzkow et al. (2014) demonstrated that consumers prefer like-minded news and this, in turn, is used by media companies for product differentiation. Trussler and Soroka (2014) confirm a consumer demand for cynical and negative news frames. Xiang and Soberman (2014) found that firms can benefit from better-designed news when operationalized as a certain set of stories. McManus (1994) and Schwarz (2006) describe that the level of newsworthiness, as perceived by the recipient, is

negatively correlated with the costs of news detection and increases when it conforms to the audience's preferences. Lee et al. (2014) find that audience clicks have an effect on news placements. Those studies that attest an ambivalent relationship between audience clicks and market-orientation do so with reference to news topics or headlines (Nelson & Tandoc, 2019; Tandoc, 2014). And even when considering more sides of the market, as news companies perform as multi-sided platforms with advertisers – traditionally – and readers or users on the one hand and other stakeholders on the other (Armstrong, 2007), results point towards certain biases. It has been observed that CEOs will distance themselves from journalists when these have previously negatively reported about firm leadership and that in turn these journalists will then positively report about leadership (Shani & Westphal, 2018). Dick (2011) observes conflicting evidence regarding the influence of search engine optimization on editorial policy. In summary, media bias can be caused by supply and demand, and demand as understood as maximization of profit and reach (Wellbrock, 2016). Notwithstanding, researchers align in viewing content and the information itself as an independent entity that should not be guided by market impulses (Ferrucci, 2018; McManus, 1994, 1995; Wellbrock, 2016; Wellbrock et al., 2020; Zelizer, 2019).

While McManus himself is neither a media economist nor a media business researcher, I chose to use his work because it appears inclusive of the possible influence of content as well as presentation and technology on journalism's success. In media economics, the similar concept of media bias is focused on biasing and omitting of information and filtering of events. The researchers define media bias as a "selective omission, choice of words, and varying credibility ascribed to the primary source, each conveys a radically different impression of what actually happened" (Gentzkow & Shapiro, 2006, p. 281). Surprisingly, the market of consumers and the general public have so far been described to exert the least amount of influence. Strengthening the relationship between consumers and the media firm could alienate the forces of the other more powerful players. McManus (1995) asks: "What if the weak link of consumer evaluation of news were somehow strengthened?" (p. 330). While this would need to go hand in hand with consumer education, a move towards "craft norms defining what is newsworthy and how to report" (McManus, 1995, p. 301) would be seemly. The *how* to report is connected to content as well as to visual media properties.

In fact, one solution McManus (1995) has named are technological differences between different mediums (e.g. print and TV) with the potential to soften market norms. McManus (1995) exemplifies "the additional space available on paper enables greater depth of content than television affords" (p. 327). Without knowing, he herein describes a visual media property.

This adds to the argument that visual media properties might represent a compromise between serving the market and serving the public.

McManus' theory has been developed further and has become somewhat more nuanced. Ferrucci (2018) divides between strong, somewhat strong, somewhat weakly, weakly market-oriented news organizations. He finds that in weakly or somewhat weakly market-oriented newsrooms, web analytics are used to reorganize a website instead of leading to new or different content. This result also points to the potential of compromise in media presentation properties. Interestingly, McManus (1995) suggests that if media companies act without audience-building appeal, news quality might actually decrease due to an attempt to lower reporting costs and practices such as 'information subsidies', during which ready-to-use-press-releases are used by the media instead of enforcing costly, high journalistic standards. A news company that can compete on the market may, in fact, be able to produce better quality (Wellbrock et al., 2020). This is because media firms have an incentive to offer market efficient deals while upholding quality in comparison to competitors. Then the demand-side of competition could work more effectively. Therefore, knowledge of consumer behaviour in relation to media presentation properties is required in order for news firms to be able to compete successfully.

A fundamental assumption in traditional consumer theory is that individuals act as rational decision-makers in consumption processes. They will search for information, weigh up costs and benefits of all alternatives and then decide following personal utility maximization. However, behavioural biases such as default positions (Breidert et al., 2006; Tversky & Kahneman, 1991) lead to an imperfect rationality, and thereby allow firms and other market participants to exploit these individual decision-making moments. Hence, it is economically important to understand that which makes a competitive difference in decision-making moments. This is especially true for media consumption, as this is an environment in which impulse decision-making to consume or buy occurs due to the product's characteristics. Pure impulse buying occurs when the buyer has no previous buying experience or knowledge of the product (Liao et al., 2009). Media products can carry hedonic characteristics and consumption activity is taken for emotional and other complex physical or psychological reasons (Alba & Williams, 2013; Clement et al., 2006). Further, it is an environment in which information asymmetries prevail (Schmidt-Stölting et al., 2011). Media products carry experience or credence characteristics, their quality is ex ante uncertain (McManus, 1995). Thereby, the presentation becomes even the more important and can immediately signal information relevant for consumers.

The signaling happens at the early stages according to consumer models. If, for example, we take one of the early models, the Stimulus-Organism-Response Model (S-O-R) (Mehrabian & Russell, 1974), presentation properties can be placed at the stimulus level. They then affect an organism and in turn lead to a response. If we follow this reasoning for the subject at hand, I argue, that presentation properties lead to changes within an individual, which then cause a response measurable as consumer intention or consumer behaviour.

1.3.2 Consumer Behaviour and Behavioural Intention

The way through which we can understand whether media presentation can affect consumer behaviour and thereby market-driven journalism is through researching consumer behaviour and behavioural intention. Especially in media consumption, consumer behaviour can be displayed by a vast amount of responses such as attention towards a product, eye-movement, voting behaviour, beliefs, knowledge (e.g. recall), usage behaviour and monetary spending for a product (e.g. sales). Generally, in economic logic, anything that is exchanged and that people place value on could be treated as an indication of consumer behaviour. "Consumer behaviour reflects the totality of consumers' decisions with respect to the acquisition, consumption, and disposition of goods, services, activities, experiences, people, and ideas by (human) decision-making units [over time]" (Hoyer et al., 2016, p. 5). Mostly utilized in this thesis are measurements of sales as well as paying and usage behaviour, that represent the monetary value a person has for the product as a whole (Völckner, 2006). Actual demand data and purchase behaviour, such as sales, are extremely reliable and reflect external valid results. Behavioural intention is rather based on estimates of actual behaviour (Breidert et al., 2006). Behavioural intention in this thesis refers mostly to purchase intention and willingness to pay, which are seen as part of the extended version of the theory of planned behaviour (Ajzen, 1991; Pavlou & Fygenson, 2006) allowing to understand how presentation properties affect consumers differently. In each individual paper, operationalizations of paying intent are chosen based on reflection of their reliability, validity, time and cost management, and usability for new products as suggested by theorist Völckner (2006). Their advantages and disadvantages will then inform future research.

The reason for a focus on variables with an attached monetary value (instead of other behaviour such as click-rates or eye movement) lies in the background of this research: journalism. It is fundamentally important for journalism companies to understand the effects of their products on consumers better.

Journalism and news companies are herein defined as those private and public corporations that, on a production and supply level, allow for "activities involved in an independent pursuit of accurate information about current or recent events and its original presentation for public edification" (Shapiro, 2014, p. 561). These companies, private as well as public, experience an extended period of transformation and face a heightened partake in the attention economy (Myllylahti, 2018), meaning that news companies court for users' attention not just with other news companies but also with any content producing entity. On top, private media companies struggle to self-finance because advertising and print revenues decline and paid digital content cannot compensate these losses so far. Yet, the future of news companies' economic survival might lie in financing through readers and users only (Berger et al., 2015).

Most of the variables that measure consumer intention and behaviour can and are operationalized differently. While sales are pretty explicit, behavioural intention variables are not as straightforward. The vivid debate about how to measure consumers' intention on how to spend money in general (Breidert et al., 2006) and on digital journalism in particular (O'Brien et al., 2020) has been previously synopsized in literature. I generally follow their definitions. All other variables, such as technology acceptance and immersion, are also explained within each respective paper.

1.3.3 Key Concepts and Assumptions

Media goods carry a dual cultural and economic character (Nölleke-Przybylski et al., 2019) which is why you need interdisciplinary approaches. The necessary terminological equipment to talk about media products can therefore not be presupposed and has to be introduced, most of them stem from communication science and have been further developed in media management. It is beyond the scope of this thesis to provide a deep account of semiotic theory relevant to the research of mass communication, nevertheless a brief explanation will be given. When I refer to *media*, I refer to mass communication (television, radio, printed news, online journalism) as well as mass self-communication (e.g. social media) (Valkenburg et al., 2016). When I refer to *the media*, I connotate media personnel and media creators. When I utilize the words *media content* or *content*, it gets more complicated. It can either connotate the offer as a whole, which includes the text in terms of linguistics, visuality, design and technology or medium through which it can be accessed. Sometimes it refers to the verbal, linguistics, the topics and the content area only, for example politics, travel, economics, and nature only. And other times it refers to the meaning of a message (McQuail & Deuze, 2020). In relation to the sentence structure utilized in this thesis, it should be clear which connotation is employed.

Media content, unlike journalistic content however, does not have to be produced by a professional journalist and can even include advertisement. *Text* is anything that can be analyzed with techniques from semiotics and relates to "visually realized language use" (Bateman, 2014, p. 15). It is rather physical (McQuail & Deuze, 2020) A *medium* refers to the point of access (e.g. a TV, radio or a smartphone). *Information* is used to describe the unit of knowledge that is supposed to be mediated (which does not mean that it is successfully mediated and communicated between sender and recipient). *Visuality* describes the design, packaging, access point, technology of content; it entails everything that can be 'seen' (Bell & Davison, 2013). Analogue, *image* can refer to "things you can visually see" (Bateman, 2014, p. 14). *Design* connotates the conscious act by media personnel to visualize information. *Presentation* combines it all.

The boundary between visuals, presentation and text can be blurry. This is true for arts (like painting on which text is displayed) and media. In journalism, the distinction used to be somewhat clearer: text and visual elements were placed in isolation and took different communicative roles, "writing and images would be separate on a page" (Machin & Polzer, 2015, p. 16). Now, the writing style itself can be quite visual, e.g. a lifestyle magazine might be systematically aligned with its readership through a suiting choice of typeface, font and images. This means that visuality and text can overlap (Bateman, 2014). Bateman (2014) suggests a measuring method for distinction of linguistic and visual properties, which will be followed in this thesis. The properties attributed to visual and textual elements is cue. He uses the example of a drawing by Paul Klee in which letters are in what appears randomly placed on a canvas. The words are not correctly spelled and thereby have no literal meaning. The semiotic mode that can be used in this example is that of visuality. Accordingly, for journalism it follows that the visuality follows the meaning of the message, it follows the content as information. Text is usually the mode upon which journalism is accessed through (Bateman, 2014; McQuail & Deuze, 2020).

Journalism in general has been described as a "construction and publication of accounts of contemporary events, persons or circumstances of public significance or interest, based on information acquired from reliable sources" (McQuail, 2013, p. 15). Or as "activities involved in an independent pursuit of accurate information about current or recent events and its original presentation for public edification" (Shapiro, 2014, p. 561). The later definition also served as a definition for a news company in chapter 3.2. *Journalistic content* itself has never been fully defined and a dual connotation analogue to content persists and its meaning changes. However, a few insinuations can be found in the literature. Gans (2004) describes journalistic content as

news content, that can simply be 'seen' in the news and which is the outcome of a journalist's work. Journalistic content follows recurring patterns (Gans, 2004; Schmidt & Weischenberg, 1994), that can be named presentation modes (Schmidt & Weischenberg, 1994). These have been foremost accessed and differentiated through their textual character (Schmidt & Weischenberg, 1994).

Just like there is no universally utilized definition of what journalistic content is, there is no universally accepted definition of what constitutes the *presentation of journalism*. However, what has been argued is that the "meaning of the written or spoken part of journalism, across different media, is communicated simultaneously by how it is presented visually […] *realised* visually […] (visuals) form part of the ideas about the world" (Machin & Polzer, 2015, p. 1). Bateman (2014) says that form and presentational style are "meaning bearing in their own right" (p. 21).

This leads to the outline of one key assumption for this thesis: In journalism (unlike for example in the arts) text governs over presentation when it comes to media biases.

On the one hand, it is argued that presentation is an alternative way within market-driven journalism, because design changes in presentation will forego the unwanted media-biases. Visual journalists have claimed that design is part of a product's meaning and that design is taking on a parallel function to language (Machin & Polzer, 2015, p. 172). And I have made similar claims, to a certain degree, throughout this thesis.

Yet, and on the other hand, the only role of presentation in journalism is to support the overall purpose of that particular journalistic piece. Text is the mode that leads the reading (Bateman, 2014; McQuail & Deuze, 2020). The presentation at most offers an alternative way to access the information through direct, physical perception (Bateman, 2014; McQuail & Deuze, 2020). This might be due to the fact that images are processed more easily than verbal and written language (McQuail & Deuze, 2020). That being said, journalistic products could yet fall under the product category in requirement of additional verbal information (Lin et al., 2012).

So far, text and images (however, not presentation overall) has been researched and findings suggest that images matter but that their impact is not stronger than that of text (Boomgarden et al., 2016). It has been also empirically established that the frame carried by the text influenced opinion-formation more heavily than the image when presented together (Powell et al., 2015). Reassuringly, individuals base their opinions generated through media consumption "mainly on what is factually written (…) rather than on how they are visually portrayed" (Boomgarden et al., 2016, p. 2540).

Lastly, journalists have been described as gate-keepers in terms of content choice (e.g. Lee et al., 2014) but not in terms of presentation. Gate-keeping widely refers to the exercise of decision-making in media production both in relation to the selection and processing of information (McQuail & Deuze, 2020). Gatekeeping generally involves a lot of layers and players. Previous research, however, has largely overlooked the role of presentation in gatekeeping processes. Studies have only explored gatekeeping in terms of information and messages (e.g. Beam, 2003) or the role of content placement on a front page or on a website (e.g. Lee et al., 2014), which can be loosely connected to the presentation of media. Summing up, the gatekeeping concept only references aspects of content, which could be understood as a superiority of content over presentation.

