

**Making Money with Paid Content:**  
Empirical Investigations on Consumers' Reactions to Free-to-Fee Switches and  
Preview Characteristics

**Dissertation**

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## Preface

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*“Please-tame me!” he said.*

*“I want to, very much,” the little prince replied.*

*“But I have not much time. I have friends to discover, and a great many things to understand.”*

*“One only understands the things that one tames,” said the fox.*

Antoine de Saint-Exupéry, The Little Prince

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# 1. Introduction

## 1.1. Practical relevance

In an increasingly competitive environment, it becomes more and more difficult to earn money with digital content. Nevertheless, companies have to think about fee-based business models online to deal with changing environmental conditions (e.g., online newspaper providers). One way to earn money in a digital environment is a price introduction for content that was previously provided free of charge. When companies change their business model from free to paid content, it is generally an unexpected transition for customers; consequently, their willingness to pay is often low due to consumers' "for free" mentality regarding content on the Internet (Sjøvaag 2015). In this regard, the manner of introducing prices as well as the characteristics of the business model after the price is introduced (e.g., design of a preview version) are essential for companies' success.

Practical examples show that firms in different industries struggle with changing their business models and make their decisions about price introductions quite unsystematically. The New York Times (NYT), for example, struggled for a long time with introducing prices for its digital content, employing a mechanism also referred to as paywall. In 2005, the newspaper publisher started the project "time select", requiring a fee for some parts of their website content, which came unexpectedly for most of the customers. However, two years later, it was announced that they would change their business model back to free content in order to increase advertising revenues. In 2011, another attempt to change to a fee-based business model was made. In this model, customers were able to read the first 20 articles for free, but a fee was required to read more than 20 articles per month. The number of free articles was finally reduced to 10 in 2012 (Cook and Attari 2012).



Another example of an unsystematic price introduction comes from the software developer WhatsApp Inc. from California. When the small start-up company launched its smart phone application in February 2009, the initial idea was to create an app that would let people know whether the user was available for phone calls. Therefore, status messages such as “Can’t talk, I’m at the gym.” could be sent from one device to another for free. As consumers started using the application for instant messaging rather than status postings, the download numbers increased. The small company, however, was not prepared to deal with the large numbers of users. It was thus decided to switch the price from “free” to “US\$1” in order to reduce the download rates. The CEOs of the company, Koum and Acton, were shocked to find that downloads were still increasing, despite the price introduction. Acton then acknowledged: “You know, I think we can actually stay paid!” (Olson 2014).

Bank of America, one of the largest banks in the United States (Relbanks 2017), serves as an example of customer reactions to an unexpected price introduction. The company announced a monthly US\$5 debit card fee in 2011 for a service which had been provided free of charge in the past. As a consequence of this announcement, 21,000 customers closed their checking account and over 300,000 customers signed an online petition to stop the price introduction. A few weeks later, the company reacted to consumers’ outrage and finally dropped their plans for introducing the new debit card fee (Mui 2011).

These practical examples reveal that companies have a lack of experience and knowledge about both price introductions and customers’ reactions to new prices. The deficiency can lead to a loss of reputation and even negative financial consequences, as in the case of Bank of America. In respect to these issues, this dissertation investigates different ways of unexpected price introductions to provide a better understanding of customers’ reactions and to identify possibilities for minimizing negative consequences.

## 1.2. Definition of free-to-fee switches

These so-called free-to-fee switches are defined as company's decision to change its business model "from offering all content for free to charging for at least some of it." (Pauwels and Weiss 2008, p. 14). For this dissertation, the definition by Pauwels and Weiss is adapted and also extended with the term "unexpected" to make sure that trial product versions and trial usage are excluded. The reason for this restriction is that, while users of trial products and services know that there will be a price in the future an important characteristic of a free-to-fee switch is that consumers become accustomed to a certain product over a period of time and consider it as "free" without the awareness of future payments or restrictions. Therefore, the following definition is used to ensure clarity and rigor for further use of the term "free-to-fee switch":

"A free-to-fee switch is an unexpected change of a business model from offering all content for free to charging for at least some of it." (adapted from Pauwels and Weiss 2008).

## 1.3. Reasons for free-to-fee switches

There are different reasons as to why companies unexpectedly change their business model from free to fee by introducing a price for a product that had been free in the past. The most common reasons are classified in this chapter; however, practical examples demonstrate that, in many cases, the switch is based on a combination of multiple reasons, which are outlined below.

Firstly, the example of the New York Times shows that companies sometimes try to explore new markets to expand their product portfolio (for instance, adding online content in addition to the traditional paper-based version of the newspaper). When the new market is very small

(such as the Internet was when the New York Times started its online service in 1996), it often occurs that companies underestimate the future importance of the market and begin with a free product to gain advertising revenues. When market conditions change – for example, the market grows very fast and cannibalizes demand from conventional markets – these companies might then have to introduce a price to remain profitable (Cook and Attari 2012). Another illustration can be given by several German banks (among them the Sparkasse and Raiffeisenbank), which in 2017, introduced a fee for withdrawing money. These companies switched their business model to react to a change in market conditions after the low-interest phase in 2016 by trying to gain revenues in an area that was for free in the past (Hübner 2016).

A second possibility for a price introduction is an infrastructure whereby companies' costs rise with an increasing number of users, thus forcing the company to introduce a price. One example is the aforementioned start-up company WhatsApp Inc. (Olson 2014). Expenses for technical equipment and personnel costs for maintaining the functionality of its messenger service increased dramatically with the increasing number of users. This compelled the company to switch its business model from free to fee.

In other cases, companies know from the beginning that they wish to introduce a price in the future but, initially, launch the service or product for free. This business strategy is common among companies with products or services based on network effects, which means that the usefulness of the service or product increases as the number of users increases – social networks are a good example of this strategy (Cheng and Tang 2010). The business-oriented social network LinkedIn, for instance, achieved its value thanks to its 500 million members connecting to each other (Strauss 2017). Online networks such as LinkedIn grow faster when they are free (Chaffey 2017) but may consider price introductions in the future when the barriers for changing the provider are higher; for example because customers have already established their contacts.

Another reason for companies to switch from free to fee exists in external usage regulations. As one case in point, the government of the United Kingdom regulated the usage of plastic bags in 2015 by passing a law that included a minimum charge of five pence for plastic bags for retailers with 250 or more full-time employees (Smithers 2016). To avoid fines, supermarkets had to introduce a price for plastic bags, now charging their customers for the use of a previously complimentary product. An alternate example is expiring funding for cultural institutions, such as museums or exhibitions, or educational programs. In many cases, these projects are funded by a third party (e.g., the government) for a certain time period. When this funding expires, companies are forced to introduce a price to cover their future expenses (Rosa and Elbert 2011).

#### 1.4. From free to freemium

Freemium is a business model in which companies (e.g., online newspaper providers) offer a free functional restricted product version (e.g., ten free articles per month) and a fee-based product without restrictions (e.g., a yearly subscription rate for full access) at the same time (Kumar 2014). A special exception to the free-to-fee switch is created when companies switch their business model from free to freemium. In a freemium business model, the free version serves as a powerful marketing tool. In particular, smaller start-up companies may use the free version to increase customer awareness (Arora et al. 2017) that less advertisement is needed. A freemium model can also be a promising way to establish or strengthen customer relationships by staying in contact with users who do not want to buy the product immediately. Moreover, the free version could deter customers from switching to competitive products from other providers, as they have already put effort and time into learning and adapting to the current product or service (Hung-Pin 2012). A good illustration of this can be seen in the practices of the software company Adobe Systems Inc., which provides the free PDF reader to

accustom customers to the data format, which then enables them to sell the PDF writer in return (Parker and Van Alstyne 2005).

### 1.5. Previews and freemium business models

The free version in a freemium business model is often used as a preview for fee-based content. Previews, or trailers, are subsequently characterized as a form of marketing advertising using “free samples to aid in [...] decision making” (Kernan 2004, p. 1). Especially in the context of online journalism or movies, preview versions are essential to increase consumers’ curiosity and provide information about paid content (e.g., quality, story, or interest in the genre) (Kernan 2004). Cheng and Tang (2010) have shown that it is crucial to consider the characteristics of free content in a freemium business model to minimize the cannibalization effects on the commercial offer, while still providing a useful free version that could serve as a teaser for paid content. Previous research reveals that the characteristics of the free-version (e.g., quantity of the content) have an impact on consumers’ buying decisions (e.g., Cheng and Tang 2010; Haruvy and Prasad 2001). Thus, in the context of price introductions, the design of the free preview version is important for a company’s success when switching from free to fee.

### 1.6. Literature review of free-to-fee switches and preview characteristics

Within the scholarly literature, research articles about free-to-fee switches exist in different fields, ranging from journalism to education to marketing. However, investigations about preview characteristics are very rare. This chapter discusses the relevant literature, starting with the history of free-to-fee switches in online journalism, determinants of willingness to pay (WTP) after a free-to-fee switch, as well as consequences and customer reactions to free-to-fee switches. Following from this, the chapter presents a discussion on research articles that

deal with the success of the business model change, different switching strategies, and preview characteristics.

A brief history of the evolution of free-to-fee switches in online journalism, also known as paywalls, is provided by Arrese (2015), who described different periods from the first pioneers to the far-reaching paywalls of the big online newspaper websites. Additionally, the adaptation process for these paywalls was found to follow the same rules as the diffusion of an innovation (Arrese 2015). The author also mentioned that most companies use a freemium model with a free preview version and a commercial full-version after introducing the paywall.

Kammer et al. (2015) identified different factors that influence customers' willingness to pay after a free-to-fee switch (e.g., attitude toward paying for online news, journalistic quality, and subscription models). Moreover, the authors found that willingness to pay after a free-to-fee switch increased for younger customers when they are able to combine content from different providers. The research by Hsiang (2005) showed that time spent on reading newspapers is positively correlated with customers' willingness to pay for online newspaper websites while format preferences and income have no influence. Cook and Attari (2012) took a more detailed look at the case of the New York Times paywall and found that a compelling justification is necessary to emphasize fairness perception during and after the switch. Framing the justification after the free-to-fee switch in terms of financial necessity leads to greater willingness to pay compared to a profit-oriented framing. In the context of online music, Ziyou and Yan (2014) found that cognitive lock-in effects – customers' decreased switching intention after an initial investment (Zauberman 2003) – influences customers' intentions to switch from free to fee. Customers are more likely to switch from free to fee when lock-in effects are high (Ziyou and Yan 2014); for example, when they are familiar with a specific interface or a unique data format that is not compatible with other competing programs. The authors recommended offering content at multiple levels of services and at different quality levels as

well as promoting perceived benefits of the commercial product to create the desired lock-in effects. However, Sjøvaag (2015) argued that not every type of content is appropriate for a price introduction because free alternatives are obtainable in many areas, allowing customers to switch to another provider. Therefore, it could be easier for niche publications without a competitive environment, such as local news, to introduce a paywall.

Likewise in the literature, the consequences of free-to-fee switches are also investigated in different areas. Cook and Attari (2012) showed that most of the customers did not pay after the introduction of the New York Times paywall in 2005. Instead, they rated the newspaper as less valuable, visited the website less frequently, and used loopholes to get free access to paid content. Moreover, Oh et al. (2015) showed that the New York Times paywall introduction also decreases online word-of-mouth effectiveness. In a similar vein, Chiou and Tucker (2013) argued that the switch to a subscription model excludes young readers because of their reduced willingness to pay – with negative consequences for policymakers trying to create a comprehensive community. The discussion by Yamada (2015) in the context of Chinese universities also revealed that the shift from free to fee for educational programs discourages the inclusion of poorer students because their families cannot afford the introduced price.

Additionally, two articles deal with consequences and customers reactions to free-to-fee switches in a marketing context. First, Pauwels and Weiss (2008) have investigated long-term revenue losses after a free-to-fee switch of an online newspaper provider. In this study, the authors compared different subscription systems after the switch, showing that a monthly subscription is superior compared to a yearly subscription system. Moreover, they compared different marketing activities (i.e., e-mail and search-engine referrals) and their effect on generating monthly and yearly subscriptions. The findings indicated that e-mail and search engine promotions are more effective in generating new yearly subscriptions, while price promotions lead to higher monthly subscriptions. Second, the investigation by Tuzovic et al. (2014) fo-

cused on free-to-fee switches in the context of airline ancillary fees; this refers to the different components of an airline service that were previously free, which are now charged (e.g., additional baggage fees). Their results showed that customers' negative reactions to free-to-fee switches are characterized by feelings of betrayal and anger; although, the intensity of customers' emotional reactions differs across different types of ancillary fees.

Some research articles questioned the success of switching the business model from free to fee in general. Myllylahti (2014) argued that, due to higher consumer reactance, paywalls generate only 10% of publishers' revenues, which is not substantial enough to become a viable business model. The author stated that this finding can differ across different countries with different preferences. Reid (2002a) has also demonstrated that the reactance to newspaper paywalls is high. Nonetheless, online newspaper providers have to decide whether to introduce a price or to work with an advertisement-based business model, which could also lead to customer hesitance (Reid 2002b). According to Boumans (2005), the low willingness to pay after a free-to-fee switch is only a temporary issue on the Internet. Boumans (2005) has argued that paid content is still growing and should be viewed as undergoing a catching-up phase.

Different ways of switching from free to fee and the implementation of prices are discussed in the research articles of Rosa and Elbert (2011), Latimer (1996), and Witell and Löfgren (2013). The switching strategy of the educational program described by Rosa and Elbert (2011) provides some insights into aspects of making a successful free-to-fee switch. The authors found that the recommendation of experts and professionals after the switch is one important factor. Findings also demonstrated that it is necessary to communicate the quality of the service, to develop the ability to "sell", and to make a detailed analysis of the target group to find an appropriate price (system). Additionally, Latimer (1996) recommended that



the introduction of fees should be used to reinvest in better service quality, equipment, and salaries.

The research article by Witell and Löfgren (2013) further identified eight strategies (based on case studies) to accomplish a free-to-fee switch in the context of services for manufacturing companies, namely:

1. Introducing a new price without any product or service changes  
“Yesterday it was free – today it has a price!”;
2. Offering a completely new fee-based service  
“New service – new rules”;
3. Communicating the service value to justify the switch  
“The value of service”;
4. Introducing a new fee-based service in addition to a free product  
“We deliver a product AND a service”;
5. Introducing an extended fee-based service with higher quality or better features than the basic service  
“We deliver a basic service AND extended services”;
6. Communicating a price-quality relationship to justify the switch  
“You get what you pay for”;
7. Justifying the price introduction with a new partner who makes the price introduction necessary  
“Our new Partner cannot work for free”;
8. Providing more value when introducing the new price  
“We give you disproportional value”.

Some of the switching strategies include the option of offering a free reduced version and a fee-based version at the same time (freemium) (Kumar 2014). In some industries the free version is used as a teaser or preview for paid content (e.g., previews for online news articles, or trailers for movies). In this regard, the characteristics of the preview version should affect customers' perception of the freemium business model and therefore also the success of the free-to-fee switch. However, research articles in the area of different preview characteristics are currently lacking.

One exception to this is the study by Finsterwalder et al. (2012), who have investigated customers' expectations based on different movie trailers. The research results show that consumers' genre preference influences the evaluation of movie trailers. In addition, the reputation of the actors and the director mentioned in the trailer, the music, as well as information about the storyline all have a strong impact on customers' expectations of the movie. Hixson (2006) also investigated the effectiveness of different segmentation types to target movie trailers and similarly identifies consumers' genre preference to be a strong predictor for perceived entertainment value of the movie after watching the trailer. To add to these analyses, Kernan (2004) discussed different ways of using rhetoric elements in movie trailers. In particular, the author identified three preview characteristics that have a strong impact on customers' willingness to pay for a movie; namely, communication of the genre, storyline, and actors.

Besides research about free-to-fee switches, academic articles have also covered free or fee-based business models (e.g., Froimovici et al. 2013; Fruchter et al. 2011; Klein et al. 2016; Mahmood et al. 2005), willingness to pay for online content without being directly related to free-to-fee switches (e.g., Goyanes 2014; Punj 2015; Vock et al. 2013; Ye et al. 2004), acceptance for commercial content (e.g., Choi et al. 2015), price effects of free products (zero price effects) (e.g., Baumbach 2016; Hossain and Saini 2015) and freemium business models

(e.g., Kumar 2014; Martin 2012). These areas cover effects before or after the switch but are not directly related to the switch itself.

Alongside the area of preview characteristics, some investigations have also explored the effects of movies, video games, or comic characteristics (e.g., interrupted endings) (Colbus 2013; Lambert 2009), but they do not refer to the context of previews. Other research articles have examined the effect of different characteristics of free versions in freemium business models (products with reduced functionality), which are likewise not considered to be previews (e.g., Cheng and Tang 2010; Haruvy and Prasad 2001). **Table 1** shows an overview of the relevant academic literature about free-to-fee switches and preview characteristics.

Focus	Context	Author(s)	Method	Main Findings
Free to Fee – History	Online journalism	Arrese (2016)	Conceptual paper	<ul style="list-style-type: none"> <li>» Four stages in the evolution of paywall adoption are identified: experimenters, pioneers (1994 - 2000), the frenzy of failed trials (2001 - 2007) and Murdoch’s crusade (2008 - 2010).</li> <li>» The history of paywalls shows how some brands have made an important contribution to the growing popularity of new payment systems in the media industry.</li> <li>» The free vs. paid dilemma has been overcome by market circumstances and by readers' behavior.</li> <li>» The majority of online newspapers tend to work with a freemium business model.</li> </ul>
Free to Fee – Determinants of WTP	Online journalism	Kammer et al. (2015)	Empirical survey research and focus groups	<ul style="list-style-type: none"> <li>» Individuals’ willingness to pay after a free-to-fee switch is influenced by their attitude toward paying for online news, journalistic quality, and the subscription models.</li> <li>» Younger consumers’ willingness to pay increases if they can combine content from different news providers and thereby individualize their news products.</li> <li>» Most consumers do not want to pay for news at all, neither online nor offline.</li> </ul>
Free to Fee – Determinants of WTP	Online journalism	Hsiang (2005)	Empirical survey research	<ul style="list-style-type: none"> <li>» Higher WTP was associated with more time spent on reading newspapers. However, income or format preferences were not associated with higher WTP.</li> <li>» Most Internet users in Hong Kong were not paying for online news services and did not show a strong intent to pay in the future.</li> <li>» Hong Kong’s Internet users think that the subscription model is not working and may not work well in the future.</li> </ul>

**Table 1:** Literature review

Focus	Context	Author(s)	Method	Main Findings
Free to Fee – Determinants of WTP/ Consequences of free-to-fee switches	Online journalism	Cook and Attari (2012)	Empirical survey research	<ul style="list-style-type: none"> <li>» Framing the paywall in terms of financial necessity moderately increased support and willingness to pay. Framing the paywall in terms of a profit motive sharply decreased both support and willingness to pay.</li> <li>» Most readers did not pay after the introduction of the NYT paywall. The newspaper was rated as less valuable after the free-to-fee switch. Moreover, consumers visited the website less frequently, and used loopholes, particularly those who thought the paywall would lead to inequality.</li> </ul>
Free to Fee – Determinants of WTP	Online music	Ziyou and Yan (2014)	Empirical survey research	<ul style="list-style-type: none"> <li>» To encourage consumer intention to pay, online content providers could offer content at multiple levels-of-service with different quality levels for paid content.</li> <li>» Content providers could also promote consumer intention to pay through changing their perceived sacrifices and perceived benefits with a good communication policy.</li> </ul>
Free to Fee – Determinants of WTP	Online journalism	Sjøvaag (2015)	Case study	<ul style="list-style-type: none"> <li>» The "for free" culture on the Internet makes it challenging for customers to pay for something that was for free in the past.</li> <li>» Not all types of online content are suitable for introducing a paywall. In most parts of the online news landscape, free alternatives are likely (e.g., politics or sports), which makes it difficult to introduce a paywall.</li> <li>» The success of paywalls is more likely in niche publications, such as local news.</li> </ul>
Free to Fee – Consequences of free-to-fee switches	Online journalism	Oh et al. (2015)	Empirical field data	<ul style="list-style-type: none"> <li>» The introduction of a paywall has a negative impact on online word-of-mouth effectiveness (e.g., the volume of word-of-mouth for NYT's content dropped significantly after the paywall has been introduced).</li> </ul>

**Table 1 (continued):** Literature review

Focus	Context	Author(s)	Method	Main Findings
Free to Fee – Consequences of free-to-fee switches	Online journalism	Chiou and Tucker (2013)	Empirical field data	» The introduction of paywalls leads to a large decline in readership, particularly among young readers.
Free to Fee – Consequences of free-to-fee switches	Education	Yamada (2015)	Conceptual paper	» Fee-based reforms for educational programs discourage the inclusion of poorer students. » Elite universities in China benefit from government investment in higher education while regions of weaker economic power have to place the burden of fees on the students.
Free to Fee – Consequences of free-to-fee switches	Online journalism	Pauwels and Weiss (2008)	Empirical field data	» The switch to a freemium model slows down the increase of free users and effectiveness of marketing communications. » Weekly subscriptions are superior compared to yearly subscription with regards to revenue losses. » E-mail and search engine promotions are more effective in generating yearly subscriptions; price promotion is more effective in generating monthly subscription.
Free to Fee – Customers reactions to free-to-fee switches	Airline ancillary fees	Tuzovic et al. (2014)	Empirical survey research	» Companies have to communicate values in return for newly introduced fees to avoid negative consequences. » Customers' negative consequences (e.g., complaining, negative word of mouth, fee avoidance) vary across different price components for which a price was introduced (e.g., baggage fee, entertainment fee, etc.). » The negative effects of free-to-fee switches are explained by the recognition of feelings of betrayal and anger.

**Table 1 (continued):** Literature review

Focus	Context	Author(s)	Method	Main Findings
Free to Fee – Questioning the business model switch	Online journalism	Myllylahti (2014)	Case study	<ul style="list-style-type: none"> <li>» Newspaper paywalls provide only ten percent of media companies' publishing revenues.</li> <li>» The revenue generated by paid online news content is not substantial enough to make paywalls a viable business model.</li> <li>» Prices in some cases are decreasing and paywalls are softening because companies fight for new subscribers.</li> </ul>
Free to Fee – Questioning the business model switch	Online journalism	Reid (2002a, 2002b)	Conceptual paper	<ul style="list-style-type: none"> <li>» Online publishers must make a decision whether to switch from free to fee or work with advertiser-initiated spyware.</li> <li>» Freemium models are a good option for online publishers.</li> </ul>
Free to Fee – Questioning the business model switch	Online services	Boumans (2005)	Conceptual paper	<ul style="list-style-type: none"> <li>» Reactance against paid content is only a temporary issue on the Internet because users get used to a legal way of getting their online content.</li> <li>» Paid content is still growing ahead of economic indicators; this can be seen as a catching-up phase.</li> </ul>
Free to Fee – Switching strategies	Education	Rosa and Elbert (2011)	Case study	<ul style="list-style-type: none"> <li>» A plan for educational programs has to be developed for sustainability after external funding expires.</li> <li>» One way for sustainability is based on a transition to a fee-based service (e.g., service fees).</li> </ul>
Free to Fee – Switching strategies	Online journalism	Latimer (1996)	Case study	<ul style="list-style-type: none"> <li>» The transition from free to fee provides companies with the chance to improve the service because of extra income.</li> <li>» The amount of extra income should be used for new equipment or better salaries.</li> </ul>

**Table 1 (continued):** Literature review

Focus	Context	Author(s)	Method	Main Findings
Free to Fee – Switching strategies	Innovation	Witell and Löfgren (2013)	Case study	<ul style="list-style-type: none"> <li>» Different strategies to accomplish a free-to-fee switch are identified. The strategies are categorized in a change in the business model, incremental business model innovation or radical business model innovation.</li> <li>» The authors also suggest changing the content as well as the structure to perform a radical business model innovation.</li> </ul>
Preview characteristics	Movie trailers	Finsterwalder et al. (2012)	Qualitative interviews	<ul style="list-style-type: none"> <li>» Genre preferences strongly influence the evaluation of a movie trailer.</li> <li>» The reputation of the actors and director mentioned in the trailer have a strong positive impact on expectations of the quality of the movie.</li> <li>» The trailer music as well as appropriate information about the storyline of the movie positively affects consumer expectations.</li> </ul>
Preview characteristics	Movie trailers	Hixson (2006)	Empirical survey research	<ul style="list-style-type: none"> <li>» Genre preference is a strong predictor for entertainment value of the movie after watching a movie trailer.</li> <li>» Consumers with similar preferences and perceptions of the movie trailer have similar behaviors, making genre preference segmentation and behavior segmentation possible.</li> </ul>
Preview characteristics	Movie trailers	Kernan (2004)	Case study and conceptual	<ul style="list-style-type: none"> <li>» The three movie trailer features: genres, stories, and/or stars have been identified as central for the success of a movie.</li> </ul>

**Table 1 (continued):** Literature review



While the relevant literature has focused on determinants of willingness to pay after a free-to-fee switch (e.g., Kammer et al. 2015) or consequences of price introductions (e.g., Oh et al. 2015, Pauwels and Weiss 2008), there is still a gap in fundamental knowledge about consumers' psychological reactions to free-to-fee switches (Tuzovic et al. 2014). While price increases have been investigated over the last fifteen years (e.g., Campbell 1999a; Xia et al. 2004) research about price introductions and the effects of different forms of free-to-fee switches are still rare. Additionally, current literature has not focused on the unexpected aspect of price introductions.

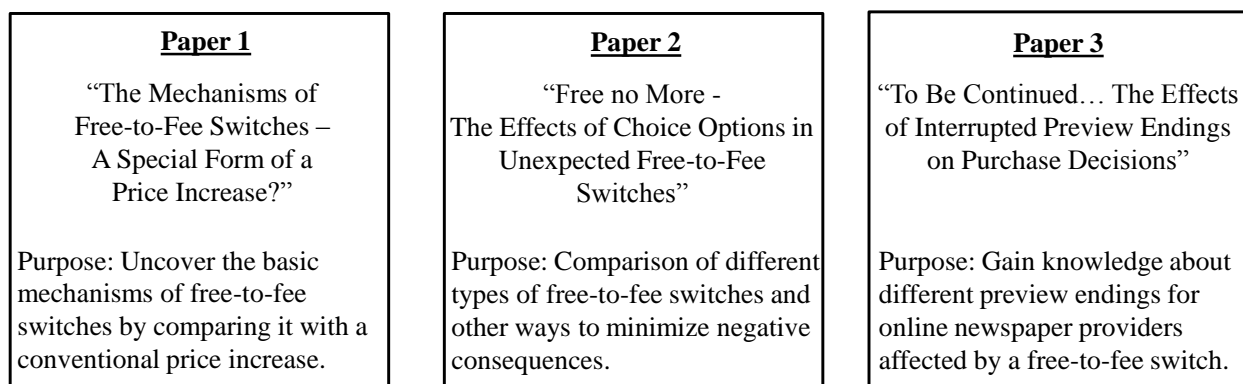
Moreover, only a few investigations, such as Kernan's study (2004), shed light on the effects of different preview characteristics. While free-to-fee switches have a high relevance in the context of online content (e.g., online news providers), the effects of different preview characteristics after the introduction of a freemium business model are important for the success of a free-to-fee switch. However, none of the identified research articles covered the effect of text-based preview characteristics on customers' purchase decision. This is surprising, considering the high relevance for online newspaper providers.

Additionally, only two of the identified research articles used established theories or a theoretical framework. The first articles, by Ziyou and Yan (2014), used the status quo bias theory (the status quo makes consumers accustomed to free content) to infer assumptions about customers' reactance against free-to-fee switches. The second article by Tuzovic et al. (2014) used the price fairness theory (unfairness involves a violation of certain norms resulting in affective responses) to explore customers' negative emotional reactions to free-to-fee switches. However, these are exceptions: the majority of research articles were based on practical experiences, or exploratory research approaches. Therefore, a theoretical framework as well as a solid theoretical foundation for assumptions about free-to-fee switches appear to be necessary.

Practical examples and the relevant scholarly literature show that fundamental and theory-based knowledge about different forms of free-to-fee switches and knowledge about preview characteristics after the switch are underrepresented. Despite the growing interest of companies in different areas (e.g., software developers, newspaper providers, etc.), there are only a few academic articles about consumer reactions to free-to-fee switches. Additionally, different ways of accomplishing the switch from free to fee have, thus far, not been adequately investigated. Therefore, the purpose of this dissertation is to contribute to the scholarly literature and provide much-needed insights for companies confronted with free-to-fee switches.

## 1.7. Content of the dissertation

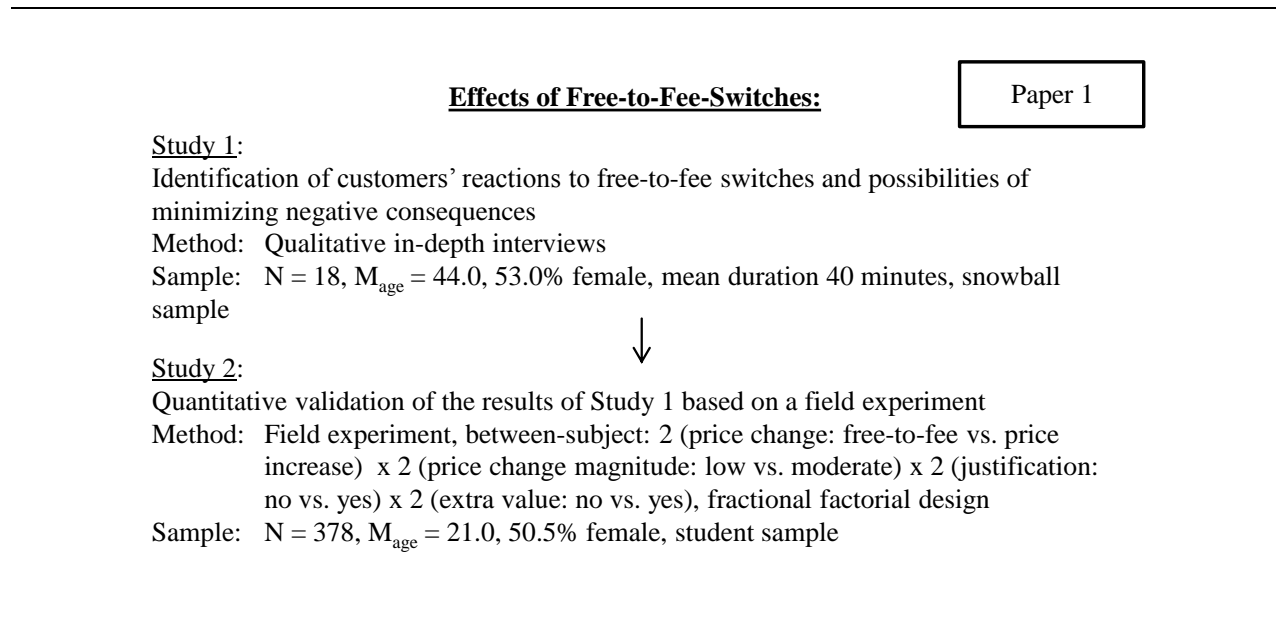
In order to attain this purpose, this dissertation covers (1) the fundamental mechanisms of unexpected free-to-fee switches, (2) different forms of free-to-fee switches, and (3) previews for online newspaper providers that were affected by free-to-fee switches. This dissertation thus consists of three individual papers (see **Figure 1**).



**Figure 1:** Overview of the three individual papers and their purposes

The first paper sheds light on customers’ reactions to free-to-fee switches, including the underlying psychological mechanisms. Two empirical studies compare a free-to-fee switch with a con-

ventional price increase to ascertain the characteristics of unexpected price introductions. These investigations further demonstrate the different ways of reducing customers' negative reactions by providing a justification for the switch and announcing extra product value while introducing the price. **Figure 2** sums up the empirical examinations of Paper 1.



**Figure 2:** Summary of Paper 1

Companies have different possibilities when switching from free to fee. One possibility is a forced switch without the opportunity to use parts of the product for free after the switch. Another option is the freemium model, which allows customers to continue using a functionally restricted product version for free (Kumar 2014). The second paper compares these two switching options and considers different feature reduction levels of the free-version in the freemium switching option as well as the effect of providing a justification for the switch. Paper 2 consists of four empirical studies, shown in **Figure 3**.