If these premises change, and presentation will move from supporting information meaning to introducing a meaning on its own, then there will be a need to research whether changes in presentation design will also cause media biases.

1.3.4 Media Presentation Properties

As just outlined, there is no universally accepted definition of what constitutes the presentation of journalism. Due to this lack, the presentation of journalistic content needs to be accessed differently. One emerging tradition to approaching media is through a theory called *Multimodality*, in which the specifics of presentation choices are broken down to tangible characteristics and their most basic components (Bateman, 2014; Machin & Polzer, 2015). These can then be documented and analyzed. With a multimodal analysis approach, one can identify patterns that form the presentation across all print and digital media (Machin & Polzer, 2015, p. 167).

A similar approach has been identified in media effects theory, wherein *media properties* act as effect predictors (Valkenburg et al, 2016). Valkenburg et al. (2016) referenced three properties: 1) Modality (e.g. text, audiovisual, interface interactivity), content properties (e.g. type of argument, topic) and structural properties (e.g. special effects). In marketing research, *media characteristics,* such as interactivity, serve as a cue to understanding media effects on consumers (Javornik, 2016b). Another study has named these *product-based factors* (O'Brien et al., 2020) and identified "format/medium, customization/personalization and ease of use on the technical side, as well as exclusiveness, (perceived) quality and specialization/niche on the content side" (p. 17). These are based upon a literature review that looks for product-based factors already empirically researched in consumer behaviour studies. Therefore, they do not represent a final list of product-based factors.

An overarching conceptualization of media presentation properties of mass media is still largely lacking. In order to understand effects of presentation on consumers or recipients, corresponding properties need to be identified, which was the one of the tasks of this thesis. To put it in advance, media presentation properties appear to be made up of three components: content design, presentation mode and those part of technology, that can be visually experienced. Throughout the various papers, I will outline the exact definitions as well as operationalizations. In the discussion, I will bring forward a description of media presentation properties based on the results of the five studies.

1.3.5 State of Research on Media Presentation Properties, Consumer Behaviour and Behavioural Intention

No matter the disciplinary approach, be it communication or management science, it becomes clear, that there is a research gap to understanding presentation properties and its effects on consumer behaviour and behavioural intention or even markets as a whole. For the purpose of this thesis, I committed to a literature analysis following the steps suggested by Webster and Watson (2002). I searched for studies in major databases (EBSCOhost, GoogleScholar, ProQuest, Web of Science), relevant journals (e.g. Digital Journalism, Journalism & Mass Communication, Journal of Advertising, Journal of Business Research, Journal of Computer-Mediated Communication, Journal of Management Information Systems, Journal of Media Management, Journal of Press/Politics, Journal of Marketing, Management Information Systems Quarterly), relevant conferences and publications (e.g. International Conference on Information Systems, International Communication Association Conference) and further used backward and forward search of literature associated with already identified articles. The keywords comprised: market-driven journalism + competition, content, consumer behaviour, behavioural intention, presentation, presentation mode, reader responses, sales, viewership, visuality, visuals; media consumption + journalism; news consumption; newspaper economics + presentation; news consumption + text, images. Through this search, 30 articles and 2 books were identified. Of the former, only 16 directly related to our subject. These were especially chosen based on their quality (which includes their empirical approach) and relevance. The two books were, of course McManus (1994) and one other text book. Hence, these are not included in figure one. I further keep older articles, because this research calls for depth, actuality and longevity.

The effects content has on media consumption are more explicitly researched than any other media property. Several market solutions to the dilemma of quality uncertainty have been

addressed in more detail and described as signaling and screening practices (Shapiro et al., 1998). Market solutions to offset behavioural biases or, in fact, simply effect journalism media consumption behaviour are less clear and as described above have also been ethically challenging, especially when it comes to content. Framing of information and textual as well as stylistic features of headlines have been shown to make such a difference already (Kuiken et al., 2017). Explicitly negative cover pages increase magazine sales (Arango-Kure et al., 2014). Level of newsworthiness (Schwarz, 2006), content in terms of topics (Beam, 2003), set of stories (Xiang & Soberman, 2014), like-minded news (Gentzkow et al., 2014) and headlines (Tandoc, 2014) influence consumer behaviour to the degree that it increases consumption. These studies thereby point to high market impulses of changes in content. Content formats such as online and offline newspapers (Berger et al., 2015) and the relationship between news content and clicks (Kormelink & Meijer, 2018) show more complex effects and rather low market impulses. Figure 3.1 is a graphic summary of the literature and organizes the literature in terms of its degree of market impulses (horizontal) and the product-based factors content or visual media properties (vertical). The figure thereby graphically depicts the research gap. The bottom part of the graph, where studies considering media presentation properties of journalism can be placed, is blank. Some studies can be loosely connected to the presentation and are placed lower on the vertical line: content placement on a front page or on a website (e.g. Lee et al., 2014) and format (Berger et al., 2015). Colour has been researched and found to strongly influence eye movement and thereby initial attraction (Bohle & Garcia, 1987). Lastly, layout and visual elements such as photographs were found to influence readership (Schoenbach & Lauf, 2002; Schweitzer et al., 1977), however, other visual elements were not considered and also these studies are somewhat outdated.

O'Brien and colleagues (2020) carried out a literature review of drivers of past payment, paying intent and willingness to pay for digital journalism and identified studies that considered product-based factors (as explained visual media properties being one of them). They found studies considering format/medium, customization/personalization, ease of use, exclusiveness, perceived quality and specialization/niche in their research of product-based factors. Alike et al. (2013) gathered media product success factors within a literature review and identified design, multimedia and overall technological creativity to be amongst decisive factors. If applicable, the studies identified in these two literature reviews were also included in Figure 3.1. Further media presentation properties have not been considered in management research of journalism as drivers of consumer behaviour.

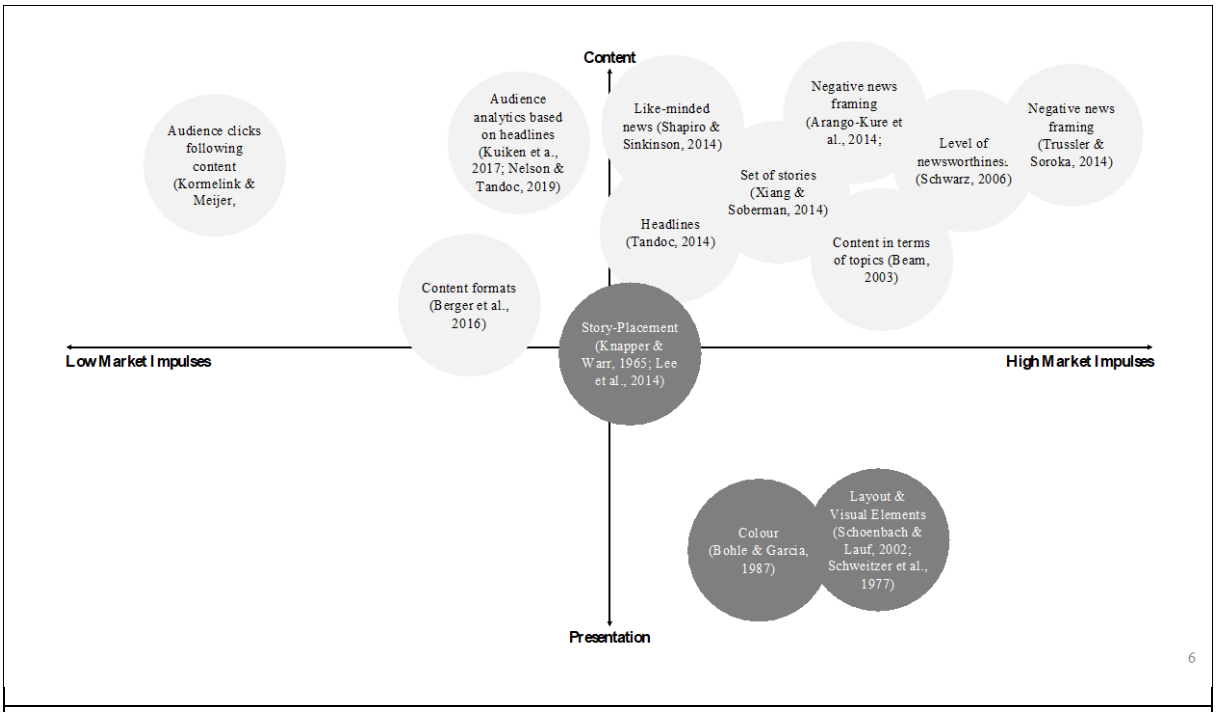

Figure 1.1. Literature Matrix Research Gap

With media products other than journalistic ones, the role of presentation on consumer behaviour has been explored to a greater degree. Appearance of a book cover (as measured through a rating of over 1200 books by four individuals) significantly influences potential buyers of paperback but not of hardcover editions (Schmidt-Stölting et al., 2011). Further, in other research areas, there is ample evidence that presentation properties affect consumer behaviour and behavioural intention. For example, in political studies, typography has been confirmed to increase interaction with political campaigns (Billard, 2016) and digitally mediated handmade signs to increase interaction with social movements (Peck & Good, 2020). It has been further established that images as well as text can influence evaluation of political candidates (Boomgarden et al., 2016). An image's framing effect leads to political behavioural intentions (e.g. the intention to sign a petition) while the persuasive power of text is paramount in opinion-formation (Powell et al., 2015). The perception of a newspaper's political orientation is shaped by visual appearance (Schindler et al., 2017). Layout has been found to increase measures of comfort and human interest (Middlestadt & Barnhurst, 1999). Whether this translates into economic behaviour, however, is not clear. Hence, this research is phased out but included for the sake of completeness. The influence of online website visuality has been addressed and explained within the Stimulus-organism-response (S-O-R) framework (Jacoby, 2002; O'Brien et al., 2020; Wu et al., 2014). This, however, is not presented in figure 3.1 because it does not directly relate to the journalism field.

Presentational characteristics inherent to any media that have been shown to evoke favorable consumer responses (return on investments, reported aesthetics, willingness to pay) is that of video and rich virtual media (Javornik, 2016a; Li & Meshkova, 2013), format (Bruce et al., 2017), layout (Janiszweski, 1998; Wu et al., 2014), aesthetics (Landwehr et al., 2012), position (Kroeber-Riel & Barton, 1980), as well as perceived interactivity (Lohtia et al., 2003; Park & Yoo, 2020), colour (Ettis, 2017; Labrecque & Milne, 2012; Lohtia et al., 2003; Panigyrakis & Kyrousi, 2015), font (Doyle & Bottomley, 2004), brand images (Fichter & Jonas, 2008), and visually recognizable promotions (Esteban-Bravo et al., 2009).

Alike, in human-computer interaction research the role of colour, interletter spacing and font size have been shown to make a favorable difference in consumer preferences, however, with differences between the sexes (Grobelny & Michalski, 2015).

In conclusion, despite decades of research in the management of journalism, research has largely neglected the influence of media presentation properties on consumer economic behaviour as well as on media-bias and thereby market-driven journalism. However, there is concrete evidence that media presentation properties generate an economic difference and consequently, presentation properties of journalism could have similar effects.

1.4 Research Program

The papers presented in this dissertation have grown over the course of four years with the aim to address the identified research gap for the benefit of the advancement of knowledge in science as well as with practical implications. The research field positioning (chapter 2) explains the plurality of methodologies utilized. These range from forming a base for dimensions of media presentation properties in journalism (i.e. presentation modes, content design) to empirically testing them.

During my inquiries I found that there is a lack of frameworks and theories to even describe digital journalism in this regard. There is no single wholesome approach to understand which factors to analyze when we want to know more about the effect visual media properties have on us as readers, recipients and journalism consumers. Hence, the first part of my research tackles this research lack and provides three theory-driven implementable frameworks to analyze the different determinants (Paper A, B and E). This is also represented through Level 1 of this dissertation, depicted in Figure 4.1.

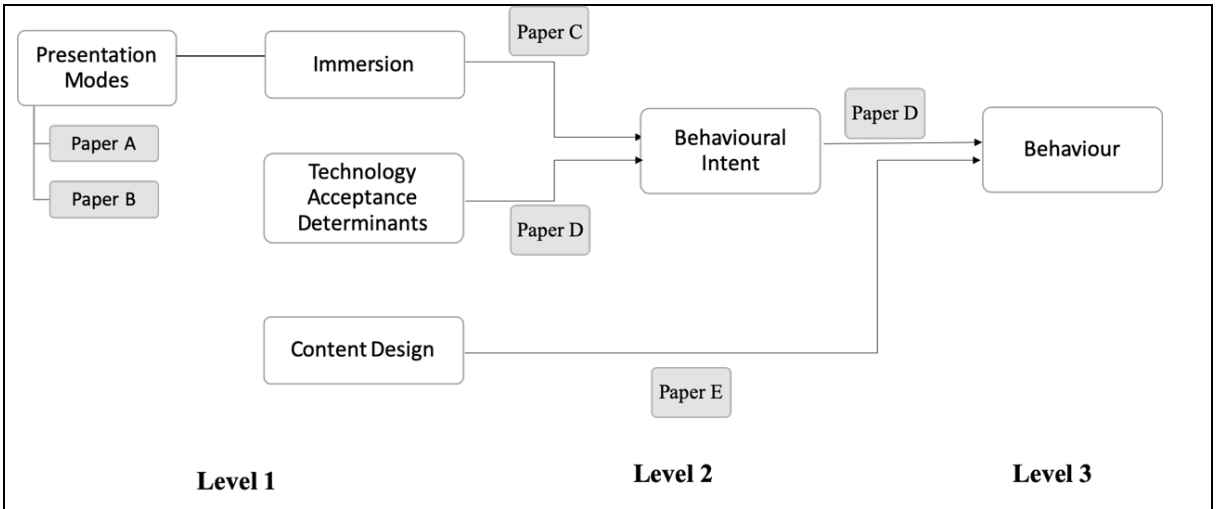

Figure 1.2. Dissertation Research Relations

As a second step, I then inquire how these different characteristics determine behavioral intention as well as actual consumer behavior in the journalistic field. The first impression is critical for users' expectation and I want to understand how the visual media properties interact with expectations and heighten a consumer's monetary value or can even lead to actual payment for journalism. This is depicted in Level 2 and 3 of this dissertation, as depicted in Figure 4.1. This is tested within classic consumer theories such as willingness to pay assessment (Kohli & Mahajan, 1991) and paying behaviour (Paper C and D), behavioural intent (Ajzen, 1991) (Paper C and D), retail sales (Paper E) and technology acceptance models (Venkatesh, 2000; Venkatesh et al., 2012) (Paper C).

In the remainder of this thesis, full papers for each of the projects are presented. Finally, chapter 5 summarizes key insights from all projects and charts out future research directions.

1.4.1 Papers A and B: A Categorization of Presentation Modes in Digital Journalism

Purpose

Based upon communication and journalism theory, we develop a coherent conceptual and operational definition of that which constitutes the content and presentation of journalism (Marchionni, 2013) both on- and offline (Rohn, 2018). This will then be used as a fundamental basis for following economic research. It has been demanded to provide observational tools and theory that can evolve over time and allow to study journalistic communication relationally (Loosen et al., 2020; Rohn, 2018). It is therefore a necessary undertaking of research activity to form a medium-independent framework for categorizing presentation modes (Coddington, 2015; Michael, 2017; Shapiro, 2014; Wagner, 1988; Yang & Grabe, 2011) and in fact, to

provide "dimensions" (Widholm & Appelgren, 2020). This study fills this research lack and will provide dimensions of presentation modes.

Design/Methodology/Approach

In these first two papers, we consult the rich traditions of communication theory, as management studies provide little to no tools and theories to understand visual media properties in form of a literature analysis. We then conduct a qualitative and quantitative content analysis. The combination of literature and content analysis approach of the Grimme jury protocols in these projects gave us data about presentation modes and their compositions.

Findings and Implications

The result is a framework with eight central dimensions and specified manifestations: Content and Function, Author, Sources, Periodicity, Material Substrate, Structure, Media, Interactive-Engagement Elements. In light of the overall framework of this dissertation, any of these dimensions are to varying degrees visual and can be understood as the result of a conscious choice a journalist makes as a gatekeeper (Schäfer-Hock, 2018; Schmidt & Weischenberg, 1994), where a journalist chooses the mean and mode of *telling* the news.

Originality/Value

These two papers provide an analytical tool for research and practice to make the presentation of journalism approachable and measurable and thereby addresses the problem, that there has not been an empirically established approach to understanding presentation of journalism and its effects.

Personal Contribution / Co-author Statement

Concerning my contribution to the paper, I would rate is as follows:

1. Intellectual input: ☐Less than 25% ☐25%-50% ☒51%-75% ☐76%-100% Comments: This research idea majorly stems from thoughts gained through presenting Paper E, at which both my co-author and myself were part of. It is further results from my literature observations in terms of a research lack.
2. Experimental set-up and results: ☐Less than 25% ☐25%-50% ☒51%-75% ☐76%-100% Comments: The idea to use the Grimme Protocols as research base did not stem from me. The idea for the experimental set-up was co-developed with my co-author. The execution and the interpretation of the results are more or less my contribution.
3. Writing process: ☐Less than 25% ☐25%-50% ☐51%-75% ☒76%-100% Comments:

Development of the paper was based on one version developed by me. Once a first draft was established, everyone worked on it.

Table 1.1.Personal Contribution Paper A and B

Publication Status

Paper A (Chapter 8) acted as a successor of Paper B (Chapter 9) and was particularly important to establish the connection to digital presentation of information. This research was presented at the following conferences: International Media Management Conference in Stuttgart (2018), International Symposium on Media Innovations in Oslow (2018), Prague Media Point (2018), Future of Journalism Conference in Cardiff (2019), International Conference on Information Systems in Munich (2019). Versions of the paper are published in the Proceedings of the International Conference of Information Systems (author Lea Püchel) and New Media and Society (authors L. Püchel & C.W. Wellbrock).

1.4.2 Paper C: Content vs. Technology - Disentangling their Effects on Immersion, Paying and Purchase Intention

Purpose

Immersion is the outcome of interactive, all-senses-approaching presentation modes and visual aspects of media technology, as established in Papers A and B. While papers A and B focus on the dimensions of presentation modes, they do not explain users' visual perception to be the result of the visuality of technology *or* content. And they do not establish the degree of impact of presentational media properties on economic variables. These two foci guide the research of project C in this dissertation.

Background

Over the past years, research has provided conflicting evidence as to which extent the perception of immersion stems from either visuality of media technology or media content (Chessa et al., 2019; Kim & Ko, 2019; Suh & Prophet, 2018).

This uncertainty regarding the origin of immersion goes hand in hand with the uncertainty media companies face when it comes to their financial investments in immersive technology. If, for example, immersion is caused by content presentation properties, then the need for further investments in immersive technologies is dispersed. This might be possible, as research has repeatedly shown that users experience perceptions similar to immersion while consuming content in traditional media technologies or even books, such as telepresence (the subjective perception of being in another place that can be reached using a medium; Pincus et al., 2017),

flow ("a state of optimal experience where one is completely absorbed and engaged in an activity"; Nah et al., 2011, p. 734), absorption (referring to the feeling of full involvement culminating in absent mindedness; Weibel & Wissmath, 2011), or transportation (being mentally drawn into a narrative; Green et al., 2004). The cause of these immersive experiences might lie in storytelling, laid out in the human-inherent narrative paradigm (Fisher, 1989). Humans use storytelling as a tool to process complex information (Boldosova, 2019; Hull et al., 2019). Storytelling tools are presentation properties. Some research has touched upon this observation (e.g., Balakrishnan & Sundar, 2011), overall, however, the role of content, in the formation of immersion is underresearched and not empirically validated.

Design/Methodology/Approach

We first conceptualize technology, content, and immersion and operationalize all concepts for our empirical study based on an extensive literature review in various fields of research. Second, we empirically explore content vs. technology as drivers of immersion through a 2 x 2 experimental study design. In a between-subjects approach, we replicate actual user experiences with two different types of content and technology, each possessing either low or high immersive potential. All participants answer a survey regarding their immersive experience as well as their resulting willingness to pay and paying as well as purchase intention. The data is then compared through a factorial ANOVA and post-hoc tests in IBM SPSS Statistics 27. A pre-study was administered in 2021.

Findings and Implications

The results of the main study, with $n = 201$, suggest that immersion is mainly driven by immersive potential in content rather than in technology. Immersion in turn, affects paying intent and purchase intention. This implies that current immersive technologies might be less commercially viable investments in terms of causing valuable immersive experiences than investments in content.

Originality/Value

To the authors' knowledge, there is no study that has separated content from technology. There has been a lack of approaches, 'the path' to understanding the impact of presentation properties is unclear and needed trailblazing (Howard, 2019; Schwabe et al., 2019; Valkenburg, 2016).

Personal Contribution / Co-author Statement

Concerning my contribution to the paper, I would rate is as follows:

1. Intellectual input: ☐Less than 25% ☐25%-50% ☒51%-75% ☐76%-100% Comments: The definition of the overall problem and proposition of core scientific ideas to solve it, was a joint endeavour.
2. Experimental setup and results: ☐Less than 25% ☐25%-50% ☐51%-75% ☒76%-100% Comments: I derived the key methodology together with two other co-authors. I implemented and executed the experiment. The pre-study was executed with a Master's student. I carried out the quantitative analysis and interpreted the results.
3. Writing process: ☐Less than 25% ☐25%-50% ☐51%-75% ☒76%-100% Comments: I wrote the draft version of the paper and revisited it according to co-authors comments. At times, co-authors implemented their suggestions directly.
Table 1.2. Personal Contribution Paper C

Publication Status

This research was presented at the following conference: European Media Management Conference in Munich (2022). At the time of publication of this dissertation, the co-authors and working title are as follows: Püchel, L., Mütterlein, J., Wellbrock, C.M., & Kunz, R., "The relation of technology, content, immersion and economic variables". A version of this research project has further been submitted to the International Conference on Information Systems and has been presented in 2022 at the European Media Management Conference in Munich.

1.4.3 Paper D: Where Technology and Content Fuse: Applying Technology Acceptance to the Usage of and Payment for Digital Journalism

Purpose

As we have argued, explaining journalistic users' economic behaviour in terms of monetary measures remains an important and yet under-researched task. Alike, technology acceptance and its relationship with economic variables in journalism is underrepresented in research. Technology Acceptance approaches have been able to explain up to 70 percent of variance in information system use in various organizational environments (Davis et al., 1989; Venkatesh

et al., 2003) as well as with individual use of mobile Internet technology (Dermentzi & Papagiannidis, 2018; Venkatesh et al., 2012; Viehland & Leong, 2010) and customized but printed newspapers (Putzke et al., 2010). However, a lot of environments are unlike those researched in traditional information systems research, especially where technology and digital content are fused from the perspective of the user, such as journalistic content accessible in an app or via a chat-bot system. I therefore believe that applying the technology acceptance framework to digital news is a promising avenue to (1) extent the understanding of technology acceptance to environments that closely integrate technology and content (namely journalism) and (2) better understand behavioral intent and consumer behavior in the journalism industry. In addition, I investigate not only usage related behavior and behavioral intent, but also paying intent and paying behavior.

Background

In this paper, visual media properties are implicitly measured. Visual design has been found to be an antecedent of technology acceptance of medical patient portals (Lazard et al., 2016), which lets us assume that visual media properties of journalism also play an important role in technology acceptance of journalism. Especially the factor ease of use (analogue to effort expectancy) is related to the design of a digital product (O'Brien et al., 2020) and also hedonic motivation relates to the visual design of a journalistic product, because it measures its entertaining properties.

Design/Methodology/Approach

We refer to a representative survey of the German online population (N = 4,240) and estimate effects within the framework of a structural equation model.

Results and Implications

The results reveal that the traditional model is better suited to explain usage, but can also explain a substantial part of the variance in payment. Above all, price value, hedonic motivation and social influence appear to have the strongest positive effects on intent and behavior. Surprisingly, effort expectancy has a positive influence on paying intent. The results seem to speak in favour of simplifying the visual media properties and design of the journalistic product. The strong impact of the hedonic motivation is similar to the results of previous acceptance studies, which were conducted in the media sector (Indrawati & Haryoto, 2015; Kunz & Santomier, 2019; Mütterlein et al., 2019; Putzke et al., 2010). Nevertheless, these studies primarily investigate media of clear entertaining character (e.g. gaming) or focused on customization processes only (e.g., Putzke et al., 2010). For the case of digital journalism, a similar result seems surprising. Nevertheless, the results of our study indicate that consumers

who find the use of journalistic content fun, are also more likely to pay for it. This finding suggests that the joy that results from the consumption of journalistic media (embedded in its technology) may have been underestimated so far.

Originality/Value

This article is the first to implement the UTAUT2 model in a journalism environment. It is further the first to test the model with new dependent variables.

Personal Contribution / Co-author Statement

Concerning my contribution to the paper, I would rate is as follows:

1. Intellectual input: ☒Less than 25% ☐25%-50% ☐51%-75% ☐76%-100% Comments: The definition of the overall problem did not stem from me. However, I performed the literature research to connect journalism, technology and UTAUT2.
2. Experimental setup and results: ☐Less than 25% ☒25%-50% ☐51%-75% ☐76%-100% Comments: I performed the analysis related to the paper and interpreted the results. Hence, when it comes to the results I contributed majorly, however, I did not contribute to the experimental set-up.
3. Writing process: ☐Less than 25% ☐25%-50% ☒51%-75% ☐76%-100% Comments: A Master's student was given the task apply UTAUT2 to digital journalism, hence, an initial framework was tested within this task. However, the eventual draft version of the German and English versions of this paper diverge from the Master student's work. Both my co-authors majorly contributed to the writing of the German version, while the English version and its development for international outlets was driven by my writing.
Table 1.3. Personal Contribution Paper D

Publication Status

This research was presented at the following conference: European Media Management Conference in Jönköping (2020). At the time of publication of this dissertation, a German version has been published as a book chapter with the authors Püchel, L., Wellbrock, C.M., and Buschow, C. in a book called "Money for Nothing and Content for Free? Paid Content, Plattformen und Zahlungsbereitschaft im digitalen Journalismus". A second, English version of this paper has been accepted to the Journal of Information Technology and Management with the authors Püchel, L., Wellbrock, C.M., & Buschow, C., and the title "Where Technology and

Content Fuse: Applying Technology Acceptance to the Usage of and Payment for Digital Journalism" and will be published forthcoming.

1.4.4 Paper E: Judging a Magazine by its Cover – A Conceptual Framework to Understand Sales through Content and Design

Purpose

While the preceding papers focus on the economic potential, this final research project uses actual real market data to relate visual media properties with economic variables. Further, it establishes a third and integral part of visual media properties, namely content design.

This research contributes to the overarching research question in three ways: (1) synthesis of fragmented knowledge concerning the effects of content design; (2) development of a coding scheme that can be adopted to other environments to be used by academics and business practitioners alike: (3) hypotheses-driven analysis based on the proposed coding scheme to validify and thereby advance empirical research about the effect of cover design on retail sales.