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**Effects of Choice in Free-to-Fee-Switches:**

Paper 2

**Study 1:**

Main effect of free-to-fee switches and the different switching options

Method: Scenario-based online experiment, repeated measurement (within-subject): 2 (point in time: before vs. after the switch) x 2 (switching option: forced vs. freemium), using a utilitarian product

Sample: N = 65, M<sub>age</sub> = 22.9, 43.1% female, student sample



**Study 2:**

Validating the effect of different switching options

Method: Scenario-based online experiment, between-subject: 2 (switching option: forced vs. freemium) x 2 (product type: utilitarian product vs. hedonic product)

Sample: N = 187, M<sub>age</sub> = 44.0, 51.3% female, recruited by a market research company



**Enhancing Fairness in Free-to-Fee-Switches:**

**Feature Reduction Effects:**



**Justification Effects:**

**Study 3:**

Effect of different levels of feature reduction in the freemium switching options

Method: Scenario-based online experiment, between-subject: 3 (feature reduction of the free-product in the freemium switch: low vs. medium vs. high) + forced switch as control group

Sample: N = 394, M<sub>age</sub> = 21.4, 45.7% female, student sample

**Study 4:**

Main effects of providing a justification

Method: Scenario-based online experiment, between-subject: 2 (justification: no vs. yes) x 2 (switching option: forced vs. freemium)

Sample: N = 189, M<sub>age</sub> = 32.6, 39.2% female, MTurk sample

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**Figure 3:** Summary of Paper 2

Many companies choose a freemium business model after a free-to-fee switch (e.g., online newspaper providers) in the form of a free-preview version (e.g., short teaser articles) alongside the fee-based full-version (e.g., subscription to access the full content). However, uncertainty still remains concerning how to design preview versions after a free-to-fee switch. Therefore, the third paper focuses on different forms of preview ending types (interrupted vs. concluded ending) for text-based previews in four experimental investigations. **Figure 4** displays an overview of the variety of different studies conducted for Paper 3.

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**Effects of Interrupted Preview Endings:**

Paper 3

**Study 1:**

Effect of interrupted preview endings on arousal

Method: Galvanic skin response experiment, between-subject: preview type (interrupted vs. concluded preview ending)

Sample:  $N = 51$ ,  $M_{\text{age}} = 25.0$ , 58.8% female, student sample



**Study 2:**

Effect of interrupted preview endings on purchases

Method: Incentive-aligned experiment, between-subject: preview type (C)

Sample:  $N = 120$ ,  $M_{\text{age}} = 20.8$  years, 50.8% female, student sample



**Study 3:**

Validating the effects of Study 1 and 2 in an overall model while including feeling of betrayal as a mediator and individual need for closure as a moderator

Method: Scenario-based online experiment, between-subject: preview type (interrupted vs. concluded preview ending)

Sample:  $N = 125$ ,  $M_{\text{age}} = 21.0$  years, 56.8% female, student sample



**Study 4:**

Including closure hindrance as another moderator in the overall model

Method: Scenario-based online experiment, between-subject: 2 (preview type: interrupted vs. concluded preview ending)  $\times$  2 (closure hindrance: yes vs. no).

Sample:  $N = 132$ ,  $M_{\text{age}} = 20.65$  years, 55.3% female, student sample

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**Figure 4:** Summary of Paper 3

Consequently, this dissertation focuses on three main questions:

1. What are the fundamental mechanisms of free-to-free switches compared to conventional price increases?
2. What are differences between the two main free-to-free switching options (forced vs. free-mium switch)?
3. How can companies increase revenues after a free-to-free switch by considering different preview characteristics?

In sum, the purpose of this dissertation is to fill the gap in the scholarly literature about price introductions by providing a better understanding of customers’ reactions and ways of minimizing their negative consequences and by showing how to use different preview characteristics after a free-to-fee switch. Empirical approaches are thus employed with a variety of different samples. Eighteen qualitative interviews were conducted, 368 students participated in a field experiment and 1263 consumers took part in online survey-based experiments, resulting in a sum of 1649 participants for the empirical examinations, as can be seen in **Table 2**.

		Method	Sample origin	N
Paper 1 “Switching From Free to Fee: More Than Just a Price Increase?”	Study 1	Qualitative in-depth interviews	Snowball sample	18
	Study 2	Field experiment (Scenario-based experiment)	Undergraduate students	378
Paper 2 “Free no More - The Effects of Choice Options in Unexpected Free-to-Fee Switches”	Study 1	Online survey (Scenario-based experiment)	Undergraduate students	65
	Study 2	Online survey (Scenario-based experiment)	Professional market research company	187
	Study 3	Online survey (Scenario-based experiment)	Undergraduate students	394
	Study 4	Online survey (Scenario-based experiment)	MTurk sample	189
Paper 3 “To Be Continued... Effects of Interrupted Previews on Emotional Responses and Purchase Decisions”	Study 1	Galvanic skin response (Scenario-based experiment)	Undergraduate students	51
	Study 2	Incentive-aligned (Scenario-based experiment)	Undergraduate students	120
	Study 3	Online survey (Scenario-based experiment)	Undergraduate students	125
	Study 4	Online survey (Scenario-based experiment)	Undergraduate students	132
				$\Sigma = 1649$

**Table 2:** Method and sample summary

## **2. Paper 1: Switching From Free to Fee - More Than Just a Price Increase?**

### 2.1. Abstract

This research investigates customers' reactions to free-to-fee switches (i.e., price introductions for products or services that were previously available for free). Specifically, it compares a free-to-fee switch to a conventional price increase, where the initial price was not zero. Building upon cognitive appraisal theory and drawing from 18 qualitative in-depth interviews, a conceptual model is developed and tested in a field experiment. Findings demonstrate that compared to price increases at different levels, a free-to-fee switch leads to higher perceived betrayal and anger, and, subsequently, fewer actual purchases. Moreover, two moderators are identified: providing a justification for the price change and offering extra value of the product after the change. While both reduce the feeling of perceived betrayal and anger, and lead to more purchases, they also interact with the type of pricing decision, such that the effects of both justification and extra value on purchases are stronger for a free-to-fee switch (vs. a price increase). Overall, the findings provide insights into the mechanisms of customers' response to free-to-fee switches as well as how they differ from conventional price increases.

**Additional note:**

- Parts of this paper were presented at the Academy of Marketing Science (AMS) Annual Conference, San Diego, May 2017.

The conference submission received the Stanley C. Hollander Best Retailing Paper Award of the Academy of Marketing Science (AMS) Annual Conference, San Diego, May 2017.

- A prior version of this paper is coauthored with JProf. Dr. Tobias Schäfers (TU Dortmund University) and Monika Kukar-Kinney (University of Richmond):

Cziehso, G. P., Schaefers, T., Kukar-Kinney, M.: „Switching From Free to Fee - More Than Just a Price Increase?“.



## 2.2. Introduction

“Even though I can, obviously, pay a buck a year, somehow I think this move is not cool. Probably because of the change.” (Reader’s response on [www.appleinsider.com](http://www.appleinsider.com) to Whatsapp’s introduction of a yearly usage fee in 2012)

Academic research and anecdotal evidence consistently find price increases to elicit negative customers’ reactions, such as complaints about a US\$1 increase in the monthly fee for the video-streaming service Netflix (Gottfried 2015) or the 25% price increase of Amazon Prime (Streitfeld 2014). Previous research provides insights into the psychological process of customers’ reactions to price increases, the negative consequences, and ways to minimize these undesirable effects (e.g., Campbell 1999a; Homburg et al. 2005; Urbany et al. 1989; Xia et al. 2004). However, aside from conventional price increases, companies increasingly use so-called free-to-fee switches by initially introducing products or services for free and, only after the product has been adopted within the target group, introducing a price for it (Pauwels and Weiss 2008). Although similar to a price increase, free-to-fee switches appear to elicit stronger negative reactions among customers. For example, the New York Times terminated its initial introduction of an annual fee for their online content in 2005 (TimeSelect) and returned to its free business model after experiencing a large customer revolt (Macmillan 2007). Bank of America’s announcement of a new monthly US\$5 debit card fee in 2011 also resulted in massive customer outrage and led the company to drop their plans for its introduction (Mui 2011).

A broad range of extant research has studied customer responses to price increases (e.g., Bolton et al. 2003; Frey and Pommerehne 1993; Kahneman et al. 1986; Martin et al. 2009; Schein 2002;

Urbany et al. 1989). Findings indicate that increased prices typically trigger negative emotional responses, such as perceptions of unfairness or feelings of anger (Peine et al. 2008; Rotemberg 2005; Xia et al. 2004). Customers' reactions to price increases are primarily driven by the magnitude of the price increase and the perceived fairness of the motive underlying the price change (Homburg et al. 2005). Negative reactions to price increases can be reduced by providing a rationale for the price change (Kachelmeier et al. 1991; Martin et al. 2009; Schein 2002). The reputation and an assumed positive motive of the company reduce negative customers' responses (Campbell 1999a; Campbell 1999b). While the effects of price increases are well-known, to the best of our knowledge, only two empirical studies have focused on free-to-fee switches in a marketing context. The first study by Pauwels and Weiss (2008) studied long-term revenue losses associated with a free-to-fee switch by comparing different subscription systems for online newspapers. Their investigation shows that a monthly subscription is superior compared to a yearly subscription. Referrals from e-mail and search-engines appear to be more effective at increasing yearly subscription rate. The second study, by Tuzovic et al. (2014), examined acceptability of airline ancillary fees for services that had previously been for free. Based on their investigation, customers' negative reactions to free-to-fee switches (e.g., feeling betrayed and angry) differ across different types of ancillary fees. At the same time, free-to-fee switches have been described across other disciplines, including medical services (e.g., price introductions for medical check-ups: Froimovici et al. 2013), arts and culture (e.g., educational programs with expiring external funding introducing a fee: Rosa and Elbert 2011), or journalism (e.g., introducing "paywalls" for online newspapers: Arrese 2015; Kammer et al. 2015). However, research on issues fundamental to understanding and implementing free-to-fee switches – such as customers' reactions to the switch itself and how they differ from their reactions to conventional price increases

– is sparse. This is surprising, as Shampanier et al. (2007) show that “zero is a unique number, reward, price, and probability” (p. 754), which should also lead to different customers’ reactions to price changes for the initially free products. Given the lack of knowledge on this topic, we seek to develop an understanding of how customers react to price introductions in the form of free-to-fee switches, as well as whether and how this reaction differs from a reaction to a conventional price increase. Moreover, a further objective of this research is to identify factors that may attenuate the negative consequences of the switch. Overall, thus we contribute to the existing literature by first identifying the theoretical mechanism underlying customer responses to free-to-fee switches (versus price increases) and secondly uncovering two ways in which negative consequences can be minimized.

Using a mixed-methods approach that combines qualitative and field experiment data, we provide managerial recommendations with regards to determining an appropriate pricing strategy for new products or services as well as to successfully implementing free-to-fee switches. Thus, this investigation is of practical importance for businesses dealing with a switch in their pricing strategy from free to fee (e.g., app developers, online journalism, or banks).

## 2.3. Study 1

### 2.3.1. Method and data

In order to better understand customers’ reactions to free-to-fee switches, in-depth interviews were conducted with 18 participants ( $M_{\text{age}} = 31.4$  years, 53% female,  $M_{\text{duration}} = 40$  minutes; see **Appendix A** for details on informants). Participants were recruited by snowball sampling (Noy 2008) starting with graduate students. The interviews focused on gathering customers’ general perceptions of price introductions. Specifically, we assessed (1) participants’ expectations of free

and fee-based products, (2) their reactions to free-to-fee switches compared to conventional price increases, and (3) their opinion as to how negative reactions could be minimized. During each interview, we also asked the participants to imagine a free-to-fee switch for a product that they currently use for free (e.g., smart phone app), to gain insights into their immediate emotional reactions to a potential switch. Subsequently, we conducted a hermeneutic, iterative analysis (Spiggle 1994) of the interview data. We performed a cross-case analysis among informants in which we followed a grounded-theory approach in order to identify emerging codes and categories (Fischer and Otnes 2006). To ensure validity codings were crosschecked by an independent research assistant (Campbell et al. 2013).

### 2.3.2. Mechanisms of free-to-fee switches and the expectation of free services

The qualitative data analysis shows that most participants viewed a free product or service to include an implicit promise by the company of an ongoing free access, without any restrictions or need to provide anything in return. Several participants stated that they had not even considered the possibility of being charged a price in the future. Generally, they do not think about companies' intention to generate profit with these products. In contrast, when customers had to pay for the product or service from the beginning, their expectations of the company and upcoming payments were different. Free products are described as something given naturally from companies that do not want to take advantage of customers, which shows that a price introduction is something unexpected and surprising for actual customers of these products.

„When I use a free offer, I do not think about any prices that could come up. You can say that people are naive! Yes, I would agree with that.”

(Amelie, 63, female)

Customers of charged products were more aware of the financial interest of the company and understood that they have to give up something in return for product usage (i.e., pay a fee). Moreover, it is also important that a decision to pay for a product or service had already been made. Participants described the decision of the first payment to be more challenging than thinking about paying a higher price for a product that they had already paid for.

“You have gotten used to some kind of payment [...]. And you have also decided to pay for that product, so an upcoming price increase is just an additional payment.”

(Tilda, 23, female)

Furthermore, participants demonstrated a greater acceptance of a price increase (versus a free-to-fee switch) because it was perceived as more common in general. While free-to-fee switches only happen from time to time, price increases are part of customers' daily lives. Thus, in this situation, an additional payment is something that customers experienced in the past, while a price introduction is perceived as something new and unknown.

„Because there are price increases everywhere, that's why I would be more likely to accept it.”

(Werner, 36, male)

Several participants also described that a conventional price increase is associated with greater convenience than a free-to-fee switch, such as when buying online from a retailer that already possesses one's payment and shipping information:

„Naturally, it [the free-to-fee switch] starts with providing credit card information and other stuff for the payment. In case of a price increase, the information is already in the system. It's also about convenience.”

(Anette, 25, female)

The interviewed persons also stated that everything works out with the payment and the way the company handles their private data (e.g., providing personal information and credit card numbers).

### 2.3.3. Reactions to the switch and negative consequences

Participants stated that they had gotten used to certain product functions or services for both a free and a fee-based product usage. Further, in a free-to-fee switch, they felt that the company's decision to take away their free access violated their expectations of an ongoing access to the product or service without any restrictions. However, the informants did not perceive that their rights were violated in a price increase situation, because they are used to giving something in return for their usage. Therefore, participants described it as a bigger step to lose their free accustomed access than being asked for an additional price for a charged product or service.

„You get used to something that is for free and you don't want the company to take that away from you. You don't want to lose your 'for free-status'.”

(Paulo, 24, male)

If a firm unexpectedly started charging a price for a free product, respondents also felt the company reneging on the promise to provide a product or service for free. They trusted the company to be able to use the product without anything in return. This broken promise led to feelings of betrayal, anger, and a high reactance against the required payment for the continued use.

“I would feel betrayed. I think that this is not cool. You get used to certain apps and you like to freely use them.”

(Katharina, 27, female)

„It would make me very angry. It’s just annoying that I have to pay a fee for a service that was offered for free the whole time. And I think I would not do that. I would not pay for it!”

(Laura, 30, female)

Thus, a free-to-fee switch results in participants feeling that they have been deceived by the company. Several participants also questioned the transparency of the business model when they were confronted with a free-to-fee switch because they perceived it as something that was deviously planned by the company in a long term. They supposed that the free offer was a dishonest strategy to lure them to pay the price in the future leading to negative emotions of being tricked.

„They just don’t put their cards on the table. It has to do with the fact that somebody lured me, made me get used to something and now they suddenly want my money for it. [...] It’s not something rational, it’s a feeling. I think people’s decisions are based on emotions in this situation.”

(Amelie, 63, female)

Stronger feelings of betrayal, anger, lower acceptance, and greater feeling of inconvenience when faced with a free-to-fee switch compared to a price increase consequently led to lower participants’ intentions to pay for a continued use of the product. Moreover, participants stated that the magnitude of price change in the free-to-fee switch was not important because they still felt betrayed, even if only a low price was introduced by the company.

„It’s not about the amount. It’s about the fact that somebody tricked me and made me get used to it and now wants my money.”

(Amelie, 63, female)

#### 2.3.4. Mitigation of negative consequences of free-to-fee switches

Most participants stated that in order to reduce the stronger feelings of betrayal and anger, a good reason for the free-to-fee switch should be provided. First, based on their beliefs that they had the right to use the product for free for as long as they wanted, they expected the company to provide a justification when taking away their free access. Second, a rationale is described as something that leads to more transparency, which lacks in the case of an unexpected free-to-fee switch, and third, a justification was mentioned as even more important when the price change is uncommon (such as in the case of a free-to-fee switch).

„Something has been taken away from me; that’s why I definitely expect a justification for it!”

(Anette, 25, female)

Another way in which a company could justify the free-to-fee switch is providing extra value at the same time when the fee is introduced. Participants perceived extra features added to a product or service as a valid reason for a price introduction. They stated that something in addition could justify the new price. Understanding and accepting the reasons behind the change consequently lead to a better understanding of the necessity of the price change and lower anger.



„When they say: ‘We now offer this and that in addition and therefore we introduced the fee’, I would have more likely accepted it, compared to a situation where I just don’t know why they had to do it.”