Background

In an age of visual logics, much can be learned from content design of editorial products because they are subject to spontaneous consumers' aesthetic and psychological appraisal (Knapper & Warr, 1965; Van Reijmersdal et al., 2010; Winship & Allport, 1943). Magazines in retail are particularly prone to consumers' in-store responses. The shopping experience of publications in stores is the only comparable experience to web-browsing, where switching costs are low and excessive information and visual complexity are high (Gavilanes et al., 2018; Wu et al., 2016), implying a promising degree of generalizability. Lastly, this research acknowledges the request to commit to more longitudinal and time trend studies (Rohn, 2018) and through its linear mixed model approach it can detect trends rather than a snapshot in time.

Design/Methodology/Approach

Again, we use a thorough literature analysis to find a codeable scheme of content design. Following, we employ content analysis as well as linear mixed model approach and analyse real-life transaction data from the German publishing industry to investigate which aspects of content design can increase sales.

Results and Implications

The findings point to a model that allows uniting the concepts of management and editorial design literature and the usefulness of our proposed framework. They further indicate that in hedonic media consumption, the colors purple and blue, text-image congruence, wording that

leads to ease of cognitive processing and promotional activities are pivotal in sales. The results are relevant for researchers and journalists who have a particular interest in the effects of editorial content design.

Originality/Value

This research is one of the first to empirically research editorial product design and its effects on sales.

Personal Contribution / Co-author Statement

Concerning my contribution to the paper, I would rate is as follows:

1. Intellectual input: ☐Less than 25% ☐25%-50% ☒51%-75% ☐76%-100% Comments: While the initial task stemmed from a collaboration with my co-author and a publishing company, I conducted the literature analysis, contributed to defining the overall research problem. The core scientific idea to solve the research task was a joint task.
1. Experimental setup and results: ☐Less than 25% ☐25%-50% ☒51%-75% ☐76%-100% Comments: I derived the key methodology together with my co-author. We also both oversaw the coding processes. For the paper, I executed the analysis of the data, however, the results were interpreted jointly.
2. Writing process: ☐Less than 25% ☐25%-50% ☒51%-75% ☐76%-100% Comments: A draft version of the paper was written by myself, however, it was also entirely changed through both authors in the process.
Table 1.4. Personal Contribution Paper E

Publication Status

This research was presented at the following conferences: European Media Management Conference in Warsaw (2018) and at the European Marketing Association Conference in Hamburg (2019; Here it was shortlisted for the Best Paper Award based on Doctoral Work), 81st Conference of the Verband der Hochschullehrerinnen und Hochschullehrer für Betriebswirtschaft e.V. in Rostock (2019). A version has been published in 2022 in the International Journal of Media Management with the authors Püchel, L. and Wellbrock, W.,

named “Judging a Magazine by Its Cover – A Conceptual Framework to Understand Sales through Content and Design”.

1.5 Discussion

Each of the projects in this dissertation focused on a particular aspect of journalism presentation properties and corresponding economic impact. Each project has its own set of findings, that were pointed out in each of the individual papers. In this chapter, I now attempt to identify *overarching themes* that surface when taking this thesis as one body of work.

Framework: Media Presentation Properties

In the introduction chapter, I introduced multimodal analysis approached to understand the presentation of media. I also outlined, that research in journalism, and in fact any mediated environment, is of interdisciplinary matter. While this thesis set out as a pure management research, during the process it became clear that every single journalistic product will also need to be understood from a presentational, nearly visual and thereby interdisciplinary perspective. Especially papers A, B and E therefore put forward an interdisciplinary understanding of media presentation properties. Together, they show that media presentation properties are made up of three components: Content design, presentation modes and technology. This is depicted in figure 5.1.

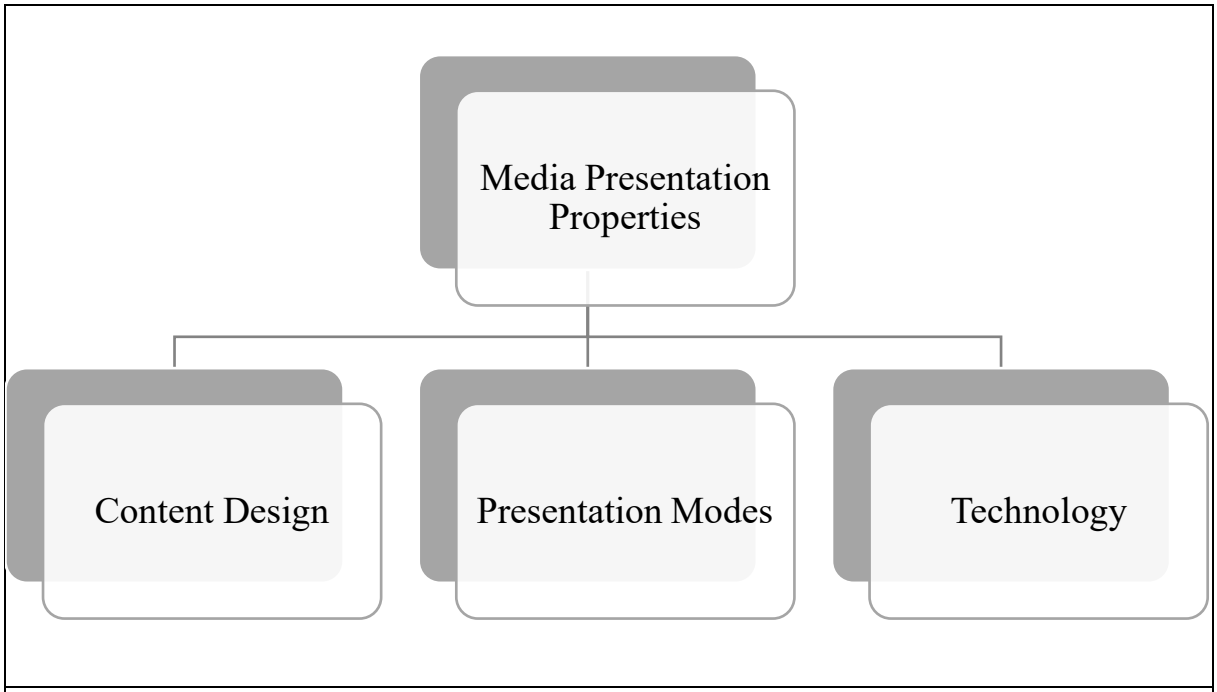

Figure 1.3. Media Presentation Properties

Media properties (e.g. Valkenburg et al., 2016) in communication theory and product-based factors (e.g. O'Brien et al., 2020; Sommer & von Rimscha, 2013) in consumer theory can therefore be widened to include the herein found tangible characteristics and components.
Especially content design and presentation modes were elaborately researched in this thesis. For both, we established a framework with components and dimensions but not yet for those aspects of technology, that a user will experience as presentation, e.g. interactivity. Consequently, there is some room left for a deeper understanding of these aspects of technology. A similar framework to content design and presentation modes should be developed and could help in understanding the affordances and effects of a media technology on consumers and thereby on market-driven journalism.

Media Presentation Properties Show Distinguishable Effects on Consumers

The primary purpose of this thesis was to understand whether presentational properties would render a difference in consumer behaviour and behavioural intention and also to establish whether these differences are economically favorable. Papers C, D, and E show significant effects of presentation properties on consumer behaviour and behavioural intention. In chapter 5 we see that interactive-engaging elements and visual parts of the technology lead to higher immersion. In chapter 6 I show that a design connected to greater utility and entertainment leads to greater paying intent, paying behaviour as well as to greater use intent and usage of journalistic content. This prolongs research from the physical to the digital and confirms that the degree of retrievability (which can be argued to connote a similar concept to the factor ease of use) (Schoenbach & Lauf, 2002) is still important for journalistic consumption processes. Finally, in chapter 6, we see that content design makes an actual difference in magazine sales.
We started to reveal how individual components of media presentation affect consumer behaviour. This research confirms previous studies in that there are consumer responses to media presentation properties (e.g. Javornik, 2016b). Hence, changes in media presentation properties can make a media firm more competitive. As outlined in the introduction chapters, the ability to compete on the market and in fact competitive markets themselves are linked to strengthening media performance and thereby a functioning democratic society (e.g. McManus, 1994; Wellbrock et al., 2020). With these results, I will therefore argue for market-driven journalism based on observations in consumer behaviour and behavioural intention and regard media presentation properties as a way of audience orientation without compromising journalistic quality.

Limitative to these results is the fact that some of the research settings were not controlled for due to real-life situations (e.g. Paper E) and hence external validity is unverified. Vice versa, the experimental settings in other papers (e.g. Paper D) may have led participants to overjudge their experience. Also, the research was placed in German-speaking countries only. Schoenbach & Lauf (2002) rightfully describe that there might be some cultural differences regarding the importance of media presentation. One other important research avenue is studying the interplay of presentation properties and content more intensely. The effects of news and journalism design are multifaceted and that design which enables better knowledge transmission should at best always be valued higher than design based on economic effects. This is important to democracy as the message should never be reduced to manipulate the market.

Media Presentation Properties and Entertainment

Entertaining news content draws more attention and readers than so-called orienting, informing news content does (McManus, 1994). Empirical research has confirmed this and for example linked willingness to pay for journalism with consumer segments that favor entertainment (Tarkiainen et al., 2014). Alike, the results in this thesis suggest that presentation properties that carry an entertaining character increase consumer behaviour and intention with the product. For example, Paper E showed that a striking promotional activity increases magazine sales. And Paper D showed that hedonic motivation influences usage and paying intent, indicating that consumers who find the use of journalistic content entertaining are also more likely to pay for it. After all, conspicuousness in visual design has been found to increase buying behaviour (Wu et al., 2016). Paper C showed that immersion increases paying intent, as well. Entertainment can also be reached via media whose design is more immersive (Tarkiainen et al., 2014). These findings suggest that the joy that results from the consumption of journalistic media (embedded in its technology) may have been underestimated so far.

Using entertaining presentation with informative, orienting content could bypass the problem that occurs when also the content and information itself is communicated in an entertaining manner. McManus (2015) described the dichotomy between orienting and entertaining news content, which is basically the synthesis of the news uses and gratifications literature (pp. 116 -120). If media presentation properties are designed in an appropriately entertaining matter, but the information itself not, then this might be the compromise. This, however, needs to go alongside with a reflective practice (Machin & Polzer, 2015).

Interdisciplinarity

Media products are inherently interdisciplinary (Förster & Rohn, 2015; Nölleke-Przybylski et al., 2019) and in fact, all products we consume through a medium are computer-mediated and thereby interdisciplinary. This interdisciplinarity provides a challenge for research and coping with it was named as one of the greatest challengers for academic personnel in the field (Förster & Rohn, 2015). As outlined in the beginning chapters, I see an opportunity for research in the backdrop of an interdisciplinary field, because it can provide a more wholesome understanding of the issue at hand. With this thesis as one body of work, and within each individual article, I exemplify the research steps necessary for an interdisciplinary approach and hope that this can set a guideline for further research.

In papers A and B I use literature analysis, content analysis and basic statistic methods to arrive at a framework which can then be used in standard economic research. This framework of presentation mode dimensions can be utilized in CMC, communication, journalism, IS and management research. In paper C, I drew from IS, CMC and communication research, used a 2x2 study design and statistical analysis, and the results can be further utilized in these fields of study as well as in (media) management research. The same goes for Paper D and E.

Theoretical Implications

From a theoretical perspective, this thesis aims to extend research on the influence of presentation properties on consumer behaviour and behavioural intention. There are five main contributions in this regard, these are also shown in Figure 5.2.

Presentation Properties, Economic Efficiency of News Communication without Compromising Content

	Research Aim	Contribution	Research Methods
Paper A/B	Setting up Dimensions of Presentation Modes	Framework; 8 Dimensions of Presentation Modes	Literature-, Content-, Statistical Analysis (SPSS)
Paper C	Understanding the causes of presentation properties and effect on immersion and paying intent	Presentation properties drive immersion and paying intent	2 x 2 experiment, Quantitative (SPSS, PLS-SEM)
Paper D	Placing presentation properties in technology acceptance models; relating paying behaviour	Presentation properties drive technology acceptance and paying behaviour via UTAUT2 modulations	Survey, Quantitative (SPSS, PLS-SEM)
Paper E	Understanding the effect of Content Design on Sales	Framework; Content design drives sales	Literature-, Content-, Statistical Analysis (SPSS)

Overall Contribution

1) Presentation properties (PP) can be operationlized via herein established, interdisciplinary frameworks
2) Integration into existing theories.
3) Key mechanisms behind effects
4) PP provoke significant differences in consumer behaviour and thereby provide a possibility for audience orientation without compromising journalistic quality.
5) Media management as reference discipline

Figure 1.4. Contribution of Papers and Dissertation

First, is the operationalization of presentation properties for future studies (Papers A, B, D and E). Studies have previously lacked approaches to even start with research on media presentation and its effects on consumers (see chapter 9 and 10). This thesis presents a theoretical synthesis (DeAndrea & Holbert, 2017) of the knowledge in fields relevant to the study of presentation properties.

Second, this study extends economic literature through integrating presentation properties in previously established models, such as theory of planned behaviour (Pavlou & Fygenson, 2006) (Papers C, D), and technology acceptance models (Paper C). By integrating presentation properties as predictors of established models, we make key contributions in the respective literature and thereby replicate and extend prior work (DeAndrea & Holbert, 2017). Although presentation properties have been theorized to influence consumer behaviour, previous views were incomplete. They either lacked a research approach (e.g. Agrawal et al., 2020) or focused on single aspects (such as colour) only (e.g. Labrecque & Milne, 2012). This research delineates the make-up of presentation properties and places presentation properties as antecedents of consumer behaviour.

Third, this thesis elucidates key mechanisms (DeAndreas & Holbert, 2017) behind the effects. Specifically, this is done in Paper D, where immersion links presentation properties with paying and purchase intention. The utilization of price points instead of using the method of lottery or auction has been found to provide somewhat less reliable results (Völckner, 2006). Hence, future research could build upon this and re-establish findings using lottery and auction measurements.

Fourth, this research shows that presentation properties provoke significant differences in consumer intention and thereby provide a possibility for audience orientation without compromising journalistic quality.

Lastly, the findings have implications for the role of media management research as a reference discipline for online consumer behaviour, because online consumer behaviour is and will always be mediated through a medium. This research suggests that presentation properties (possible because of a medium through which they are transported) have become at least as important as traditional factors in predicting consumer behavior for journalism. Rather than viewing consumer behaviour as influenced through a product's characteristics only (marketing) and or influenced through a system's characteristics (IS research), it is perhaps more accurate to view consumer behaviour as an economic exchange influenced through a medium. Units of analysis considering the mediated interactions of consumers at the presentation property level will likely persist, because this provided narrower units of analyses and can tell us whether

effects actually stem from differences in presentation properties. Traditional research in marketing, economic theories and IS can draw from this knowledge and can jointly further shed light on how presentation properties interact with complex consumer phenomena.

Managerial Implications

All papers in this thesis were based on real examples of media presentation, which makes its results of high practical value of media producers.

Lucy Küng (2016) asked scholars to know the actual questions the field faces. The field asks for methodological skills (Timm, 2021) (in German: Methodenkompetenz). With this thesis, a tool is gained, that can help to facilitate methodological skill sets. To be exact, I herein developed tools for breaking down and analyzing the appearance of journalistic outputs. They act as sets of resources to be used for specific design decisions and is more predictive in nature, due to its empirical base. Managers and other media personnel can use these tools during an early stage of product development to understand the presentational make-up of their products better and back up their decisions. Managers are interested in influencing success and they want to know what to alter to a more favorable outcome.

The presentation properties act as specific factors on which managers should focus to alter consumer behaviour and behavioural intention. The papers in this dissertation additionally help to create an awareness for the communicative role presentation can play in the positioning of journalistic products with their audience. With attention to presentational detail, specific niche market positions can be pursued, products could be differentiated and marketing campaigns could be based on an improved product feature communication.

Thinking further, due to financial and time constraints, pre-programmed, default templates and ready-made website masks will continuously be utilized in journalism. While the results of this study show the necessity to staff presentation with sufficient resources in media production processes, the results of this study can also help to form efficient templates that suit the need of journalism better. For example, a news producer could one day choose a design template that is a) an eye-catcher for the segment of youth consumers and b) educative for this group.

Lastly, this research shows the importance of presentation design for a company. However, if news companies want to succeed in a world that is so visual, they need to invest in the technical development and maintenance of contemporary presentation news design and train or buy personnel with according skill sets.

1.6 Conclusion: What Can Be Done?

This thesis asked about the role of presentation properties on consumer behaviour and behavioural intention in journalism, their configuration and measurement and whether presentation properties provide a possibility for audience orientation without compromising journalistic quality. This thesis established tools to measure presentation properties, found that they in fact influence consumer behaviour and behavioural intention and theoretically explained how they can provide a possibility for audience orientation without compromising content.

Gentzkow, Shapiro and Stone (2014) described how content is slanted towards preferences of the audience through demand-driven media bias. McManus (1995) creates a scenario in which the "weak link of consumer evaluation of news were somehow strengthened" (p. 330). Neither one did not identify the presentation and technology of media to counterbalance the influence of market-dynamics over news content. However, with this thesis I would like to add media presentation properties to this argument. After all, recognizable difference between available news products may increase competition and thereby quality and secondly from a management point of view, presentation properties are "piecemeal components most readily manipulated by firms" (Sample et al., 2020).

Limitations were already identified in chapter 5. When it comes to future research, a sharper focus on presentation unlocks many unfamiliar lines of research. For instance, it is apparent that current news consumers find themselves in moments of multi-reception. They will retrieve messages from private networks through the same device as news. The physical setting is thereby the same. What could news outlets visually change to strike consumers as being more valuable? Furthermore, detailed research is needed to establish the degree to which presentation can be altered without sacrificing quality or the message. Another notion that has not been answered within this research is to understand where individual differences in reactions to presentation stem from. Possible explanations for these differences can be found in demographic and social differences or in the link to psychological types in the context of problem structuring methods (Siebert & Kunz, 2016). Foremost, research should initially establish the link between media presentation properties and perceived quality of journalism as well as its impact on media bias.

Besides these more specific theoretical and practical implications outlined in the chapter above, there are some broader repercussions. This research contributes to an overall awareness of how vital journalism's presentation is. Thereby it is primed to be of significance to debates about media literacy, influence and effects, ethics and artificial intelligence. It is especially the first, that I want to stress as "democratically desirable outcomes appear to be associated with visual

knowledge" (Grabe & Bucy, 2009, p. 270). In light of an increased fusion of presentation and text, media literacy needs to include presentation for this reason. Such education projects might need a lot of resources and time. Financial resources should stem from government and to a great degree from all those commercial players who use modern presentation to influence consumption, including social networks (Curran, 2019; Pickard, 2020). The one thing is when an unsteady supply of quality news leads to societal harm. Another is, when society cannot even *read* modern news.

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2 Paper A: Online Content Complexity: A Conceptual Framework to Categorize and Evaluate Presentation Modes

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3 Paper B: Examining the Digital Renewal of News Communication: A Categorization of Presentation Modes in Digital Journalism

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4 Paper C: Content vs. Technology: Disentangling their Effects on Immersion, Purchase and Paying Intention

Abstract

Immersion as a key construct in human computer interaction can be caused by both technology and content. Most information systems research has focused on immersive potential in technology, while several studies, such as from media and communication studies, have also addressed the effect of content on immersive experiences. This study investigates the effects of immersive potential in technology and content as well as their interaction on immersion, paying intent, and purchase intention. In a 2 x 2 between-subjects experimental design (n=201), each respondent consumes one of four systematically varying versions in terms of immersive potential of a journalistic video. The results suggest that immersion is mainly driven by immersive potential in content rather than in technology. Immersion in turn, affects paying intent and purchase intention. This implies that current immersive technologies might be less commercially viable investments in terms of causing valuable immersive experiences than investments in content.

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4.1 Introduction

If we want future generations to be informed through democratically relevant and digitally transmitted content, such as journalism, we must understand the mechanisms through which such content affects consumers to improve digital transformation of democratically relevant organizations. In this realm, immersive technologies have been advocated to have the potential to reach greater audiences, cause higher levels of engagement with the content and positively affect consumers paying behavior. At the same time, there is evidence through recent native information systems (IS) theories such as the hedonic-motivation system adoption model (HMSAM) (Hull et al., 2019) that the content itself could also lead to an immersive state analogous to or even more profound than immersive technology (Balakrishnan & Sundar, 2011).

While there is plenty of research on immersion (e.g., Slater & Sanchez-Vives, 2016; Suh & Prophet, 2017), and particularly immersive technologies (Csíkszentmihályi, 1990; Kampling, 2018; Nah et al., 2011; Witmer & Singer, 1998) research on the factors that cause immersion is scarce (Brown & Cairns, 2004; Hull et al., 2019; Qin et al., 2009). Existing research has provided conflicting evidence as to which extent the perception of immersion stems from either *technology* or *content* (Agrawal et al., 2020; Chessa et al., 2019; Kim & Ko, 2019; Suh & Prophet, 2018).

Despite this unclarity, the design of human computer interaction often operates under the assumption that immersive technologies such as VR lead to immersion and are, on top of that, desired by users and conducive to better communication (Chessa et al., 2019; Christou, 2014; Kim & Ko, 2019; Nah et al., 2011). Previous research suggests that the physicality as a side-product of immersive technologies leads to higher interaction of the user with the information (Oh et al., 2018) and that perceived immersive aspects drive perceived advantage of a product as seen with games (Müller-Stewens et al., 2017).

However, such results provide only weak evidence on the actual *origin* of immersion, as previous work did not regard technology independent from content. Whether adding immersive technical functionality leads to higher immersion is questionable (Agrawal et al., 2020; Balakrishnan & Sundar, 2011; Hull et al., 2019).

The uncertainty regarding the origin of immersion goes hand in hand with the uncertainty companies face when it comes to their financial investments in immersive technology and content. If, for example, immersion is caused by content, then the need for further investments in immersive technologies is dispersed. This might be possible, as research has repeatedly

shown that users experience perceptions similar to immersion while consuming content in traditional media technologies or even books, such as telepresence (the subjective perception of being in another place that can be reached using a medium; Pincus et al., 2017; Steuer, 1992; Witmer & Singer, 1998), flow ("a state of optimal experience where one is completely absorbed and engaged in an activity"; Nah et al., 2011, p. 734), absorption (referring to the feeling of full involvement culminating in absent mindedness; Weibel & Wissmath, 2011), or transportation (being mentally drawn into a narrative; Green et al., 2004).

The cause of these immersive experiences might lie in storytelling, which is inherent to humans and has been previously laid out in the narrative paradigm (Fisher, 1989) based on historic observations of oral storytelling. Humans have used and continuously use storytelling as a tool to absorb and understand complex information (Boldosova, 2019; Hull et al., 2019; Kuijpers et al., 2014). Some research has touched upon this observation (e.g., Balakrishnan & Sundar, 2011; Boldosova, 2019). Overall, however, the role of content that is the narrative and storytelling in the formation of immersion is underresearched and not empirically validated (Agarwal et al., 2020; Brown & Cairns, 2004; Howard, 2019). Moreover, 'the path' to understanding the impact of storytelling is unclear and needs trailblazing (Schwabe et al., 2019). Also, Howard (2019) asks for novel experimental designs to understand the influence of technology and content.

Immersion has been found to influence an array of responses, such as favorable cognitive and emotional engagement (Howard, 2019), process and outcome satisfaction (Zhu et al., 2019), user satisfaction (Deng et al., 2010; Kim & Ko, 2019), as well as enjoyment and brand equity (Nah et al., 2011). There is, however, a lack of research on dependent variables surrounding monetary behavior variables (Howard, 2019; Javornik, 2016; Pöhler et al., 2021). We consider a study of the effects of immersion on consumer paying and purchase intention as particularly important. Methodologically, the embedding of immersion as a potential influencing factor of consumer intention in Fishbein and Ajzen's (1975) theory of planned behavior, points towards nomological validity of the construct of immersion. Further, from a managerial perspective, the link of immersion to paying and purchase intention addresses relevant concerns of a business that is quite in need of monetary implications.

The potential of immersion in a societally relevant media environment as a business avenue is compelling (Bellalouna, 2020; Nah et al., 2011). Our study is placed in a journalism environment, a sector in need of understanding the side of the consumer, because funding through advertising is eroding (Olsen et al., 2020). Technological developments, such as

immersive technologies, have been identified as a potential solution to the monetary dilemma media companies face (Bellalouna, 2020). The research lack in this regard is therefore not trivial and more academic efforts placed on understanding consumer behavior could help solve financial problems for these democratically relevant entities.

This research focuses on the interplay of content and technology in driving immersion and its effect on consequential user behavior related to paying and purchase intentions. In an empirical experiment, we aim to demonstrate the potential of storytelling in human-computer interaction and help to understand why previous immersive research has provided conflicting results. Specifically, we investigate the following research question: *How do content and technology affect immersion, paying and purchase intention?*

To answer our research question, we first conceptualize technology, content, immersion, as well as paying and purchase intention. We then operationalize all constructs for our empirical study to empirically explore content vs. technology as drivers of immersion through a 2 x 2 experimental study design. In a between-subjects approach, we confront respondents with stimuli that represent combinations of content and technology that have high or low immersive potential. All participants answer a survey regarding their immersive experience and their paying and purchase intention. The data is then compared through a factorial ANOVA and post-hoc tests in IBM SPSS Statistics 27.

4.2 Conceptualization

4.2.1 Immersion and Immersive Potential

Although immersion has frequently been researched, definitions of the phenomenon vary profoundly, mainly due to two different schools of thoughts. On the one hand, immersion is understood as an objective property of a technology (e.g., Cummings & Bailenson, 2016; Slater & Wilbur, 1997). On the other hand, immersion is understood as an individual's psychological state (e.g., Agrawal et al., 2020; Baía Reis & Coelho, 2018; Qin et al., 2009; Witmer & Singer, 1998). The latter allows for understanding the subjective nature of immersive experiences and is utilized in the majority of the research. We will follow this understanding, as well, so that differences in experiences are measurable (Agrawal et al., 2020).

Immersion is a physical, emotional and mental involvement in the context (Qin et al., 2009). Murray (1997) derived an understanding of immersion from an analogy to the sensation one has when being fully submerged in water, a completely different reality. This depends upon the shaping of dramatic events, not necessarily on high-tech surroundings (p. 53). Agarwal et al.

(2020) understand immersion to be a state of deep mental involvement, in which cognitive processes shift an attentional state to the degree of disassociation from the awareness of the physical world (p. 407). The immersive potential of a system or of a content as well as one's own immersive tendency can facilitate or disrupt the immersive experience. Agarwal et al. (2020) also regard daydreaming to carry the potential of creating an immersive experience. Other researchers argue that sensory stimulation is a necessary component of immersion (e.g. Qin et al., 2009).