(Werner, 36, male)

## 2.4. Customers’ responses to free-to-fee switches

In order to develop a conceptual model on customer response to free-to-fee switches, we combined the exploratory research findings with existing theories. Cognitive appraisal theory (Lazarus 1991) suggests that customers evaluate companies’ motives for changing a price, which consequently leads to their emotional reactions (Watson and Spence 2007), such as feelings of anger or betrayal. According to Grégoire and Fisher (2008), betrayal is experienced when the norms regulating a relationship between two or more parties are violated. As such, betrayal differs from other attitudinal variables, such as dissatisfaction (Bougie et al. 2003), in that it relies on a violation or infringement of normative standards (Elangovan and Shapiro 1998). Compared to the action-driven emotion anger (Bougie et al. 2003), betrayal involves the formation of beliefs about a violation. Although the norm violation leading to betrayal may also lead to anger, these two reactions differ in their cognitive and emotional nature (Koehler and Gershoff 2003).

In the case of free products or services, customers perceive the unlimited free access to be the norm. When a company reneges on this commitment by introducing a fee, customers may feel betrayed because of a violation of their expectation norms, which consequently triggers anger. These responses should be less pronounced in a price increase situation, where the expectation norms are not violated. Moreover, prior research on the impact of anger on judgment and decision making indicates that customers are less likely to repurchase a product or service when an-

ger is increased (e.g., Folkes et al. 1987). Thus, based on both the results of the qualitative interviews and cognitive appraisal theory we propose:

**H1:** *A free-to-fee switch has stronger negative effects on customers' (a) feelings of betrayal, (b) feelings of anger, and (c) purchase behavior than a price increase of equal magnitude.*

**H2:** *The effect of a free-to-fee switch (vs. a price increase) on purchase behavior is serially mediated through feelings of betrayal and anger.*

The qualitative research findings further demonstrate that the stronger feelings of betrayal and anger in a free-to-fee switch are accompanied by a weaker focus on the actual magnitude of the price change in contrast to a conventional price increase. Consistent with cognitive appraisal theory, the negative effect of a free-to-fee switch should be independent of the magnitude of the price change, because cognitive appraisal is triggered by the fact that the free access to a product or service is taken away, rather than by the magnitude of the required payment (Lazarus 1991). Thus, the magnitude of a price change should exert a weaker effect on purchase behavior in the case of a free-to-fee switch than in the case of a price increase.

**H3:** *The negative effects of a free-to-fee switch (vs. a price increase) are moderated by the amount of the price change. Specifically, the effects are stronger when the amount of the price change is low.*

Moreover, both our exploratory research and cognitive appraisal theory suggest that providing customers with a reason for the price change may mitigate its negative effects (Campbell 1999a). Therefore, customers should experience lower feelings of betrayal and anger when a rationale in forms of a verbal justification (Kachelmeier et al. 1991) for the price change or extra value of the

priced product is provided. In our interviews, participants stated that the unexpected and unfamiliar nature of a free-to-fee switch makes the rationale for the price change especially important. Thus, due to the different nature of a price introduction (vs. a price increase) as well as the expected stronger negative reactions (see H1), customers should also experience a greater need for a rationale (justification and extra value) in a free-to-fee switch than in a price increase situation. In turn, when a rationale is provided, we expect that its mitigating effects will be more effective (i.e., stronger) in a free-to-fee switch than in a price increase condition. Thus:

**H4:** *The negative effects of a free-to-fee switch (vs. a price increase) are moderated by the inclusion of a justification in the price change announcement. Specifically, the negative effects are weaker when a justification is included.*

**H5:** *The negative effects of a free-to-fee switch (vs. a price increase) are moderated by providing extra value after the price change. Specifically, the negative effects are weaker when extra value is provided.*

## 2.5. Study 2

### 2.5.1. Setting and data collection

To test the proposed hypotheses, we conducted a field experiment. Undergraduate students, enrolled in two different courses at a large German university, were offered an opportunity to register for a printing service for their course materials. Participants first completed a short questionnaire capturing demographic and control variables, such as usage of tablet computers in the class, printer ownership, price-quality perceptions, and price consciousness. Several days later, students only received the first half of the printed course materials. They were also informed that

for organizational reasons, they would receive the remaining materials at the beginning of the second half of the semester. The type of price change (free-to-fee switch vs. price increase) was manipulated across the two courses: participants in the first course received the first half of the printed course material for free, while participants in the second course paid 3€ (printing out the course material at home with an average printer would have cost approximately 6€-7€). In both courses, an expectation was set that the second part of the course material would not incur any/additional charges. We ensured that students were not enrolled in both classes at the same time by selecting two courses that are typically taken at different stages of the program (one undergraduate and one graduate class). We also took these particular classes to minimize the opportunity that students between the two conditions talk to each other, which we also tried to control by checking the posts on the social media facebook groups of the two courses. Six weeks later participants were informed that the printing service for the second half of the course materials would incur a fee; thus, we unexpectedly introduced a price for students who had received the first half of the materials for free and increased the price for students who had already paid a fee. Participants stated their purchase decision in an only questionnaire and had to pay the new fee at the end of the next lecture to get the second half of the course material. Additionally, we manipulated the magnitude of the price change (moderate + €3 vs. low + €1), providing a justification for the price change (no vs. yes) and the inclusion of extra value after the switch (no vs. yes) within the two courses. Thus, the experimental setup allows the comparison of eight different groups, namely: 1) free-to-fee switch with a moderate price change, 2) price increase with a moderate price change, 3) free-to-fee switch with a low price change, 4) price increase with a low price change, 5) free-to-fee switch with a justification, 6) price increase with a justification, 7) free-to-fee switch with extra value, 8) price increase with extra value, see **Figure 5**.

	<b>Free-condition</b> (Print-out Service is free from the beginning)		<b>Price Condition</b> (Print-out Service costs 3€ from the beginning)	
	↓ A price was introduced ↓		↓ The price was increased ↓	
<b>Amount of price change</b> (Testing the effect of price change and the amount of the price change)	(Group 1)  Moderate price change  (+3€) N = 38	(Group 3)  Low price change  (+1€) N = 32	(Group 2)  Moderate price change  (+3€) N = 34	(Group 4)  Low price change  (+1€) N = 38
<b>Justification provided</b> (Testing the effect of providing a justification)	(Group 1)  No  N = 38	(Group 5)  Yes  N = 40	(Group 2)  No  N = 34	(Group 6)  Yes  N = 41
<b>Extra Value provided</b> (Testing the effect of providing extra value)	(Group 1)  No  N = 38	(Group 7)  Yes  N = 46	(Group 2)  No  N = 34	(Group 8)  Yes  N = 39

**Figure 5:** Overview of the experimental setup for Study 2 (field experiment)

The justification stated: “We are sorry, but due to a last minute loss of university funding, we have to introduce/increase the price for the remaining course materials”. Customers’ perception of extra value was manipulated by offering two versions of the print-outs for the second half: a black-and-white version (no extra value) versus a full color version with binding (extra value) (see **Appendix B**). The extra value manipulations were previously pretested (N = 52, M<sub>age</sub> = 26.32; 55.4 % female). The results confirmed that there were significant differences in perceived value between the two versions (M<sub>black and white</sub> = 3.86 vs. M<sub>color</sub> = 6.18, t(52) = -11.68, p < .01).

Students’ decision to continue their usage of the service by paying the new/additional fee was captured with a questionnaire that also included measures of feelings of betrayal (Grégoire and

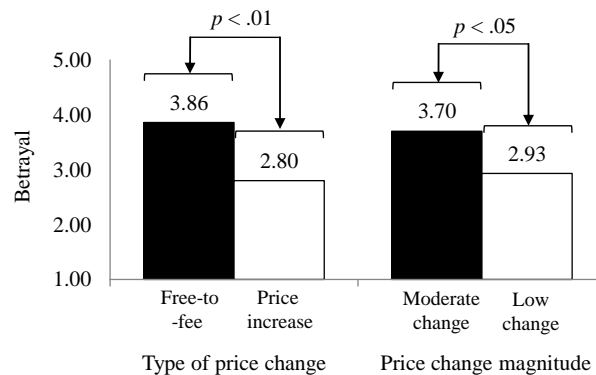
Fisher 2008,  $\alpha = .93$ ) and anger (Bougie et al. 2003,  $\alpha = .89$ ). The decision to continue the service was only counted when the research team actually received the payment for the second half of the course material during the next lecture.

The sample consisted of 378 students (50.5% female; mean age 20.98 years), randomly assigned to the experimental conditions. Due to the nature of the hypotheses as well as the field setting (which resulted in a limited sample size), a fractional factorial design was used (Box et al. 2005). In this design, the two conditions for testing the main effect (i.e., free-to-fee switch +3€ vs. price increase +3€) were used again to test the moderating effects of price change magnitude (+1€ vs. +3€), providing a justification (no vs. yes) and providing extra value (no vs. yes) (see **Figure 5**). Thus, we reduced the significance level threshold as per Bonferroni adjustment. Moreover, the covariates (e.g., gender, age, usage of tablet computers in the class, printer ownership, price-quality perceptions, and price consciousness) were included for all analyses.

### 2.5.2. Testing the effects of price change type and magnitude

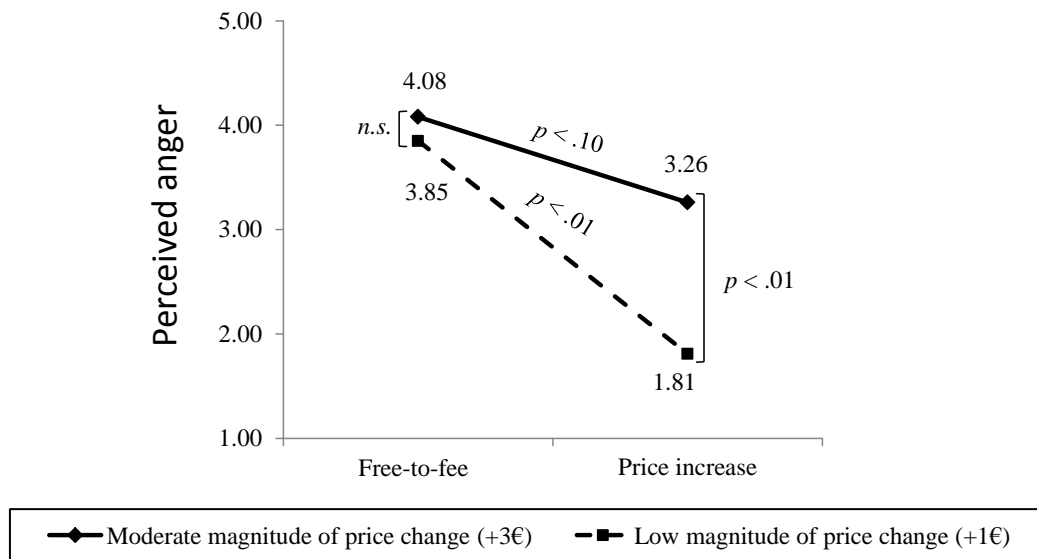
To investigate the effects on the dependent variables betrayal and anger, a MANCOVA analysis was conducted. The results show a significant main effect of price change on betrayal ( $F(1, 137) = 11.06, p < .01$ ); participants confronted with a free-to-fee switch experienced a greater feeling of betrayal ( $M_{\text{free-to-fee}} = 3.86, SE = 1.87$ ) compared to those confronted with a price increase ( $M_{\text{price increase}} = 2.80, SE = 1.55; t(136) = 5.14, p < .01$ ), consistent with H1a. Moreover, a main effect of price change magnitude on betrayal ( $F(1, 137) = 5.55, p < .01$ ) was evident, with a moderate price change leading to a greater feeling of betrayal than a low price change ( $M_{\text{moderate change}} = 3.70, SE = 1.71$  vs.  $M_{\text{low change}} = 2.93, SE = 1.79; t(136) = 2.61, p < .05$ ).

**Figure 6** shows an illustration of the results. However, the analysis shows no interaction between the type of price change and magnitude on betrayal ( $F(1,137) = 1.11, n.s.$ ).



**Figure 6:** Paper 1 - The effects of a price introduction vs. a price increase and moderate vs. low price change on betrayal

With regards to perceived anger, the results show a main effect of price change type ( $F(1, 137) = 26.82, p < .01$ ), with participants in the free-to-fee condition experiencing a greater feeling of anger ( $M_{\text{free-to-fee}} = 3.97, SE = 1.68$ ) than those confronted with a price increase ( $M_{\text{price increase}} = 2.50, SE = 1.41; t(136) = -5.59, p < .01$ ), in support of H1b. Additionally, a main effect of price change magnitude on anger is present ( $F(1,137) = 11.09, p < .01$ ). A moderate price change leads to more anger than a low price change ( $M_{\text{moderate change}} = 3.67, SE = 1.63$  vs.  $M_{\text{low change}} = 2.74, SE = 1.67; t(136) = 3.30, p < .01$ ). The significant price change type  $\times$  price change magnitude interaction on anger ( $F(1,137) = 6.28, p < .05$ ) further indicates that participants confronted with a moderate price change experienced a higher feeling of anger in the free-to-fee condition ( $M_{\text{free-to-fee}} = 4.08, SE = 1.65$  vs.  $M_{\text{price increase}} = 3.26, SE = 1.53; t(66) = 2.11, p < .10$ ), with the effect being even stronger for the low price change ( $M_{\text{free-to-fee}} = 3.85, SE = 1.74$  vs.  $M_{\text{price increase}} = 1.81, SE = .85; t(66) = 6.43, p < .01$ ) (see **Figure 7**).

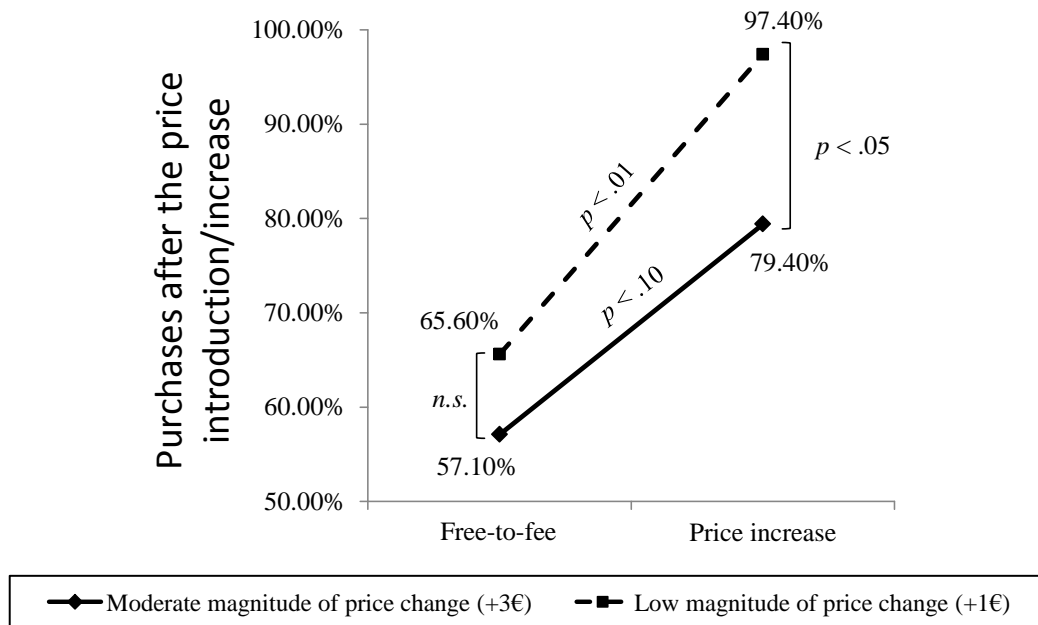


**Figure 7:** Paper 1 - The effects of a price introduction vs. a price increase and moderate vs. low price change on perceived anger

With regards to purchase behavior, a logistic regression shows a negative main effect of the type of price change (free-to-fee switch vs. price increase) on purchase behavior ( $\beta = -2.01$ ,  $SE = .60$ ,  $z(139) = -3.33$ ,  $p < .01$ ). 61% of participants in the free-to-fee condition bought the second half of the course materials, compared to 89% in the price increase condition ( $\chi^2(1) = 20.56$ ,  $p < .01$ ), consistent with H1c. Moreover, the results show a positive main effect of price change magnitude (moderate vs. low) ( $\beta = 1.31$ ,  $SE = .60$ ,  $z(139) = 2.17$ ,  $p < .05$ ) and an interaction between the type of price change and its magnitude ( $\beta = -1.90$ ,  $SE = 1.21$ ,  $z(139) = -1.57$ ,  $p < .10$ ). Specifically, the negative effect of the free-to-fee switch (vs. price increase) is stronger when the magnitude of price change is low (+1€) ( $\text{Purchase}_{\text{price increase}} = 97.40\%$  vs.  $\text{Purchase}_{\text{free-to-fee}} = 65.60\%$ ;  $\chi^2(1) = 12.32$ ,  $p < .01$ ) compared to a moderate price change (+3€) ( $\text{Purchase}_{\text{price increase}} = 79.40\%$  vs.  $\text{Purchase}_{\text{free-to-fee}} = 57.10\%$ ;  $\chi^2(1) = 3.94$ ,  $p < .10$ ), partially supporting H3, see