We follow this latter reasoning. In a world full of stimuli, a definition of immersion must include the fact that one is continuously in exchange with certain stimuli (Engeser & Rheinberg, 2008; Ermi & Mäyrä, 2005; Wimer & Singer, 1998). Hence, involvement with the stimuli as well as absorption through the stimuli lead to psychological immersion (Agrawal et al., 2020; Cheng et al., 2015; Engeser & Rheinberg, 2008; Koufaris, 2002). We define immersion as a multidimensional concept and as a mental state experienced by an individual due to a current motivated activity which can be experienced in varying intensity and is characterized by absorption and involvement. This definition will form the basis for our conceptualization of immersion. In this regard, content or technology cannot be immersive themselves but carry immersive potential (IP) (Agarwal et al., 2020).

Various concepts are closely related to immersion and describe the experience of feeling deeply engaged with a medium, such as a book, movies, computer games or virtual reality applications. Among the most important and most frequently mentioned ones are flow, cognitive absorption, presence and telepresence as well as narrative transportation.

Flow was initially coined by Csikszentmihalyi (1975) and is "a state of optimal experience where one is completely absorbed and engaged in an activity" (Nah et al., 2011, p. 734). *Cognitive absorption* was established as deep involvement with a software (Agarwal & Karahanna, 2000) and is situationally motivated. The personality trait of absorption, the state of flow and cognitive engagement institute cognitive absorption (Qin et al., 2009). *Absorption* implies the feeling of full involvement culminating in absent mindedness (Weibel & Wissmath, 2011). *Presence* and *telepresence* refer to the subjective perception of being in another place that can be reached using a medium, it is also described with a being-there heuristic (Pincus et al., 2017; Steuer, 1992; Witmer & Singer, 1998) and can occur simultaneously to immersion. *(Narrative) transportation* is a state of being mentally drawn into a narrative (Green et al., 2004). Some have argued that presence, narrative transportation and immersion mean exactly

the same (Argawal et al., 2020) which supports the notion, that content is also a cause of immersion.

Technology and content can affect immersion but this effect is not independent from the human subject. Hence, the ability of a technology or a content to induce immersion can be described as immersive potential (IP) (Agrawal et al., 2020).

4.2.2 Content

Content is often understood as a representation of meanings or messages as subject of public communication (Berger et al., 2015). In differentiation to a piece of information in general, it is important to call in the form of an information. When the information exists in a form that enables transmission to other people, one can speak of content. This is mirrored in Henfriddson et al.'s (2018) modular structure of digital resources. Applied to our research setting, we understand content as the digital representation of information in a form that can be transmitted to other people. When also taking into account the journalistic environment of this research, we bear in mind that content can also be understood as the result of editorial, democratically relevant work and a type of goal-oriented display of implicit information. Alike, in IS research the term 'deliberate storytelling' was coined (Boldosova, 2019) and expands on the production of content for ethical business purposes, meaning the usage of storytelling for education not persuasion.

4.2.3 Digital Technology

Hague and Williamson (2009) state that technologies store and transmit information. This includes hard- and software such as computers, the internet and email, mobile phones, and other mobile devices or Web 2.0 technologies. Henfridsson et al. (2018) differentiate more detailed through their value spaces framework and understand technology in terms of the value it can bring forward. Digital resources, which they define as "entities that serve as the building blocks in the creation and capture of value from information in digital innovation" (p. 10), belong to one of four value spaces, that is the devices, network, services, and contents. Applied to the digital journalism context, when reading a digital article on a smartphone browser, the article itself (the information) is the contents value space, the website is the services value space, the network value space is the mobile network, and the device value space is the smartphone. The value space framework allows to integrate the network as an area between hard- and software into the definition. Applying this framework to our setting, we define digital technology as any

technological device that is connected to a network and that stores or transmits information in digital form, therefore including the devices, network, and services value spaces.

4.2.4 Paying and Purchase Intention

Paying intention is defined as the stated probability that someone will pay for a certain product (O'Brien et al., 2021), while purchase intention stands for the stated probability that someone is willing to purchase a product. While these two concepts are undoubtfully related, paying intention is the more fitting one for our purposes, because it is closer to the real-world transactions in the digital sphere and for digital journalistic products in particular. Here, it is more common that consumers pay a subscription fee to get access to content bundles rather than purchasing products in the sense that they obtain legal or physical possession of a good. Since the most commonly applied scale for paying intention consists of only one item (Chyi, 2012; Goyanes et al., 2018), we decided to focus on both concepts as alternative dependent variables to provide an in-depth understanding of the effects of immersion on behavioral intentions regarding monetary assets.

4.3 Related Literature on Technology, Content, and Immersion

The stream of research on the genesis of immersion is dominated by theoretical and conceptual work, providing valuable approaches to better understand the concept. Yet it lacks empirical support (Agrawal et al., 2020; Brown & Cairns, 2004; Howard, 2019; Hull et al., 2019).

The role of technology in the formation of immersion has been touched upon in research but shows inconclusive results (e.g., Ermi & Mäyrä, 2005; Qin et al., 2009; Suh & Prophet, 2018). Several studies indicate a positive influence of digital technologies (Chessa et al., 2019; Kim & Ko, 2019; Ma & Zytko, 2021) on an individual level of immersion, especially in research from computer game scholars (Qin et al., 2009); for example, when VR instead of 2D technologies, such as desktop monitors, are used (Qin et al., 2009) or when technological features create interactivity and thereby increase immersion (Hudson et al., 2019). The general understanding has been that the closer a technology comes to simulating real-life experiences, the higher consumers' perception of immersion will be (Agarwal et al., 2020; de Bruin et al., 2020; Javornik, 2016). However, Howard (2019) found conflicting evidence pointing to ineffective hard- and software. Only game elements showed significant overall effects, which is interesting, because game elements are not components of the technology but could rather be interpreted as parts of storytelling and the content.

Choi et al. (2017) is one of the few studies to research technology and content simultaneously. Their study was placed in a virtual travel environment with concepts similar to immersion. Hence, the results of this study are not directly transferrable, but both modality (still pictures versus panoramic pictures) and navigability have been found to impact emotional responses. Alike, Javornik (2016) looked at the flow concept and found that augmented reality media characteristics do not directly influence flow, but rather perceived augmentation influences flow.

The role of content in the formation of immersion is highly correlated to observations of storytelling in IS research but lacks empirical support. Storytelling is inherent to humans, which has been laid out in the narrative paradigm (Fisher, 1989) based on historic observations of oral storytelling (Qin et al., 2009). Humans use storytelling as a tool to absorb and understand complex information (Boldosova, 2019; Hull et al., 2019; Kuijpers et al., 2014; Qin et al., 2009). Hull et al. (2019) offer a roadmap for studying multimedia instructional materials within IS management education. They claim that immersion can be enhanced when multimedia instruction materials follow rules of narrative form of sense-making, for example when there is an artistic telling of the story and when images and sounds are skillfully employed in narrative animated videos. The opposite would be an expository form of sense-making. The researchers align their claims with the narrative paradigm by Fisher (1989). Yet, they do not provide an empirical study to support their claims but demand of future research to understand the differences in story shapes, particularly in content design better and to also understand their effect differences. Similarly, storytelling through content and technology have been identified as drivers of individual big data adoption in a qualitative study (Boldosova, 2019).

Content has been found to influence the experience of presence (e.g., Balakrishnan & Sundar, 2011; Ijsselstein et al., 2001; Lombard & Ditton, 1997; Steuer, 1992). Balakrishnan and Sundar (2011) researched the impact of navigability and narrative transportation on spatial presence. All three concepts are closely related to immersion. They describe that “for any given user interaction device, there is an underlying scenario or narrative of use” (p. 172). Balakrishnan and Sundar (2011) utilize a study of 240 participants and find that narrative transportation as well as steering control significantly affect spatial presence, but their results remain to be discussed, because narrative transportation also had a negative impact on action and reality judgment. Chung and Tan (2004) find content, defined as the amount of information presented on a search website, to be a significant factor influencing flow. Only Green et al. (2004) indicate

that narrative transportation leads to an immersed state and Agarwal et al. (2020) even suggest that narrative transportation and immersion are one and the same.

4.4 Hypotheses

Previous research indicates a possible positive influence of digital technologies (e.g., Agarwal et al., 2020; Chessa et al., 2019; Kim & Ko, 2019; Ma & Zytko, 2021) and content (e.g., Agarwal et al., 2020; Ma & Zytko, 2021; Qin et al., 2009) on an individual level of immersion. Suh and Prophet (2018) develop a framework to conceptualize immersive technology use. They describe technology and content as stimuli that directly impact cognitive and affective reactions, with immersion being one of the cognitive reactions.

The general understanding of literature in the field is that immersion is likely to be higher the closer a digital technology comes to simulating real life experiences (de Bruin et al., 2020), that is the higher the immersive potential of a technology, the higher the experienced immersion. We therefore hypothesize:

H1: Immersive potential in a technology positively influences experienced immersion.

Game research and research into storytelling in IS and immersive journalism offer valuable insights. The idea is that the content, too, creates an environment which draws the users into an area outside of themselves (Qin et al., 2009). Certain characteristics have been researched to carry this potential: The amount of suspense and emotionality, point of view of the user in terms of first-person perspective or objective observer, the representation of the self in a digital environment as well as interaction possibilities.

H2: Immersive potential in content positively influences experienced immersion.

Braceviciute et al. (2021) find higher parietal theta activity, which has been connected to long-term memory activity, with immersive VR technology versus in a 2D reading environment. However, they do not find differences in outcomes such as retention capability. These results are interesting and hint towards a high interrelation of immersion with human information processes.

Most information processing models are based on the assumption that the human brain has a limited capacity for information processing (e.g. Lang, 2000). Lang (2000) argues that this leads to selection processes especially when the two sub-systems of verbal on non-verbal stimuli are involved (Sundar, 2000). When several modalities are involved, more cognitive abilities might be needed than are available.

In the context of immersive journalism, the results of Sundar et al. (2017) indicate that the degree of an individual's experienced presence not only depends on the technological capabilities of a medium but also on the emotional intensity of the story. They find significant interaction effects of a medium such as a smartphone and story for all three presence-related outcomes. They suggest that emotional storytelling and a rich narration might be the basis of an immersive experience that high technology can amplify. Underlining the definition of immersion as an individual's mental state, we argue that immersion cannot be determined by technological factors a priori. This leads to the following hypothesis:

H3: Immersive potential in a technology moderates the effect of immersive potential in content on experienced immersion such that the effect of immersive potential in content on experienced immersion is stronger for technologies with high immersive potential than for technologies with low immersive potential.

Immersion has been shown to increase willingness to pay for premium prices in tourism (Huang, 2021) and is thought to increase upselling (Hudson et al., 2019). At the same time, results in high consumer uncertainty environments, such as journalism products, indicate no influence of immersive experiences on purchase behavior (Lombart et al., 2020). Results further indicate, that purchase behavior in online environments is more influenced through prices than appearance (Lombart et al., 2020). Most studies have been administered in virtual store environments previous to consumption, whereas in our study, the behavioral intention is asked post-consumption. Consumer uncertainty should therefore be low. Additionally, trust in immersive experiences, which occurs mostly after consumption, leads to more positive purchase intentions (Baker et al., 2019). Hence, we hypothesize:

H4.1: Immersion positively influences paying intention.

H4.2: Immersion positively influences purchase intention.

Figure 10.1 summarizes the conceptual framework.

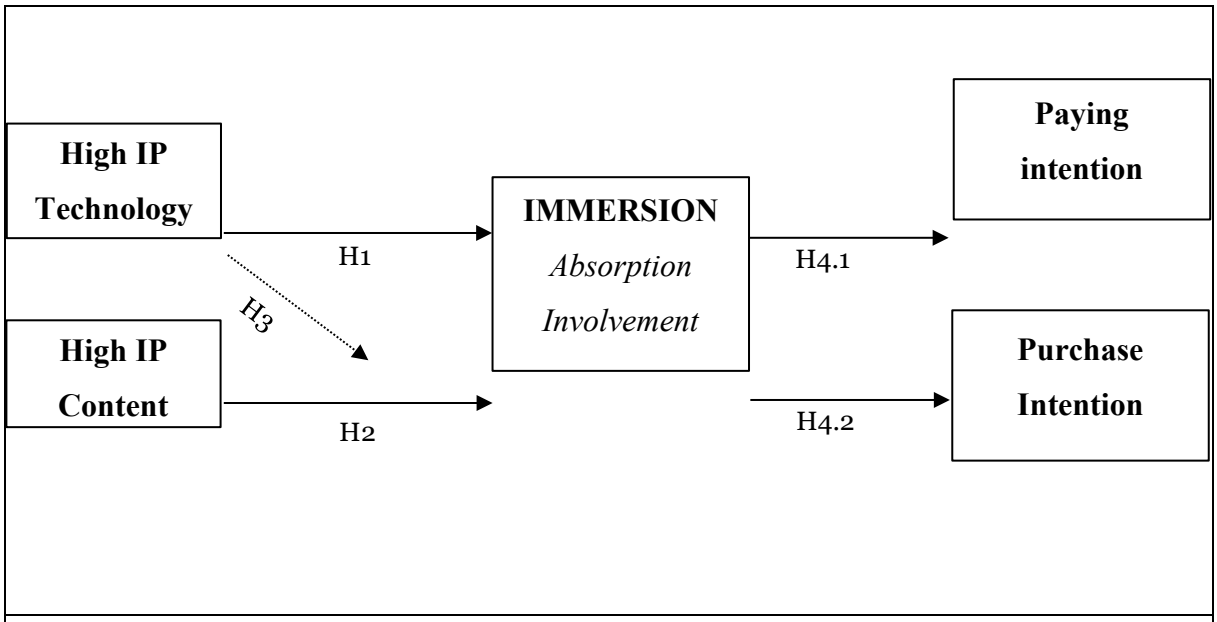

Figure 4.1. Conceptual Framework

4.5 Research Design and Method

4.5.1 Design and Procedure

To investigate the hypotheses, we conduct a 2 x 2 (low vs. high IP of content and low vs. high IP of technology) between-subjects experimental study. As outlined previously, in previous research on immersive systems it was made clear that an experimental, empirical research design is needed to understand the influence of technology and content on immersion (Agarwal et al., 2020; Brown & Cairns, 2004; Howard, 2019; Schwabe et al., 2019). All participants are shown stimuli that differ in IP with regards to content and technology and answer a survey regarding their immersive experience. The results are then compared through a factorial two-way ANOVA in IBM SPSS Statistics 27 with bias-corrected bootstrapping (5,000 samples). Our hypotheses were tested in a PLS path modeling in SmartPLS3 (Ringle et al., 2015), because both reflective and formative measures were used (Hair et al., 2017). A confirmatory factor analysis (CFA) preceded the model measurement.