**Figure 8.**

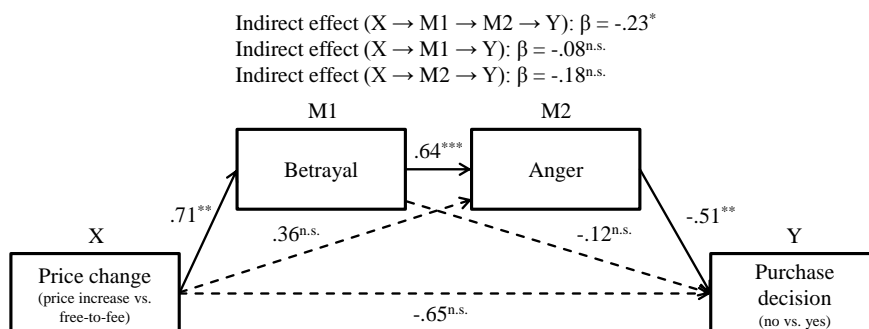




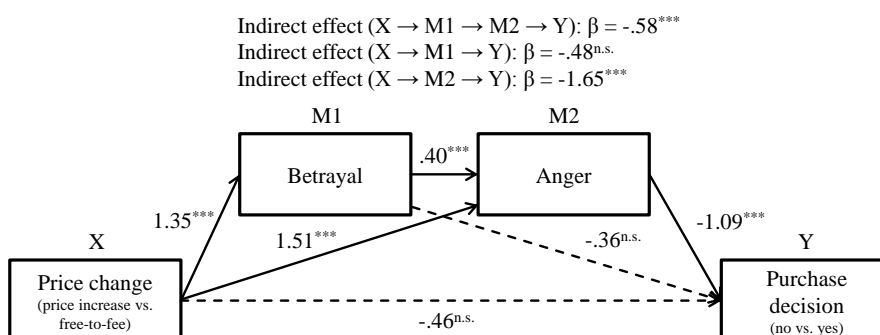
**Figure 8:** Paper 1 - The effects of price introduction vs. price increase and moderate vs. low price change on purchase behavior

To investigate the proposed mediation effect (H2), a process model using the PROCESS SPSS macro (Hayes 2013) with 10,000 bootstrap samples was tested (see **Figure 9**). We report unstandardized regression coefficients, as these are the preferred metric in causal modeling when the independent variable is dichotomous (Hayes 2013, p. 43). Regression results indicate that the strength of the effect of price change on purchase behavior via betrayal and anger is moderated by price change magnitude (index of moderated mediation:  $\beta = -1.03$ ,  $SE = .52$ ,  $CI (95\%): -2.21$  to  $-.190$ ), such that the mediation is even stronger when the amount of price change is low ( $\beta = -.58$ ,  $SE = .74$ ,  $CI (99\%): -3.44$  to  $-.019$ ) compared to a moderate price change ( $\beta = -.23$ ,  $SE = .25$ ,  $CI (90\%): -.827$  to  $-.008$ ). In both conditions, a complete mediation of the effects of the type of price change on purchase behavior through feelings of betrayal and anger occurs, supporting H2.

A: Moderate price change magnitude (+3€)



B: Low price change magnitude (+1€)

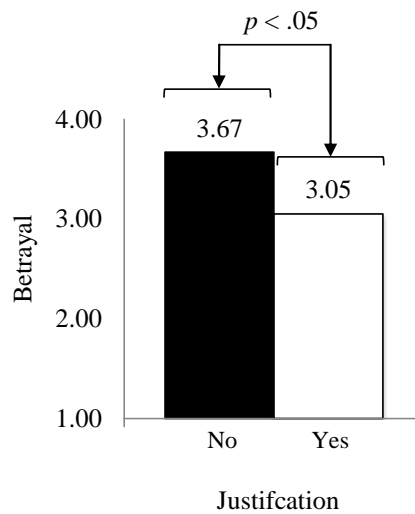


Note: Covariates included are usage of tablet computers in the class, printer ownership, price-quality perceptions, price consciousness, gender, age; dashed line indicates non-significant path; \*\*\* =  $p < .01$ , \*\* =  $p < .05$ , \* =  $p < .10$ , n.s. =  $p > .10$ .

**Figure 9:** Paper 1 - Mediation model of price introduction vs. price increase on purchases with amount of price change (moderate vs. low) as a moderator

2.5.3. Testing the effects of justification

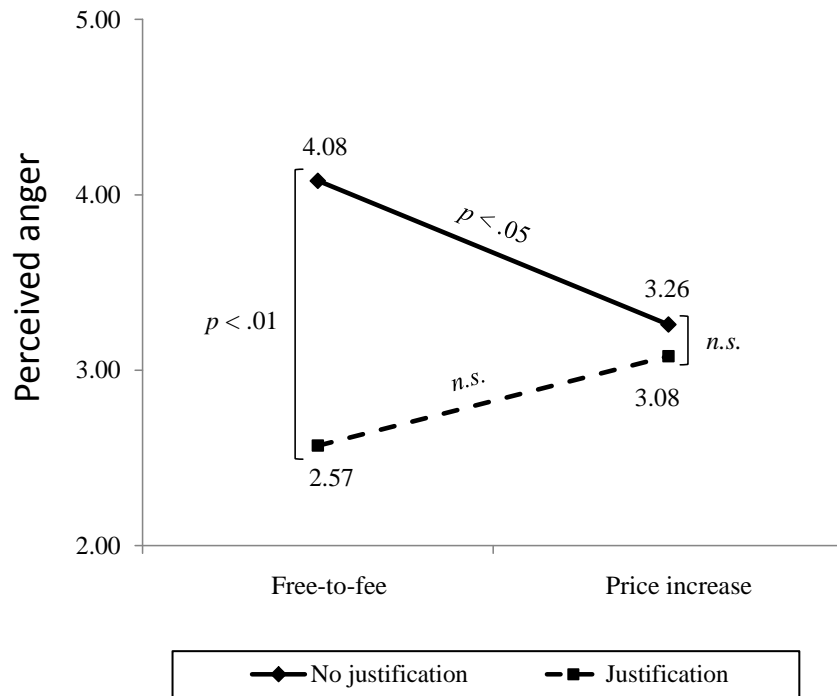
A MANCOVA analysis shows no main effect of price change ( $F(1,144) = .37, n.s.$ ), but a main effect of justification on betrayal ( $F(1,144) = 4.74, p < .05$ ), such that providing a justification leads to a decrease in feelings of betrayal ( $M_{no\ justification} = 3.67, SE = 1.63$  vs.  $M_{justification} = 3.05, SE = 1.46; t(142) = 2.40, p < .05$ ), see **Figure 10**. No significant interaction between price change type and justification ( $F(1,144) = 2.85, n.s.$ ) is evident (rejection of H4a).




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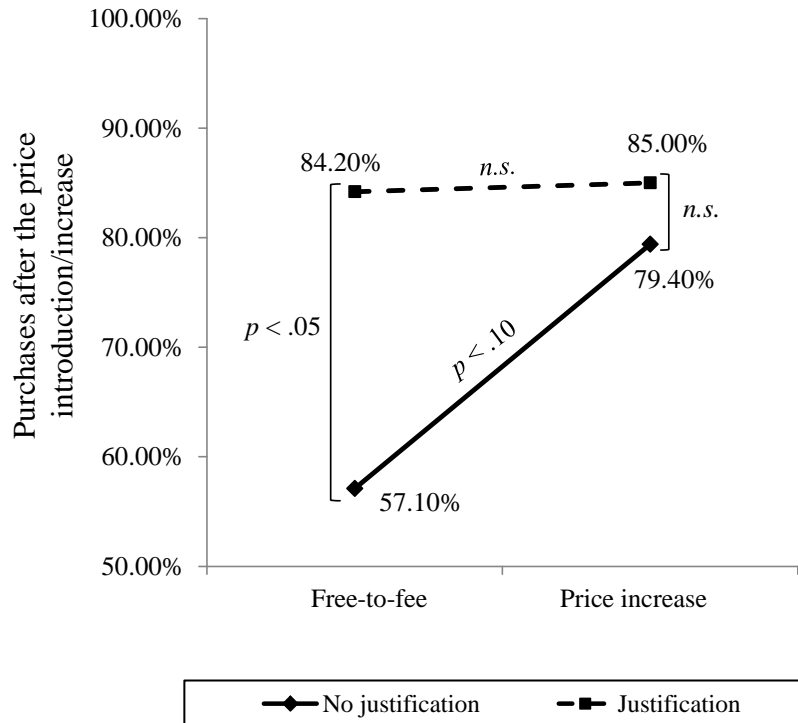
**Figure 10:** Paper 1 - The effects of a price introduction vs. a price increase and providing a justification (no vs. yes) on betrayal

With regards to the feeling of anger, no main effect of price change type ( $F(1,144) = .48, n.s.$ ) is present, however a main effect of justification exists ( $F(1, 144) = 10.02, p < .01$ ), such that feelings of anger are lower when justification is present ( $M_{\text{no justification}} = 3.67, SE = 1.63$  vs.  $M_{\text{justification}} = 3.05, SE = 1.46; t(142) = 2.40, p < .05$ ). Additionally, a price change  $\times$  justification interaction exists ( $F(1, 144) = 6.18, p < .05$ ). Specifically, the increasing effect of a free-to-fee switch on anger only occurs when no justification is provided ( $M_{\text{free-to-fee}} = 4.08, SE = 1.82$  vs.  $M_{\text{price increase}} = 3.26, SE = 1.53; t(66) = 2.11, p < .05$ ), while there are no differences between the two price change types when a justification is present ( $M_{\text{free-to-fee}} = 2.57, SE = 1.21$  vs.  $M_{\text{price increase}} = 3.08, SE = 1.67; t(142) = -1.48, n.s.$ ), supporting H4b, see **Figure 11**.



**Figure 11:** Paper 1 - The effects of a free-to-fee switch vs. a price increase and providing a justification (no vs. yes) on anger

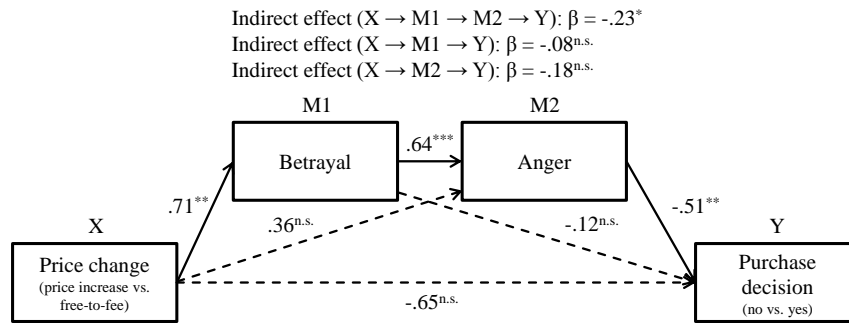
With regard to the effect of providing a justification on purchase behavior, a logistic regression shows a main effect of justification (no vs. yes) ( $\beta = .89$ ,  $SE = .42$ ,  $z(147) = 2.13$ ,  $p < .05$ ), but no main effect of price change type (free-to-fee switch vs. price increase) ( $\beta = -.56$ ,  $SE = .42$ ,  $z(147) = -1.35$ ,  $n.s.$ ) and no price change  $\times$  justification interaction ( $\beta = 1.00$ ,  $SE = .83$ ,  $z(147) = 1.21$ ,  $n.s.$ ). However, the interaction term approaches significance ( $p = .12$ ) and a spotlight analysis reveals significant differences in purchase frequency between the two price change conditions (i.e., free-to-fee switch vs. price increase), depending on whether a justification is provided. Without a justification, a free-to-fee switch leads to less purchases than a price increase ( $Purchase_{\text{free-to-fee}} = 57.10\%$  vs.  $Purchase_{\text{price increase}} = 79.40\%$ ;  $\chi^2(1) = 3.94$ ,  $p < .10$ ), while there is no difference when a justification is provided ( $Purchase_{\text{free-to-fee}} = 84.20\%$  vs.  $Purchase_{\text{price increase}} = 85.00\%$ ;  $\chi^2(1) = .01$ ,  $n.s.$ ), partially supporting H4c, see **Figure 12**.



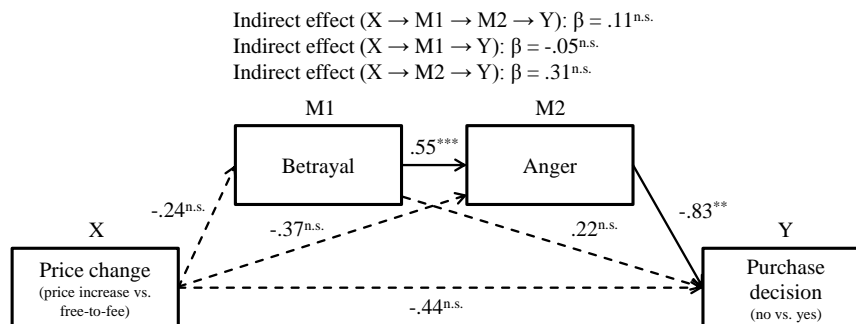
**Figure 12:** Paper 1 - The effects of a free-to-fee switch vs. a price increase and providing a justification (no vs. yes) on purchase behavior

A regression, using the PROCESS SPSS macro with 10,000 bootstrap samples, indicates that the mediation of the purchase decision by betrayal and anger is moderated by providing a justification for the price change (**Figure 13**) (index of moderated mediation:  $\beta = .82$ ,  $SE = .43$ ,  $CI$  (99%): .011 to 2.33). The negative effect of a free-to-fee switch vs. a price increase on purchase behavior is mediated by betrayal and anger when no justification is provided ( $\beta = -.23$ ,  $SE = .25$ ,  $CI$  (90%):  $-.827$  to  $-.008$ ), while there is no effect in the justification condition ( $\beta = .11$ ,  $SE = .29$ ,  $CI$  (90%):  $-.166$  to  $.640$ ).

### A: No justification



### B: Justification

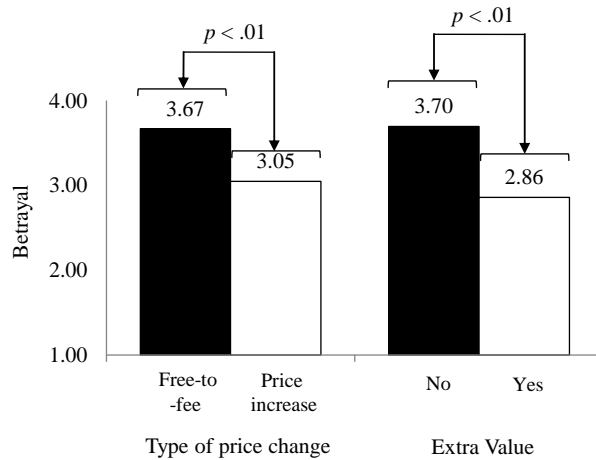


Note: Covariates included are usage of tablet computers in the class, printer ownership, price-quality perceptions, price consciousness, gender, age; dashed line indicates non-significant path; \*\*\* =  $p < .01$ , \*\* =  $p < .05$ , \* =  $p < .10$ , n.s. =  $p > .10$ .