A pre-study with 30 participants was administered in March 2021. Following, we changed the wording only minimally and deleted five redundant items. The main study took part from August 2021 until March 2022. We used two smartphones and suiting VR gear and respected COVID hygiene standards. Via promotion through the leading research department's mailing lists and social media, interested participants were invited to register for the study. Potential participants were neither enticed nor incentivized through monetary compensation. Per participant, the procedure took about 30 minutes. We did not aim at representativeness when

drawing the sample. While representative population studies aim to make generalizable statements about the population as a whole, the experiment aims to make relative statements: How did a variable change as a result of an experimental stimulus? However, the random selection per group needs to be comparable in terms of socio-demographics. Further, based on findings of inverse correlations between online journalism consumption and age, people above the age of 60 were omitted (Yang & Grabe, 2011). Participants took part one by one. They had to reply to a set of questions shortly before and after consuming videos that we used as stimuli. The first part of the survey covered data security information, demographics (age, gender, income, occupation), involvement with political topics, perceived well-being, and also asked for previous VR experience. The second part of the survey (after the video stimuli) covered the main constructs of our research, which includes the participants' perception of their immersive experience as well as their behavioral intentions. Lastly, the participants were verbally debriefed about the actual purpose of the study.

4.5.2 Operationalization of Factors

Technology. We chose to establish low and high IP technological environments based on the type of modality, quality of the modalities, and match between displayed information and proprioceptive feedback of body movements as criteria for defining the level of IP of a technology. Cummings and Bailenson (2016) meta-analyzed research to see how different parts of technologies influence presence. De Bruin et al. (2020) carried out similar research but with a focus on immersion. In order to generate categories of components that influence the IP of immersion we therefore use the categories that de Bruin et al. (2020) formulated and supplement these with the findings of our own literature review (Table 9) by assigning each finding to one of de Bruin's (2020) main elements. These are the corresponding factors with their manifestation, which are derived from the original sources. This set of elements and factors, derived from previous research, enables a comparison of digital technologies in terms of IP.

Category following de Bruin et al. (2020)	**Corresponding Factors**	**Manifestations low ↔ high IP**	**Authors**
Type of modality	Field of view/range of display	small ↔ large	Cummings & Bailenson, 2016; de Bruin et al., 2020; Javornik, 2016; Sanchez-Vives & Slater, 2005; Sherman & Craig, 2003
	Amount of sensory coverage (how many senses are covered) Sensory breadth Display format (e.g., photography)	one ↔ every	de Bruin et al., 2020; Sanchez-Vives & Slater, 2005; Sherman & Craig, 2003; Slater & Wilbur, 1997; Steuer, 1992
	Interactivity	low ↔ high	Sherman & Craig, 2003; Steuer, 1992
Quality of the modalities	Stereoscopic/monoscopic video	monoscopic ↔ stereoscopic	Baños et al., 2008; Cummings & Bailenson, 2016
	Stereoscopic/spatalized sound	spatalized ↔ stereoscopic	Baños et al., 2008; Cummings & Bailenson, 2016
	The extent of (user-)tracking	none ↔ completely	Cummings & Bailenson, 2016; Sanchez-Vives & Slater, 2005
	Time between a user's action and the appropriate response by the system (latency/lag time)	none ↔ ∞	Sanchez-Vives & Slater, 2005; Sherman & Craig, 2003; Steuer, 1992
	Display/image qualities: resolution	low ↔ high	Bracken, 2005; Sherman & Craig, 2003
	Quality of rendering in each sensory modality	low ↔ high	Sanchez-Vives & Slater, 2005
	Frame rate	low ↔ high	Sanchez-Vives & Slater, 2005
	Amount of sensory coverage (how much of each sense is covered)/ Sensory depth	little ↔ completely	Sanchez-Vives & Slater, 2005; Sherman & Craig, 2003; Slater & Wilbur, 1997; Steuer, 1992
Match between displayed information & proprioceptive feedback of body movements	Degree to which simulated sensory data matches proprioception	low ↔ high	Sanchez-Vives & Slater, 2005 Slater & Wilbur, 1997 Steuer, 1992

Table 4.1. Defining the Immersive Potential of Digital Technologies (by categories)

In the two high IP technology scenarios (Groups 2 and 4, Table 11), we use cardboard VR equipment (VR-SHARK X6), which allows the experience of 360-degree video. In the low IP

technology scenario (Groups 1 and 3, Table 11), the video is seen without the use of supporting VR equipment. In all groups, the same smartphone (Samsung Galaxy S10) is used. Both smartphone and VR equipment were bought for the purpose of the study to ensure smooth operation with the devices and to control for differences in devices, in case each participant had used their own.

Although the high IP technology scenario in this study does not fulfill all upfront defined factors, for example that there is no usage of stereoscopic sound, the smartphone with VR gear can definitely be defined as having a higher degree of immersion compared to the smartphone as it outperforms the low immersive technology scenario in all three main categories.

Content. Alike to technology, content needs to be broken down into manifest components. Certain characteristics have been researched to carry immersive potential: The amount of suspense and emotionality, point of view of the user in terms of first-person perspective or objective observer, the representation of the self in a digital environment as well as interaction possibilities.

The last characteristic, interaction possibilities, poses a challenge, because interaction possibilities can also arise from technology. De Bruin et al. (2020) therefore distinguish between technological interactivity (interaction of the user within the virtual environment) and narrative interactivity (agency of the user in terms of content choice).

Table 10 assembles the presented previous research into a set of factors that enables a comparison of different content pieces in terms of IP.

Characteristic	**Manifestations** **Low ↔ high IP**	**Authors**
Amount of suspense	low ↔ high	Sherman & Craig, 2003; Qin et al., 2009
Amount of emotionality	low ↔ high	Baños et al., 2004
Point of view	observer ↔ first person perspective	De la Pena et al., 2010; Sherman & Craig, 2003; Sanchez-Vives & Slater, 2005
Representation of self in digital environment	None ↔ own character, recogniziation by other characters	de Bruin et al., 2020
Interaction possibilities	None ↔ influence the narrative ↔ interaction with the story	de Bruin et al., 2020; Dominguez, 2017; Sherman & Craig, 2003; Qin et al., 2009

Table 4.2. Immersive Potential of Contents

The difference between high and low IP in content can be established based on the amount of suspense, amount of emotionality, point of view, representation of self in digital environment,

and interaction possibilities. Our stimulus was changed along two of the parameters (the amount of emotionality and the amount of suspense) and is therefore argued to be sufficiently enough modified to provide a low and high IP of a content environment. To be more precise, our content stimulus is a journalistic 360-degree reportage by the German newspaper Süddeutsche Zeitung called "Maria against Olympia" (Ondreka, 2016) published during the Olympic Games in Rio de Janeiro in 2016. The quality of content and technology necessary for this research are still up to date. In this documentary, one follows protagonist Maria, whose Favela was teared down to make room for the games and who decided yet to stay. This piece was chosen during the research process for several reasons. First, it is high in journalistic quality, as the publisher follows high journalistic standards for its content. Second, this immersive experience can be used in VR and on a 2D smartphone screen. Further, the subject matter itself is expected to elicit little emotional response from viewers.

In the two high IP content scenarios (Groups 1 and 2, Table 11), the journalistic piece is shown in its original form. For the purpose of a low IP content variant (Groups 3 and 4, Table 11), the audio track of the offering was modified. For this purpose, the audio track was transcribed first. Second, a trained journalist rewrote the audio track into a version that did not include storytelling but only offers the main information also given in the original version. To ensure that the information given in the original and modified versions were the same, we further consulted three independent journalists who rated the versions in terms of the similarity of informational content. The length of the shown content remained the same (4:12 Minutes).

Table 11 summarizes the experimental set-up.

			Immersive Potential in Technology	
			Low	**High**
			Smartphone	**VR**
Immersive Potential in Content	**Low**	**Adapted Video**	**Group 1**	**Group 2**
	High	**Original Video**	**Group 3**	**Group 4**

Table 4.3. 2x2 Experimental Design

4.5.3 Construct Measurement

To measure the dependent constructs in our research model, we mostly drew upon established items and adapted these to the context at hand. As the study was conducted in Germany, all items were translated from their original English wording to German in a systematic process. First, the items were translated into German. Second, two independent bilingual speakers translated the items back to English. Thirdly, original and translated versions were compared.

In the case that the re-translated items differed from the meaning of the original items, all researchers discussed the wording and consented on a version.

The immersive experience has been previously measured (e.g., Qin, 2009), but the dimensions may differ depending on the application (Agrawal et al., 2020). As previously outlined, we define immersion as an involved and absorbed state and base measurement on an immersion-focused version of Engeser and Rheinberg's (2008) flow short scale consisting of absorption (3 items) and involvement (4 items). They are the original items, however, translated into German. In accordance with Engeser and Rheinberg (2008), we use mean values of the two factors. The immersion scales are specified as a reflective-formative (type II) second-order construct (Jarvis et al., 2003). The interaction effect was calculated via the term content*technology. Paying intention was measured with one item based on Chyi (2012) and Goyanes et al. (2018). Purchase intention was measured with four items based on Moon et al. (2008). Statements were rated on a seven-point Likert scale from 1 ("Strongly Disagree") to 7 ("Strongly Agree"). Participants could (technically) not skip questions of the survey, but all scales included an "don't know" option.

In addition, we included control variables. Experience with VR (Kim et al., 2005) and cybersickness (Davis et al., 2014) could interfere with the results. Dizziness, headache and nausea were used as indicators and respondents had to rate the symptoms' intensity on a scale that ranged from no problems (0) to unbearable problems (10). One dizziness scale was included before watching the video, the other two scales after the video to determine the difference and thereby degree of symptoms caused by the actual VR experience. A theoretically unrelated political interest scale was added (based on Francis & Geer, 1999) to test for common method variance (CMV) through a latent marker variable (Lindell & Whitney, 2001). CMV may be a threat to measurement when utilizing Likert-type scales in cross-sectional surveys. Finally, we included demographic variables in the questionnaire.

4.6 Results

4.6.1 Data Screening, Sample Profile and Measurement Model Validation

Our purged sample included 201 responses. The treatment groups were nearly evenly distributed. Group 1 (low IP in content and technology) with 54, group 2 (low IP in content, high IP in technology) with 51, group 3 (high IP in content, low IP in technology) with 50 and group 4 (high IP in content and technology) with 46 respondents. In our sample, none were diverse, 55% were female and 45% male. The participants' mean age was 45.98 (*SD* = 13.6)

years. 7.5% were ≤ 20, 30.8% between 21 and 30, 37.8% between 31 and 40, 5.0% between 41 and 50, and 18.9% >50 years of age. The following education levels were present: no completed degree 3%, high school/gymnasium or equivalent 21.4%, completed apprenticeship 21.9%, university degree Bachelor 19.9%, Master 16.9%, PhD 7.5%, other 9.5%. The occupation mostly named was employee with 58.7%, followed by student 14.4%, entrepreneur/self-employed 10.4%, high school student 6.0%, trainee/apprentice 3.5%, retired 3.5%, unemployed 2.5%, homemaker 1%. 5.4% of the sample had an income ≤ 500 €, 13.4% between 501 and 1000 €, 10.9% between 1001 and 2000 €, 20.4% between 2001 and 3000 €, 19.9% between 3001 and 4000 €, 8.5% between 4000 and 5000 € and 14.9% > 5000 €. 65.7% had no previous experience with VR, 21.9% had watched a VR video once, 9.5% a few times, 0.5% often and 2.5% were unsure.

As the respondents could not continue with the survey without replying to each one of the questions, there were no missing values. Further, straight-lining did not occur. We screened for the frequency of the answer option "don't know" instead of missing values, and deleted one case from the dataset because more than 25% of the questions were answered with this option (Hair et al., 2009). In the remaining sample, the amount of "don't know" per participant was below 2%. We further deleted one case based on a high account of cybersickness, because this respondent's results could have been flawed due to sickness. We controlled for differences between the four treatment groups. We applied the Fisher-Freeman-Halton test to the demographic and control variables and did not find any significant differences (all p-values > 0.1). Two one-way analyses of variance (ANOVA) yielded no significant differences. We therefore concluded that subjects were homogenously distributed in the four groups with respect to demographics and predispositions.

The CFA was calculated for the reflective measurement models, which means all constructs except the second-order construct immersion, and we assessed factors in terms of factor loadings, internal consistency, as well as convergent and discriminant validity. All factor loadings were > 0.7 (Matsunaga, 2010). All selected items had factor loadings between 0.792 and 0.941 and high reliabilities (Cronbach's $\alpha > 0.8$). The composite reliability (CR) coefficients of the immersion dimensions are more than adequate, ranging from .89 to .95. Hence, scores are satisfactory for all factors (see Table 12).