**Figure 13:** Paper 1 - Mediation model of price introduction vs. price increase on purchases with justification (no vs. yes) as a moderator

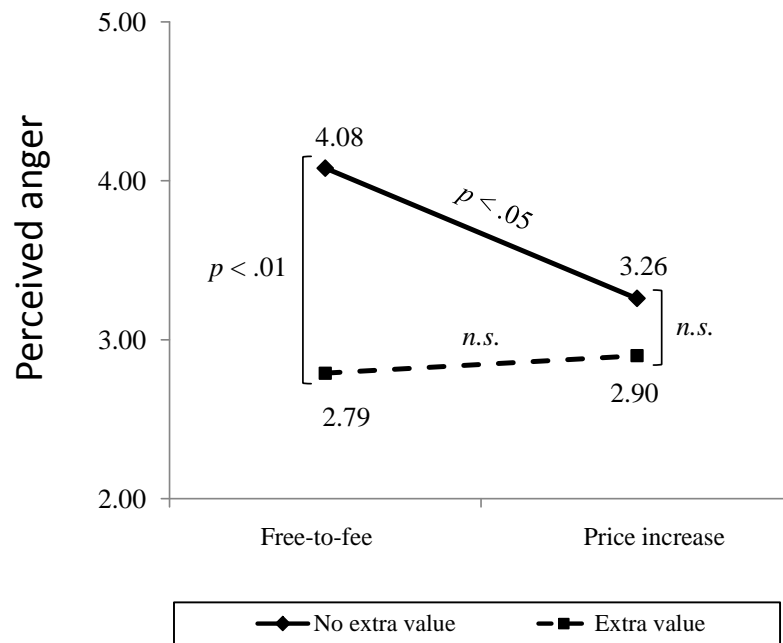
#### 2.5.4. Testing the effect of providing extra value

A MANCOVA indicates a main effect of the price change type on betrayal ( $F(1, 148) = 5.18, p < .05$ ) ( $M_{\text{free-to-fee}} = 3.61, SE = 1.74$  vs.  $M_{\text{price increase}} = 2.88, SE = 1.61$ ;  $t(146) = 2.66, p < .01$ ) and a direct effect of extra value on betrayal ( $F(1, 148) = 8.56, p < .01$ ) ( $M_{\text{no extra value}} = 3.70, SE = 1.71$  vs.  $M_{\text{extra value}} = 2.86, SE = 1.63$ ;  $t(146) = 3.05, p < .01$ ), but no interaction between the type of price change and extra value ( $F(1, 148) = .01, n.s.$ ). **Figure 14** illustrates the results.



**Figure 14:** Paper 1 - The effects of a price introduction vs. a price increase and providing extra value (no vs. yes) on betrayal

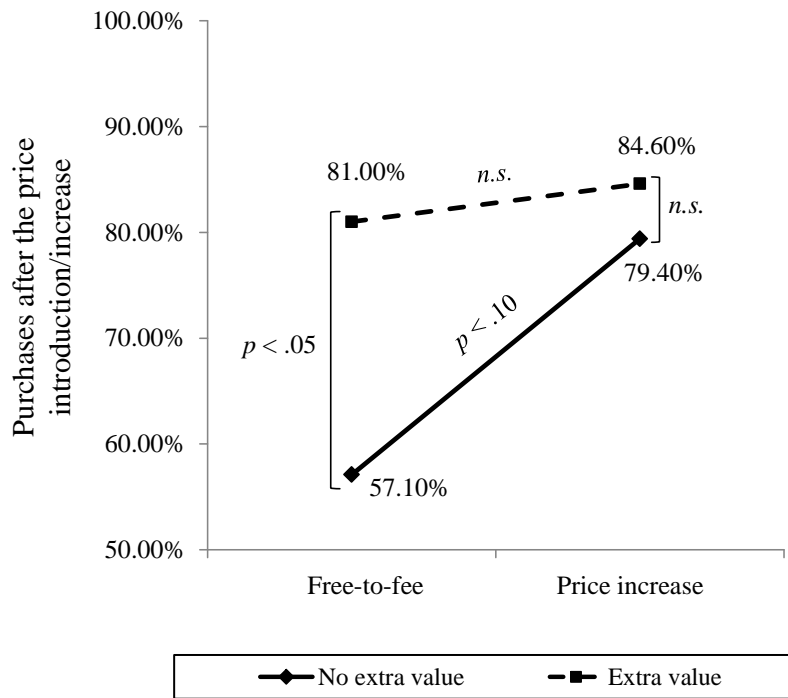
Moreover, no main effect of the type of price change on anger is present ( $F(1,148) = .84, n.s.$ ), but the main effect of extra value on anger is significant ( $F(1, 148) = 8.28, p < .01$ ), such that providing extra value leads to less anger ( $M_{\text{no extra value}} = 3.67, SE = 1.63$  vs.  $M_{\text{extra value}} = 2.84, SE = 1.70; t(148) = 3.01, p < .01$ ). Moreover, the price change  $\times$  justification interaction is significant ( $F(1, 148) = 3.74, p < .10$ ). The spotlight analysis shows a negative effect of a free-to-fee switch (vs. a price increase) on anger in the no extra value condition ( $M_{\text{free-to-fee}} = 4.08, SE = 1.82$  vs.  $M_{\text{price increase}} = 3.26, SE = 1.53; t(66) = 2.11, p < .05$ ), no differences in anger between these two groups are present when extra value is provided ( $M_{\text{free-to-fee}} = 2.79, SE = 1.71$  vs.  $M_{\text{price increase}} = 2.90, SE = 1.71; t(66) = -.28, n.s.$ ), as illustrated in **Figure 15**.



**Figure 15:** Paper 1 - The effects of a free-to-fee switch vs. a price increase and providing extra value (no vs. yes) on anger

Logistic regression with purchase behavior as the dependent variable shows a main effect of providing extra value ( $\beta = .76$ ,  $SE = .40$ ,  $z(150) = 1.88$ ,  $p < .10$ ). In addition, no main effect of price change type (price increase vs. free-to-fee switch) ( $\beta = -.66$ ,  $SE = .40$ ,  $z(150) = 1.64$ ,  $n.s.$ ) and no interaction between the type of price change and extra value is present ( $\beta = .80$ ,  $SE = .80$ ,  $z(150) = 1.00$ ,  $n.s.$ ). However, the type of price change x extra value interaction approaches significance ( $p = .16$ ) and the spotlight analysis shows that when no extra value is provided, there are differences in the effect of price change type ( $\text{Purchase}_{\text{price increase}} = 79.40$  percent vs.  $\text{Purchase}_{\text{free-to-fee}} = 57.10$  percent;  $\chi^2(1) = 3.93$ ,  $p < .10$ ) on purchase behavior, while no significant difference exists when extra value is provided ( $\text{Purchase}_{\text{price increase}} = 84.60$  percent vs.  $\text{Purchase}_{\text{free-to-fee}} = 81.00$  percent;  $\chi^2(1) = .19$ ,  $n.s.$ ), supporting H5 (**Figure 16**).

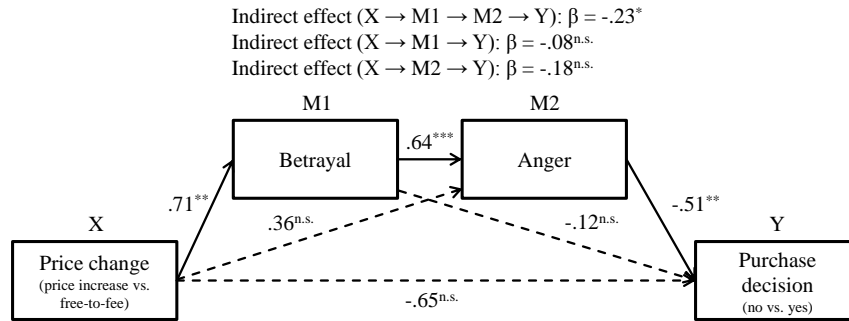




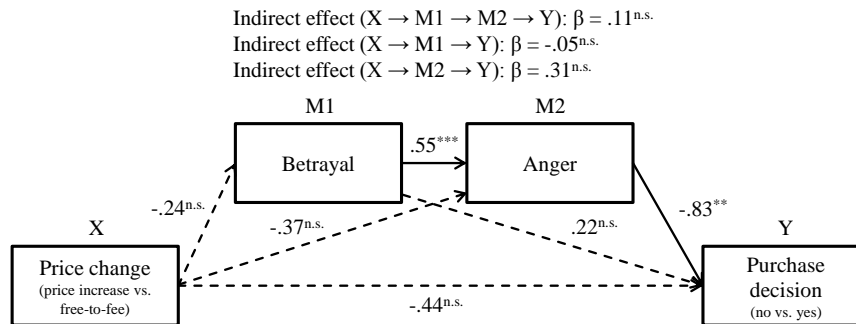
**Figure 16:** Paper 1 - The effects of a price introduction vs. a price increase and providing extra value (no vs. yes) on purchase behavior

A regression using the PROCESS procedure shows again a total mediation of the effect of the type of price change on purchase behavior via betrayal and anger. However, there is no moderating effect of extra value on the effect of the price change type on betrayal ( $\beta = .06$ ,  $SE = .54$ ,  $t(144) = .10$ , *n.s.*) or anger ( $\beta = -.92$ ,  $SE = .55$ ,  $t(144) = -1.69$ , *n.s.*) and therefore also no moderated mediation (**Figure 17**).

A: No extra value



B: extra value



Note: Covariates included are usage of tablet computers in the class, printer ownership, price-quality perceptions, price consciousness, gender, age; dashed line indicates non-significant path; \*\*\* =  $p < .01$ , \*\* =  $p < .05$ , \* =  $p < .10$ , n.s. =  $p > .10$ .

**Figure 17:** Paper 1 - Mediation model of price introduction vs. price increase on purchases with extra value (no vs. yes) as a moderator

2.5.5. Discussion of the results

Our experimental study shows that introducing a price for a product or service that was previously for free leads to stronger feelings of betrayal (H1a) and anger (H1b), consequently resulting in lower purchases (H1c, H2) than a price increase of equal magnitude. The findings also indicate that the negative effect of a free-to-fee switch (vs. a price increase) on purchase behavior is even stronger for smaller price changes (H3). However, there is also a direct effect in a small price change of a free-to-fee switch on anger, showing that the feeling of betrayal cannot explain the

whole effect on the purchase decision. Moreover, we find support for the assumption that, in contrast to a price increase, the negative consequences of a free-to-fee switch can be effectively mitigated by providing a justification (H4) and extra value while introducing the price (H5). A justification for the price change and extra value had a stronger attenuating effect in a free-to-fee switch than in a conventional price increase.

## 2.6. General discussion

This research provides important contributions to the marketing literature and to behavioral pricing theory. Specifically, utilizing a mixed-methods approach, our work bridges the gap between research on price introductions (i.e., free-to-fee switches) and price increases by directly comparing both and by identifying differences in customers' reactions across the two types of price changes. Moreover, by identifying the theoretical mechanism underlying the effects of different types of price changes on purchase behavior, our investigation contributes to research on perceptions and emotions following pricing decisions. We found that the violation of expectations in free-to-fee switches leads to feelings of betrayal and anger. While anger also leads to a decrease in purchases, the feeling of betrayal increases anger, but does not directly affect the short-term purchase decision, consistent with previous research on negative long-term effects of betrayed customers (Grégoire and Fisher 2008).

Our research offers important insights for managers considering free-to-fee switches in the media and entertainment industry. We show that managers need to expect greater feelings of betrayal and anger among their customers when conducting a free-to-fee switch compared to a price increase. In addition, our findings suggest that lowering the magnitude of the introduced fee will not reduce these negative consequences. Thus, it is not recommended to try and use price change

magnitude as an option to decrease negative consequences of a free-to-fee switch. However, our investigation identifies an alternative way in which managers can mitigate the negative consequences of free-to-fee switches: by providing a rationale for the price change (e.g., justification or extra value).

When interpreting the results of this research, some limitations should be taken into account. Future research should validate the findings with a broader sample, at different price levels, including different initial prices in the price increase condition, and for additional product categories. Moreover, additional factors which could potentially attenuate the negative consequences of free-to-fee switches should be considered, such as the timing of the price introduction announcement. To further expand our knowledge of the effects of free-to-fee switches, future studies should also consider whether and how the strength of the relationship with the company affects customers' reaction to the switch as well as the effects of sunk costs after the first payment.

### **3. Paper 2: Free no More - The Effects of Choice Options in Unexpected Free-to-Fee Switches**

#### **3.1. Abstract**

Many companies struggle with the consequences of introducing prices for previously free products, referred to as free-to-fee switches. This research investigates the effects of different types of unexpected free-to-fee switches by comparing a forced switch, in which companies introduce a price without giving customers additional options of continued usage of the product, to a freemium switch, in which customers have the additional option to use a product with reduced features for free. Integrating price fairness theory and the concept of cannibalization, a series of four experimental studies reveals detrimental effects of free-to-fee switches on perceptions of fairness, attitude toward the company, and purchase intentions for the fee-based product. However, these negative effects on fairness and attitude may partly be attenuated by a freemium switch. Ways for further improving the effectiveness of freemium as well as forced free-to-fee switches are examined. Overall, the findings question the common practice of unexpectedly introducing freemium business models. The research contributes to a better understanding of customer reactions to free-to-fee switches and provides recommendations for companies intending to introduce a price for free products or services.

**Additional note:**

- This paper is currently under review in the International Journal of Research in Marketing (IJRM), VHB3 Ranking: A.
- Parts of this paper were presented at:
  - » the Winter Marketing Educators' Conference (AMA), Las Vegas, USA, Feb., 2016;
  - » the European Marketing Academy (EMAC) Annual Conference, Leuven, Belgium, May, 2015;
  - » the Academy of Marketing Science (AMS) Annual Conference, Denver, USA, May 2015.
- A prior version of this paper is coauthored with JProf. Dr. Tobias Schäfers (TU Dortmund University) and Monika Kukar-Kinney (University of Richmond):  
Cziehso, G. P., Schaefers, T., Kukar-Kinney, M.: „Free no More - The Effects of Choice Options in Unexpected Free-to-Fee Switches”.

### 3.2. Introduction

Companies frequently introduce products or services for free and begin to unexpectedly charge a fee after reaching a certain level of awareness and acceptance within the target group. This practice is known as a free-to-fee switch (Pauwels and Weiss 2008) and defined as a business model change from offering a free product or service to a required payment by introducing a price. Unexpected free-to-fee switches are common across many industries (e.g., Steven 2006), including travel (e.g., introduction of baggage fees), hospitality (e.g., introduction of fees for hotel Internet access), banking (e.g., introduction of checking account fees), or media and entertainment (e.g., introduction of fees for online content).

Recent examples of unexpected free-to-fee switches include the mobile messaging app WhatsApp starting to charge an annual fee of US\$.99 in 2012 (Dredge 2013), the introduction of the Chicago Tribune's paywall for online content (Marek 2012), or electric car maker Tesla's decision to no longer offer complimentary vehicle charging (Stewart 2016). When such a free-to-fee switch occurs, existing customers are faced with a decision of whether to start paying for the previously free product or to terminate its use. The challenge for companies is to minimize customers' unfavorable reactions, such as deterioration in attitudes and customer churn. Unanticipated negative reactions may prove costly and, in extreme cases, may even lead to companies reverting back to the free business model. For example, Bank of America announced a monthly US\$5 debit card fee in 2011, only to drop the plans for its introduction after experiencing significant customer outrage (Mui 2011). Similarly, the New York Times terminated its paid Internet service and – temporarily – returned to offering free access to its online content after a slew of negative reactions in 2007 (Macmillan 2007).

Finding a balance between offering products and services for free and demanding a fee has recently been identified as one of the most relevant areas for future research in digital marketing (Kannan and Li 2017). However, although unexpected free-to-fee switches appear to be a common phenomenon, existing research focuses on price introductions in the form of trial versions or free samples (e.g., Faugère and Tayi 2007; Scott 1976), where consumers expect to pay for the product or service in the future. Other studies center on potential business models before or after the switch, without considering the price introduction itself (e.g., Halbheer et al. 2014; Lambrecht and Misra 2017; Reid 2002a; Reid 2002b; Wlömert and Papies 2016). To the best of our knowledge, unexpected free-to-fee switches and customers' reactions have not been addressed in prior research. The purpose of our investigation is therefore to shed light on customers' responses to unexpected free-to-fee switches and to determine ways in which the assumed negative consequences can be minimized. Specifically, this is the first research to distinguish between two common types of unexpected free-to-fee switches: (1) a *forced* free-to-fee switch, in which companies begin charging a fee for a previously free product or service (e.g., WhatsApp); and (2) a *freemium* free-to-fee switch (Kumar 2014), in which companies begin charging a fee for a previously free product, but at the same time also provide customers with an option of using a functionally reduced product version for free (e.g., Chicago Tribune's paywall). While some researchers equate the term "free-to-fee switch" with the move from a free to a freemium business model (e.g., Pauwels and Weiss 2008), this investigation is the first to additionally consider the common practice of a forced free-to-fee switch.

To develop the conceptual model, we build upon equity theory (Adams 1965) and integrate the fair outcome effect (van den Bos et al. 1997), the fair process effect (Thibaut and Walker 1975), and the concept of cannibalization (Srinivasan et al. 2005). Four studies, utilizing different ex-



perimental designs and samples from different consumer populations, test the proposed theoretical model. Studies 1 and 2 demonstrate customers' negative responses to an unexpected free-to-fee switch for both forced and freemium switches. Compared to a forced switch, a freemium switch is found to be less detrimental regarding perceived fairness of the switch and attitude toward the company, while the effect on purchase intentions is less negative in a forced switch. Subsequent studies build upon the initial findings and focus on determining how customers' negative responses to the switch can be attenuated. Specifically, Study 3 investigates how to enhance perceived outcome fairness by offering different levels of a free version in a freemium switch, while Study 4 focuses on enhancing procedural fairness, such as by providing a justification for the switch.