	Item	Loading	Cronbach's α	CR	Source
Absorption	1 I didn't notice time passing.	0.929	0.918	0.948	Engeser & Rheinberg, 2008
	2 I was totally absorbed in what I was doing.	0.941			
	3 I was completely lost in thought.	0.911			
Involvement	1 My thoughts and activities ran fluidly and smoothly.	0.925	0.932	0.951	Engeser & Rheinberg, 2008
	2 I had no difficulty concentrating.	0.904			
	3 My mind was completely clear.	0.928			
	4 The right thoughts and movements occurred on their own accord.	0.888			
Purchase Intention	1 I will purchase the video.	0.806	0.835	0.890	Moon et al., 2008
	2 Given a choice, my friends will choose the video.	0.837			
	3 There is a strong likelihood, that I will buy the video.	0.839			
	4 I would recommend the video to my friends.	0.792			

Table 4.4. Constructs, Items and Reliability Criteria

Convergent validity is displayed when more than half of the variance in indicators is explained through their constructs. Each construct's average variance extracted (AVE) is above 0.5 and thus convergent valid. For discriminant validity, the constructs AVE values should be greater than the maximum shared variance (MSV) with other constructs, items should load more strongly on their corresponding construct than on other constructs (Fornell & Larcker, 1981), and the heterotrait-monotrait (HTMT) ratios of correlations should lie below 0.85 (Henseler et al., 2015). Our data meet these criteria (see Table 13). The HTMT ratios of involvement and absorption (0.832), purchase intention and absorption (0.644), as well as purchase intention and involvement (0.529) are all below the threshold and underline the validity of the concepts.

Construct	AVE	MSV	1	2	3
(1) Absorption	0.860	.599	0.927		
(2) Involvement	0.830	.599	0.774	0.911	
(3) Purchase Intention	0.670	.319	0.565	0.473	0.819

Table 4.5. Construct Validity Assessment: AVE, MSV and Correlation Matrix

*Note: The underlined diagonal elements in the correlation matrix are the square root of the AVE.

Following, the validity of our reflective-formative (type II) second-order immersion construct was tested in a two-step approach with a repeated indicator model in the first state (Henseler & Chin, 2010). The highest variance inflation factor (VIF) concerned the second-order construct immersion. Involvement and absorption carried a VIF value of 2.560, which is below the restrictive threshold of 3.33 (Diamantopolous & Siguaw, 2006). Hence, collinearity is not an issue. The test of the two dimensions, involvement and absorption, using a bias-corrected bootstrapping approach showed highly significant loadings with the second-order construct. The measurement model can be regarded as valid. In addition, no notable differences were detected between the structural relationships of the models with and without the marker variable political interest. All paths maintained their significance levels. Hence, CMV was not detected.

4.6.2 Structural Model Validation and Hypothesis Testing

Visual inspection of the histogram and QQ-Plot as well as computation of the Shapiro-Wilk test confirmed the data's normal distribution. To ensure homogeneity of variance, Levene's Test for Equality of Variances was successfully checked ($p > .05$).

Again, collinearity between the constructs was tested and none of the VIF values were greater than 3.33 (Diamantopolous & Siguaw, 2006). Following, the same bootstrapping procedure as above described for the formative measurement model validation was applied. The results are displayed in Figure 10.2.

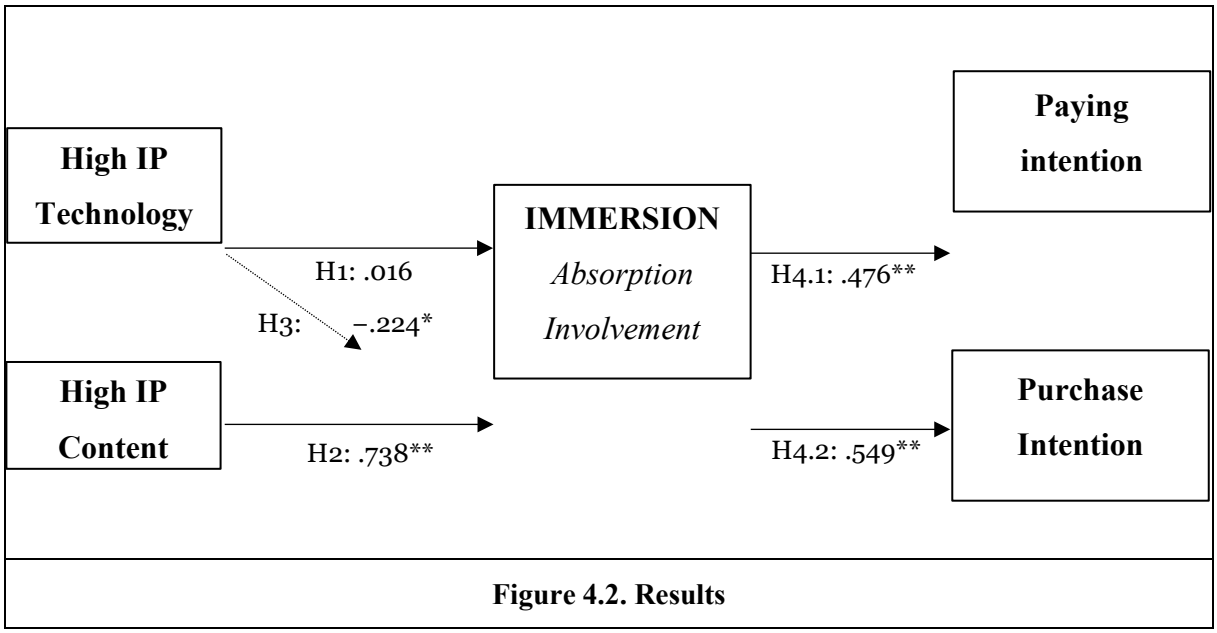

Figure 4.2. Results

The results provide support for H2 and H4 and thus for two of our five proposed relationships to understand the genesis of immersion as well as their effects on the behavioral intentions. Unlike hypothesized, IP in technology has no statistically significant effect on immersion. Thus,

H1 has to be rejected. IP in content, however, does show a significant positive effect on immersion, as proposed in H2. The interaction effect is significant, but, in contradiction to H3, negative.

For a detailed examination of the interaction effect of the IP in technology and content on immersion, a 1-factoral ANOVA is performed with the four groups as the between-subjects factor. The individual immersion values are taken from those calculated in PLS. The calculation of the ANOVA revealed a significant main effect for the four experimental groups ($F(3, 197) = 44.18, p < .001$). The highest mean value results for immersion in group 3 (high IP in content, low in technology) ($M = 0.88$, $SD = 0.83$), followed by group 4 (high in both) with a mean value of $M = 0.38$ ($SD = 0.75$). The groups 1 and 2 show similarly high mean values of $M = -0.60$ ($SD = 0.79$) and $M = -0.57$ ($SD = 0.75$) respectively. Tukey post-hoc t-tests show significant differences between all groups except for the comparison of groups 1 and 2. This means that the higher IP is in technology, the smaller the effect of IP in content is on immersion.

The coefficient of determination (R^2) for all constructs reveals that roughly 40 percent of the variance in immersion and 22 percent in paying intention and 30 percent in purchase intention were explained. We further computed the effect sizes by means of Cohen's f^2, which acts as an indicator of changes in R^2 when an exogenous variable is excluded from the analysis (Cohen, 1988). Values below 0.15 signify weak effects, values between 0.15 and 0.35 are connected to moderate effects and values above 0.35 represent strong effects. The effect sizes are presented in Table 14. In our case, we assess a moderate effect of immersion on paying intention and strong effects of IP in content on immersion and of immersion on purchase intention.

Relationship	f^2
Content → Immersion	0.472
Technology → Immersion	0.000
Interaction → Immersion	0.030
Immersion → Paying intention	0.292
Immersion → Purchase intention	0.432

Table 4.6. Effect Sizes

4.7 Discussion

The results of our 2 x 2 experiment reveal that the immersive potential of content has an impact on experienced immersion while IP in technology does not. In addition, immersion, in turn, has a positive and significant effect on paying and purchase intention.

When setting the study's findings against prior literature to identify commonalities and contradictions, the following theoretical implications become clear. First, this study extends the individual-level IS research by suggesting that the genesis of immersion lies in storytelling techniques rather than in the technology. Unsurprisingly, studies trying to measure immersion in 2D and 3D environments produced inconclusive results, because potentially the amount of storytelling was not controlled for. Only lately did we see an awareness for this lack in IS research, especially through findings from IS management education research. For example, Hull et al. (2019) discussed storytelling techniques as a facilitator for immersion given their foundational role in human cognition. Hence, we contribute to filling the research gap on the actual genesis of immersion, which can potentially lead to more consistent findings.

Second, the insignificant effect of high IP in technology is surprising considering the findings from previous research (Chessa et al., 2019; Kim & Ko, 2019; Weibel & Wissmath, 2011) and considering that we controlled for cybersickness. Balakrishnan and Sundar (2011) report similar results and reasoned that in the case of spatial, technological surrounding and a simultaneous high amount of storytelling, cognitive resources might be allocated to a greater degree "towards the narrative rather than processing spatial cues" (p. 194). They also suggested that an individual might have higher expectations of an immersive state when confronted with VR, which could in turn lead to lower scores in the following. This could also explain the negative interaction effect of a high IP in content and technology. Further, on average, the respondents' previous VR experience was low. This is representative of the way journalism is consumed as most VR usage occurs in the gaming sector (Wohlgenannt et al., 2020). Users might therefore still be more used to storytelling in content than to immersive technology. Moreover, results in the gaming sector also point towards a great influence of IP in content (Qin et al., 2009).

Third, this research could point towards the fact that the concept of immersion and the concept of narrative transportation (Agrawal et al., 2020; Green et al., 2004) might overlap to the degree that they are one and the same. Hull et al. (2019) thought that narrative transportation might enhance users' spatial encounters and compensate for psychological shortcomings in overcoming technological limitations. However, it appears that the IP in content is affected through the interaction with technology.

Fourth, the results highlight an implicit, but lesser investigated effect in IS research, namely that immersion is associated with favorable customer behavior. Immersion can be regarded as an intrinsic motivator (Engeser & Rheinberg, 2008) and is herein found to increase paying and

purchase intention. As this study is situated in a journalism environment, the results are particularly compelling and relevant, because this industry (and society as a whole) are in great need of understanding how to render journalism economically viable in digital environments. The results of this study would also add to the ethical discussion whether or not storytelling techniques should be included in journalism (see e.g., Emde et al., 2015). When a user can influence the narrative, this might interfere with journalism's quality claim to represent truth (Domínguez, 2017). This potentially negative effect might be overcompensated by increases in monetization potential – as our results imply – and possible better communication quality through immersion.

From a management perspective, this study offers relevant insights for the marketing of human-computer embedded content. Based on the results, two strategies are suggested that will help with managerial and allocative implications for business practitioners. Most importantly, the development of immersive products can generate attraction and thereby demand through novelty (Hudson et al., 2019). However, this does not generally translate into sales. The results of this study indicate that a high IP in content, that is more storytelling, increases immersion and thereby paying and purchase intention. This means that the journalistic field would do well with storytelling training of their journalists to provide compelling content. In addition, differentiation of product offerings as well as improved product feature communication could emphasize the storytelling character of journalism.

4.8 Conclusion

The aim of this research was to understand the genesis of immersion and to make informed choices when it comes to the utilization of technology in and from companies that produce and distribute (possibly socially and democratically relevant) digital content, such as journalistic organizations. This research is intended to be a valuable source for further empirical and conceptual research on the interaction of technology and content from a wholesome, interdisciplinary point of view. The IP of technologies has been assumed to impact or even cause individually perceived immersion. However, this proposed relationship is not confirmed by our data. Rather, the results of the current study suggest that the experienced level of immersion is heavily influenced by the IP of content. Further, experienced immersion shows positive effects on consumers' paying and purchase intentions.

One limitation of the study is the experiment's focus on one particular information piece that is altered in terms of storytelling techniques and two particular technologies. Consequently,

generalizability is therefore restricted. Further research should use several different technologies thought to carry high IP. The fact that the IP in technology has no influence on the experienced immersion is, as explained, somewhat counterintuitive and should be looked at in more detail. Potentially, the explanations of Balakrishnan and Sundar (2011) could be utilized for future studies and explanations. Also, the study was placed in Germany only. Future studies should aim at establishing generalizability across cultures.

Digital, and in fact virtual, worlds have likely not yet hit their highest popularity level. Although we cannot control for the number of differences in IPs in content and technology the findings imply that content high in IP provides advantages over the affordances of technology – at least in its current state of development. The findings show how systems research can help us grapple with the effects of digital transformation in environments particularly important for our democracies. While it will be important to stay informed with latest technological developments, these findings provide evidence that the content itself has not (yet) taken the back seat in creating immersive experiences and that good and engaging quality journalism is able to uphold innovation cycles.

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5 Paper D: Where Technology and Content Fuse: Applying Technology Acceptance to the Usage of and Payment for Digital Journalism

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6 Paper E: Judging a Magazine by its Cover – A Conceptual Framework to Understand Sales through Content and Design

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Appendix

Please see articles published for respective appendices.

WIRTSCHAFTS- UND SOZIALWISSENSCHAFTLICHE FAKULTÄT
DER UNIVERSITÄT ZU KÖLN

Gelöbnis nach § 14 Abs. 1 Satz 2 der Promotionsordnung der Wirtschafts- und Sozialwissenschaftlichen Fakultät der Universität zu Köln von 2015:

„Als Doktorin der Wirtschafts- und Sozialwissenschaftlichen Fakultät der Universität zu Köln gelobe ich, mich des Doktorgrades stets würdig zu erweisen."

Vow according to § 14 para. 1 clause 2 of the doctoral regulations of the Faculty of Economics and Social Sciences of the University of Cologne of 2015:

"As a doctor of the Faculty of Economics and Social Sciences of the University of Cologne, I vow to always prove myself worthy of the doctoral degree."

Münster, 5. Oktober 2022

Ort, Datum Unterschrift (Lea Sabine Püchel)