On a theoretical level, we propose that adding a choice option in a freemium switch beneficially affects fairness perceptions, but cannibalizes the intention to buy the fee-based product. Thus, the present research is the first to contribute to behavioral pricing theory by integrating theoretical aspects of customers' fairness perceptions with the concept of cannibalization and applying them to the free-to-fee switching context in order to develop a better understanding of offering a freemium choice option. In addition to the theoretical contributions, our research offers important managerial implications for companies considering free-to-fee switches, as the question of how to effectively implement these switches with minimal negative consequences is relevant across numerous industries.

### 3.3. Price introductions and freemium business models

Existing research has considered different forms of price introductions, such as product trials (e.g., Cheng and Liu 2008; Cheng and Tang 2010), free samples (e.g., Bawa and Shoemaker

2004), different subscription systems (e.g., Pauwels and Weiss 2008), and ancillary fees (e.g., Bower and Maxham 2012; Koukova et al. 2012; Tuzovic et al. 2014). While most of these studies investigate situations in which customers expect that they would eventually have to start paying for a product, recent examples of banks (e.g., Bank of America), mobile phone apps (e.g., WhatsApp), or news providers (e.g., Chicago Tribune) demonstrate that customers can unexpectedly encounter a free-to-fee switch.

Related research investigates consumers' acceptance of fee-based business models (e.g., Choi et al. 2009; Punj 2015), consumers' willingness to pay for fee-based services (e.g., Clemons 2009), and the value of free products (e.g., Baumbach 2016; Haruvy and Prasad 2001; Hossain and Saini 2015; Shampanier et al. 2007). However, these studies focus on business models either before or after the switch, but not on customers' reactions to the switch itself. However, the finding that price effects, such as those of reference prices, are most pronounced immediately after a price change (Fibich et al. 2005), underlines the need for research on reactions to a free-to-fee switch.

When switching from free to fee, companies can utilize different strategies (Anderson 2009; Witell and Löfgren 2013), such as: (1) introducing a price without changing the product; or (2) introducing a fee for the existing product and at the same time introducing a product version with reduced features for free. The second – freemium – business strategy (Kumar 2014) is commonly utilized by online content providers and services. The idea behind the freemium model is to provide customers with an opportunity to try the product with limited functionality for free, while simultaneously allowing them to purchase the full version (Kannan and Li 2017). Such a strategy may increase the number of users (Cheng and Tang 2010) by attracting consumers who would otherwise refrain from using the fee-based product (Papies et al. 2011), but at the same time, the

availability of a free version was recently found to cannibalize demand for the fee-based product (Arora et al. 2017). However, the psychological mechanism that explains customers' reactions to different types of free-to-fee switches has not been sufficiently considered. We propose that an unexpected price introduction triggers changes in consumers' fairness perceptions, similarly to those experienced in the context of price increases (e.g., Bolton et al. 2003; Xia et al. 2004), but that this effect differs between a forced and a freemium free-to-fee switch.

Investigations about freemium business models are rare and often limited to products that are characterized by lock-in effects, in which users have to invest effort and time to learn and adapt a product (Hung-Pin 2012). One example is the company Adobe Systems Inc. providing the free PDF Reader software, which allows customers to use the special data format, thereby creating a lock-in effect, while also selling other products, such as the PDF Writer, in return (Parker and Van Alstyne 2005). Other companies utilize the free version in a freemium business model as a way to build up their user base, especially when the provided product or service becomes more beneficial with an increasing number of users (e.g., social networks, such as LinkedIn). While research has investigated a freemium business model as a way to create lock-in effects (e.g., Cheng and Tang 2010), not much is known about the influence of freemium in product categories that are not subject to lock-in effects.

In sum, while different strategies for free-to-fee switches exist, little is known about customers' reactions to different switching options and the psychological mechanism behind it. The objective of our research is therefore to address these questions and to further identify factors that may attenuate the negative consequences of different types of unexpected free-to-fee switches.

### 3.4. Fairness in free-to-fee switches: conceptual development

An important concept in understanding customers' reactions to price introductions and price changes is perceived fairness, predominantly investigated in the context of price increases (e.g., Bolton et al. 2003; Xia et al. 2004). Perceived fairness can be defined as customers' judgement as to whether an outcome and/or the process leading to an outcome is reasonable, acceptable, and just (Bolton et al. 2003). Thus, two key aspects of perceived fairness are the outcome and the procedure leading to the outcome. In the context of free-to-fee switches, what a consumer receives (i.e., the product and its features) relative to what she has to sacrifice to receive it (i.e., the newly introduced product price) represents the outcome, while the process of implementing a free-to-fee switch can be seen as the procedure leading to the outcome.

The perceived fairness of an outcome is conceptualized as distributive justice, which is judged based upon the distribution of rewards (i.e., what one receives; also referred to as an output) resulting from the investments (i.e., what one has to give up; also referred to as an input or sacrifice) of different exchange parties into their relationship/transaction (Adams 1965). Equal ratios of rewards to investments between the exchange parties result in perceptions of fairness while unequal ratios lead to perceived unfairness. However, as customers typically are not aware of sellers' investments, they may instead compare one transaction with a reference transaction of the same or a similar product (representing an output), but at a different price point (representing an input) (Kuester et al. 2015; Xia et al. 2004). In a free-to-fee switch, the reference point to which the new transaction (i.e., paying a fee in order to use the product or service) will mostly likely be compared to is the previously free product. When a customer is charged a higher fee than a reference transaction, perceptions of fairness should decline. Based on the fair outcome effect, which refers to the positive influence of perceived distributive fairness on subsequent

behavioral responses when consumers receive outcome information before process information (van den Bos et al. 1997), the perceived fairness should affect subsequent behavioral responses, with lower fairness leading to more negative responses.

Related to the concept of price fairness is equity theory, which postulates that individuals make price judgments by comparing output-input ratios of different alternatives (Adams 1965). Transactions are evaluated as unfair if these ratios are perceived to be inequivalent, with the perceived unfairness being less severe when the inequality is to the buyer's advantage (i.e., a larger ratio) than when it is to the buyer's disadvantage (i.e., a lower ratio) (Ordóñez et al. 2000). Thus, differences across output-input ratios should lead to a feeling of injustice. Similar to a price increase, an unexpected free-to-fee switch represents an increase in the necessary input or sacrifice (e.g., required payment increases from zero to US\$2.69), while the output (e.g., product features) remains unchanged. As a consequence, the customer's output-input ratio declines. A decrease in the ratio should lead to lower fairness perception, which should consequently negatively affect customers' attitudes and behavioral reactions (Peine et al. 2008), consistent with the fair outcome effect (van den Bos et al. 1997). Thus:

**H1:** *An unexpected free-to-fee switch (a) reduces customers' perceived fairness, (b) leads to less a favorable attitude toward the company, and (c) reduces usage intentions of the fee-based product.*

In addition, differences between consumers' responses to a forced and a freemium switch should exist. If a customer confronted with a freemium switch chooses to pay for the full product version, the output-input ratio decreases – similar to a forced switch. However, when customers decide not to pay for the product (i.e., input = zero), those customers who have an option of us-

ing a product with reduced features for free (i.e., a freemium switch) have a higher outcome (i.e., output = a product with low functionality) than those in the forced switch, who do not have a free option (i.e., output = no product). Thus, given the same input, the possible output for a freemium switch is higher than that for the forced switch, which should lead to a larger perceived output relative to the input for the freemium switch. This greater output-input ratio should lead to more favorable perceptions in the freemium than in the forced switch. Thus, even though both forced and freemium switch should lead to a deterioration of customers' fairness perception and attitude toward the company, these negative effects should be attenuated in a freemium switch.

While we expect a freemium switch to attenuate negative effects on customers' perceptions relative to a forced switch, its effect on customer purchase behavior should be more complex. On the one hand, being able to use a free reduced product instead of paying for the full version in a freemium model allows customers to continue their usage for free, although with less features. Thus, an existence of an additional free alternative is likely to cannibalize the usage of a fee-based product version (Arora et al. 2017; Cheng and Tang 2010). Therefore:

**H2:** *Compared to a forced free-to-fee switch, a freemium switch attenuates deterioration in (a) customers' fairness perceptions and (b) attitude toward the company, while at the same time it (c) enhances deterioration in purchase intentions for the fee-based product.*

At the same time, based on the fair outcome effect (van den Bos et al. 1997), we also predict a positive relationship between fairness perceptions and downstream customers' responses. According to the relationships hypothesized in H2a and b, due to the enhanced fairness relative to the forced switch, a freemium switch should indirectly lead to more favorable attitudes and therefore greater intentions to pay the new fee. In addition, Reinders et al. (2008) show that a

forced use of a new service induces negative attitudes toward that service, indirectly leading to adverse effects on customers' behavioral intentions. Hence:

**H3:** *Compared to a forced free-to-fee switch, a freemium switch has a positive indirect effect on purchase intentions for the fee-based product through higher fairness perceptions and a more favorable attitude toward the company.*

In sum, we predict competitive mediation (Zhao et al. 2010) that encompasses both a negative direct effect and a positive indirect effect of a freemium (versus forced) switch on consumers' purchase intentions. First, based on likely product cannibalization, giving customers an option to choose between a free reduced version and a fee-based full version (i.e., a freemium model) is expected to directly lead to lower purchase intentions for the fee-based product (H2c). Second, based on equity theory and the fair outcome effect, fairness perceptions and attitude toward the company are expected to be higher in the freemium (versus forced) switch (H2a and b), which should indirectly increase purchase intentions of the fee-based product (H3).

## 3.5. Study 1

### 3.5.1. Method

To test hypotheses 1-3, we conducted a mixed design online experiment with one within-subjects factor (free-to-fee switch: yes vs. no) and one between-subjects factor (a forced vs. a freemium switch) in a mobile app product context. The analyzable sample consists of 65 undergraduate students, who completed the Study for extra class credit. The sample characteristics ( $M_{\text{age}} = 22.9$  years,  $SD = 2.44$ ; 43.1% female) are consistent with the main target group for mobile apps, which ranges in age from 18 to 29 years (Pew Research Center 2015).

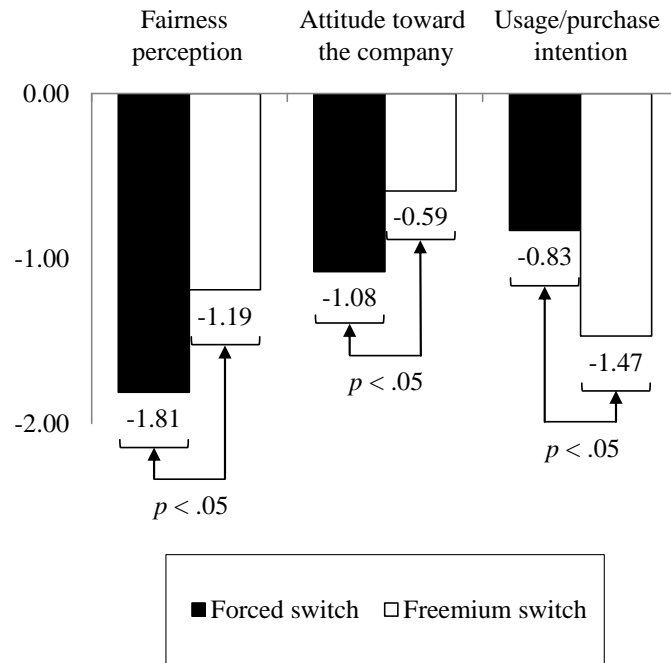
To be able to investigate the within-subjects effects of a free-to-fee switch, we assessed respondents' fairness perceptions, attitude toward the company, and usage/purchase intentions of the product two weeks before ( $t_1$ ) and directly after the experimental treatment ( $t_2$ ). All participants were first shown detailed information about a fictional free data backup app for their mobile phone (see **Appendix E (I)**). Participants responded to established multiple-item scales capturing their fairness perceptions of the offer (Kukar-Kinney et al. 2007;  $\alpha_{t1} = .79$ ), attitude toward the company (Goldsmith et al. 2001;  $\alpha_{t1} = .80$ ) and usage intentions of the free product (Chattopadhyay and Basu 1990;  $\alpha_{t1} = .91$ ). Furthermore, we measured technological anxiety (Barbeite and Weiss 2004;  $\alpha_{t1} = .94$ ), general app use (Mathwick and Rigdon 2004;  $\alpha_{t1} = .87$ ), gender, and age as possible covariates. Two weeks later ( $t_2$ ), the same participants were again shown the details of the app's functionality and were asked to imagine having used it in the meantime. To increase experimental realism, the app usage was simulated with a series of screenshots of the app's functions (see **Appendix E (II)**). Subjects were then randomly assigned to one of the two experimental groups (a forced vs. a freemium switch). In the forced switch condition, participants read that unless they paid a new annual fee (€2.69), they would be unable to continue using the app. In the freemium switch condition, participants additionally had an option to continue using a functionally restricted product version for free (see **Appendix E (III)**). Subsequently, the dependent variables were captured again (fairness perceptions,  $\alpha_{t2} = .73$ ; attitude toward the company,  $\alpha_{t2} = .76$ ; purchase intentions of the fee-based product version,  $\alpha_{t2} = .94$ ). We used similar operationalization for usage intentions (i.e., intention to use the initially free app in  $t_1$ ) and purchase intentions (i.e., intention to buy the app in  $t_2$ ) to be able to directly compare behavioral intentions across the two points in time. All measures exhibited satisfactory psychometric char-



acteristics. **Appendix C** lists all measures and their psychometric properties, **Appendix D** the construct correlations.

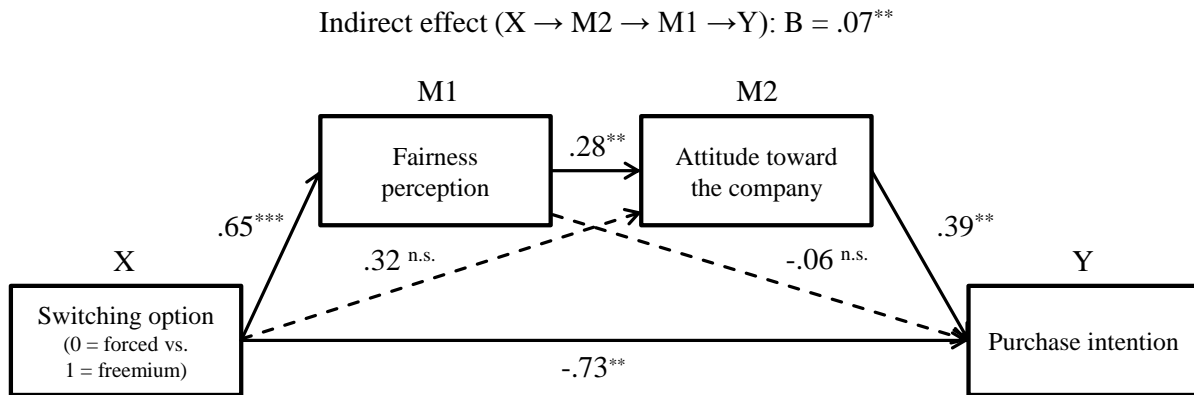
### 3.5.2. Results

A repeated-measures ANCOVA showed that an unexpected free-to-fee switch led to decreases in fairness perceptions ( $F(1, 59) = 4.16, p < .05$ ), attitude toward the company ( $F(1, 59) = 4.14, p < .05$ ), and usage/purchase intentions ( $F(1, 59) = 5.65, p < .05$ ), supporting H1a-c. While deterioration of fairness perceptions was significant in both forced and freemium conditions ( $M_{\text{forced}}(t_2-t_1) = -1.81, SD = .81, t(35) = -13.25, p < .001$ ;  $M_{\text{freemium}}(t_2-t_1) = -1.19, SD = 1.05, t(30) = -6.21, p < .001$ ), a difference between the two types of switches existed ( $F(1, 59) = 7.39, p < .01$ ), with the decrease being significantly smaller in the freemium than in the forced condition, supporting H2a. The unexpected free-to-fee switch also resulted in less positive attitude toward the company in both conditions ( $M_{\text{forced}}(t_2-t_1) = -1.09, SD = 1.12, t(35) = -5.73, p < .001$ ;  $M_{\text{freemium}}(t_2-t_1) = -.59, SD = .69, t(30) = -4.65, p < .001$ ), with this negative effect again being weaker in the freemium condition ( $F(1, 59) = 4.48, p < .05$ ), supporting H2b. Moreover, in support of H2c, an effect in the opposite direction was found for usage/purchase intentions: The significant reduction in behavioral intentions ( $M_{\text{forced}}(t_2-t_1) = -.83, SD = .95, t(35) = -5.15, p < .001$ ;  $M_{\text{freemium}}(t_2-t_1) = -1.47, SD = 1.45, t(30) = -5.56, p < .001$ ) was smaller in the forced compared to the freemium condition ( $F(1, 59) = 3.46, p < .10$ ). **Figure 18** illustrates the mean within-subjects differences. The effects of the covariates were not significant.



**Figure 18:** Paper 2 - Study 1: Within-subjects mean differences

To investigate the competitive mediation effect of the switching options through fairness perceptions and attitude toward the company (i.e., serial mediation) on purchase intentions, we analyzed a conditional process model based on the repeated measures results ( $t_2-t_1$ ), using the PROCESS SPSS macro by Hayes (2013) with 10,000 bootstrap samples. Regression results indicated non-significant effects of all covariates. In support of H3, the indirect effect of the switching option on purchase intentions via fairness perception and attitude toward the company was significant and positive ( $B = .07$ ,  $SE = .05$ , 95% bootstrap CI: .008 to .241). In addition to this positive indirect effect, the negative direct effect of the switching option on purchase intentions remained significant ( $B = -.73$ ,  $SE = .32$ ,  $t(59) = -2.31$ ,  $p < .05$ ; see **Figure 19**).



Note: Covariates included are app use, technological anxiety, gender and age; dashed line indicates non-significant path; \*\*\* =  $p < .01$ , \*\* =  $p < .05$

**Figure 19:** Paper 2 - Study 1: Indirect effects of switching option on purchase intentions for the fee-based product

### 3.5.3. Discussion

Study 1 shows that both forced and freemium unexpected free-to-fee switches lead to a deterioration in customers' fairness perceptions, attitude toward the company, and intentions to use/pay for the fee-based product (H1a-c). Additionally, as hypothesized, the negative effects on fairness perceptions and attitudes are smaller in the freemium than in the forced switch (H2a-b), leading to an indirect positive effect of a freemium (versus a forced) switch on purchase intentions (H3). At the same time, a freemium switch leads to cannibalization of the fee-based product, as the availability of a free alternative with reduced features directly lowers purchase intentions for the fee-based product (H2c).

Overall, Study 1 provides initial insights into the negative effects of unexpected free-to-fee switches, differences between two common types of switches, and the underlying process through perceived fairness of the offer. At the same time, the generalizability of the findings may be limited due to the nature of the selected product, as a data backup app addresses functional needs and thus represents a utilitarian product (O'Curry and Strahilevitz 2001). According to

Dhar and Wertenbroch (2000), customers' choice and preferences depend on the nature of the product, with hedonic products, characterized by pleasure and fun, eliciting greater preferences than utilitarian items. Recently, Arora et al. (2017) found that the cannibalization effect of an available free app version is stronger for hedonic apps. Therefore, Study 2 assesses the generalizability of the findings by replicating Study 1 in a hedonic product context and by using a broader sample with a different research design.

### 3.6. Study 2

#### 3.6.1. Method

Study 2 was a between-subjects online experiment, which allowed us to focus on two manipulated factors: switching option (a forced vs. a freemium switch) and product category (utilitarian vs. hedonic). In contrast to the student sample of Study 1, we recruited an analyzable sample of 187 German consumers through a market research company. Respondents ( $M_{\text{age}} = 44$  years,  $SD = 13.84$ ; 51.3% female) were members of an actively managed online consumer panel and received an incentive of €1.50 for completing the survey.

Participants in the utilitarian condition were shown detailed information about the same data backup app used in Study 1, while participants in the hedonic condition viewed information about a photo editor app (see **Appendix E (IV-VI)**). Hedonic goods address customers' desire for fun and provide an affective experience (Hirschman and Holbrook 1982). A photo editor app with different options to individualize pictures and a focus on customers' creativity represents such a product. In a pretest with 106 undergraduate students ( $M_{\text{age}} = 21.8$  years,  $SD = 5.47$ ; 50.9% female), the backup app was perceived as more functional than the photo editor app ( $M_{\text{data backup}} = 5.51$ ,  $SE = 1.44$  vs.  $M_{\text{photo editor}} = 4.92$ ,  $SE = 1.23$ ,  $t(104) = 2.25$ ,  $p < .05$ ), while the photo

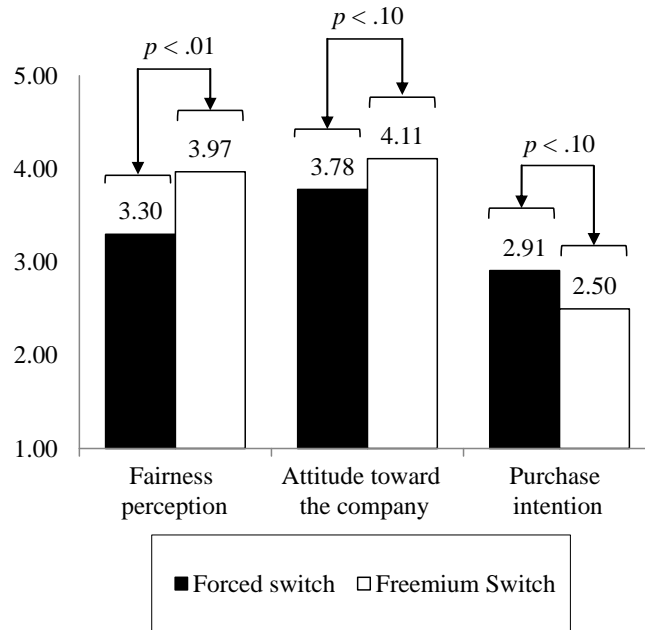
editor app was perceived as more entertaining ( $M_{\text{data backup}} = 2.15$ ,  $SE = 1.22$  vs.  $M_{\text{photo editor}} = 3.86$ ,  $SE = 1.61$ ,  $t(104) = -5.91$ ,  $p < .01$ ); both measured on a 7-point Likert-scale. As in Study 1, to increase experimental realism, the respondents were shown images of smartphone screens simulating actual app usage (e.g., **Appendix E (II) and (V)**). We used the same switching option manipulation as in Study 1. Participants in the forced condition were told that, unless they paid the new annual fee (€2.69), they would be unable to continue using the app, while participants in the freemium condition had an additional option of using an app version with restricted functionality for free. The same dependent variables and covariates as in Study 1 were measured (see **Appendix C**).

### 3.6.2. Results

A manipulation check supported the pretest results. The data backup app was perceived as more functional than the photo editor app ( $M_{\text{data backup}} = 4.35$ ,  $SE = 1.53$  vs.  $M_{\text{photo editor}} = 3.85$ ,  $SE = 1.60$ ,  $t(185) = 2.62$ ,  $p < .01$ ), while the photo editor app was seen as more entertaining ( $M_{\text{data backup}} = 3.53$ ,  $SE = 1.52$  vs.  $M_{\text{photo editor}} = 4.36$ ,  $SE = 1.65$ ,  $t(185) = -4.33$ ,  $p < .01$ ).

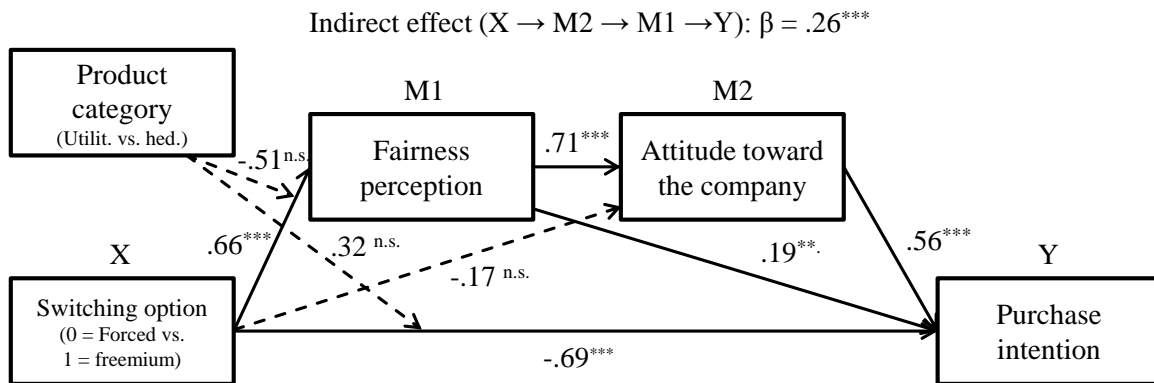
ANCOVA results revealed that, regardless of the type of product (utilitarian vs. hedonic), the switching option had a significant impact on customers' fairness perceptions ( $F(1,181) = 9.46$ ,  $p < .01$ ), attitude toward the company ( $F(1, 181) = 1.80$ ,  $p < .10$ ), and purchase intentions of the fee-based product ( $F(1, 181) = 2.36$ ,  $p < .10$ ). Spotlight analyses revealed that, compared to the forced switch, respondents exposed to the freemium switch had higher fairness perceptions ( $M_{\text{forced}} = 3.30$ ,  $SE = 1.52$  vs.  $M_{\text{freemium}} = 3.97$ ,  $SE = 1.48$ ,  $t(185) = -3.09$ ,  $p < .01$ ) and a more favorable attitude toward the company ( $M_{\text{forced}} = 3.78$ ,  $SE = 1.57$  vs.  $M_{\text{freemium}} = 4.11$ ,  $SE = 1.58$ ,  $t(185) = -1.42$ ,  $p < .10$ ), but lower purchase intentions ( $M_{\text{forced}} = 2.91$ ,  $SE = 1.79$  vs.  $M_{\text{freemium}} =$

2.50, SE = 1.80,  $t(185) = 1.54$ ,  $p < .10$ ), supporting H2a-c. At the same time, the non-significant product category  $\times$  switching option interaction confirmed that the proposed relationships are independent of the type of product, see **Figure 20**.



**Figure 20:** Paper 2 - Study 2: Between-subjects mean differences

To analyze the competitive mediating effect of fairness perception and attitude toward the company on purchase intentions, we again tested a process model. Consistent with H3 and Study 1 findings, the indirect effect of the freemium vs. forced switch on purchase intentions via fairness perceptions and attitude toward the company was significant and positive ( $B = .26$ ,  $SE = .10$ , 99% bootstrap CI: .048 to .600). Additionally, a negative direct effect on purchase intentions ( $B = -.69$ ,  $SE = .21$ ,  $t(181) = -3.25$ ,  $p < .01$ ; H2c) was evident, while no interaction effect was present. Moreover, no significant effects of the covariates were found, see **Figure 21**.



Note: Covariates included are app use, technological anxiety, gender and age; dashed line indicates non-significant path; \*\*\* =  $p < .01$ , \*\* =  $p < .05$

**Figure 21:** Paper 2 - Study 2: Indirect effects of switching option on purchase intentions for the fee-based product with the moderating effect of product category

### 3.6.3. Discussion

The results validate Study 1 findings with a different product category and a broader sample. Compared to a forced switch, a freemium switch has less detrimental effects on fairness perceptions and attitude toward the company. At the same time, it exerts a direct negative effect on purchase intentions for the fee-based product, while the indirect effect via fairness perceptions and attitude toward the company is positive, confirming a competitive mediation effect.

Studies 1 and 2 provide evidence that a forced free-to-fee switch is superior to a freemium switch when it comes to eliciting immediate intentions to pay the newly introduced fee. However, at the same time, the forced switch results in negative consequences in the form of lower fairness perceptions and less favorable attitude toward the company, which could lead to a long-term damage to company's reputation. In contrast, the freemium switch leads to more favorable fairness perceptions and attitude, but at a cost of lower purchase intentions due to the cannibalization caused by the free version.

However, as evidenced by companies such as Dropbox or Spotify, which have been applying a freemium business model successfully, forcing customers to pay is not always the favored option, especially in competitive markets where customers can easily switch providers or choose other free alternatives. In such situations, freemium can serve as a powerful marketing tool, lowering the required costs of advertising. It is thus not surprising that it has become a dominant business model for small companies, such as app developers and Internet start-ups with limited resources (Kumar 2014). When a decision is made to switch from free to fee by using a freemium business model, the question arises as to how companies can minimize the extent of cannibalization caused by the free version.

### 3.7. Enhancing fairness in free-to-fee-switches: feature reduction effects

If a free alternative that is offered in a freemium switch is too similar to the fee-based product, customers are more likely to use the free version instead of the fee-based product. Thus, cannibalization effects are likely to occur (Haruvy and Prasad 2001). However, the less features the free version offers relative to the fee-based full version, the less useful it will be, consequently leading to lower intentions to use it. Thus, cannibalization of the fee-based product should be reduced. In line with this reasoning, Haruvy and Prasad (2001) recommend that companies implementing a freemium business model consider introducing a free version with a sufficiently lower quality to avoid cannibalization effects on the fee-based product. Therefore, as the level of features offered in the free reduced version of the product decreases, customers' intentions to purchase the fee-based product should increase:



**H4:** *The fewer features a free product version in an unexpected freemium free-to-fee switch contains, (a) the lower the customers' usage intention of the free version, and (b) the higher the intention to purchase the fee-based product.*

At the same time, based on equity theory, a reduction in product features, and thus, product functionality, should decrease the customers' output, subsequently reducing the perceived output-input ratio for consumers. Consistent with equity theory and the fair outcome effect, the lower output-input ratio in the case of a strong feature reduction should reduce perceived outcome fairness (Adams 1965), indirectly leading to a less favorable attitude toward the company and lower purchase intentions for the fee-based product (van den Bos et al. 1997). Thus:

**H5:** *The fewer features a free product version in an unexpected freemium free-to-fee switch contains, (a) the lower the fairness perceptions, (b) the less favorable the attitude toward the company, and (c) the lower the intention to purchase the fee-based product.*

In sum, we expect that a decreasing level of features of the free version leads to competitive mediation, with a feature reduction of the free version directly increasing the intention to purchase the fee-based version, while the deterioration in fairness perceptions indirectly decreasing purchase intentions.

## 3.8. Study 3

### 3.8.1. Method

To test hypotheses 4 and 5, a between-subjects online experiment with one manipulated factor (features of the free product version in a freemium model: high vs. medium vs. low) was conducted. Additionally, a forced switch condition served as a control group. Analyzable data were

obtained from 394 undergraduate students ( $M_{\text{age}} = 21.4$  years,  $SD = 1.94$ ; 45.7% female) who completed the survey for extra class credit. All participants were shown detailed information about the same photo editor app as in Study 2. We used a manipulation based on the freemium condition from Study 2. The three experimental groups only differed in the level of available features for the free version. The forced condition was identical to Study 2 (see **Appendix E (VII)**). The dependent variables and covariates were assessed as in previous studies (see **Appendix C**). In addition, we measured perceived usefulness of the free product version (single item) as well as intention to use the free version (Chattopadhyay and Basu 1990;  $\alpha = .97$ ).

To create meaningful experimental stimuli of the different levels of feature reduction, we conducted a pretest with 164 undergraduate students ( $M_{\text{age}} = 22.6$  years,  $SD = 2.10$ ; 41.6% female), in which we changed the features of the photo editor app used in Study 2 (e.g., available filters). The results confirmed that perceived usefulness of the free version of the app decreased as fewer features were available ( $M_{\text{high features}} = 4.38$ ,  $SE = 1.89$ ;  $M_{\text{medium features}} = 3.69$ ,  $SE = 1.73$ ;  $M_{\text{low features}} = 1.90$ ,  $SE = 1.15$ ; all means different at  $p < .05$ ).

### 3.8.2. Results

In the main Study, a manipulation check confirmed that the perceived usefulness of the reduced version decreased with the decreasing feature level ( $M_{\text{high features}} = 4.53$ ,  $SE = 1.40$ ;  $M_{\text{medium features}} = 4.16$ ;  $M_{\text{low features}} = 2.88$ ,  $SE = 1.77$ ; all means different at  $p < .05$ ).

Testing H4 and H5, an ANCOVA revealed significant effects of feature availability on usage intentions of the free product ( $F(1, 301) = 14.67$ ,  $p < .01$ ) and purchase intentions of the fee-based product ( $F(1, 301) = 4.45$ ,  $p < .01$ ). As illustrated in **Figure 22a**, the lower the features of the free version, the lower the intentions to use it ( $M_{\text{high features}} = 3.60$ ,  $SE = 1.82$ ;  $M_{\text{medium features}} =$

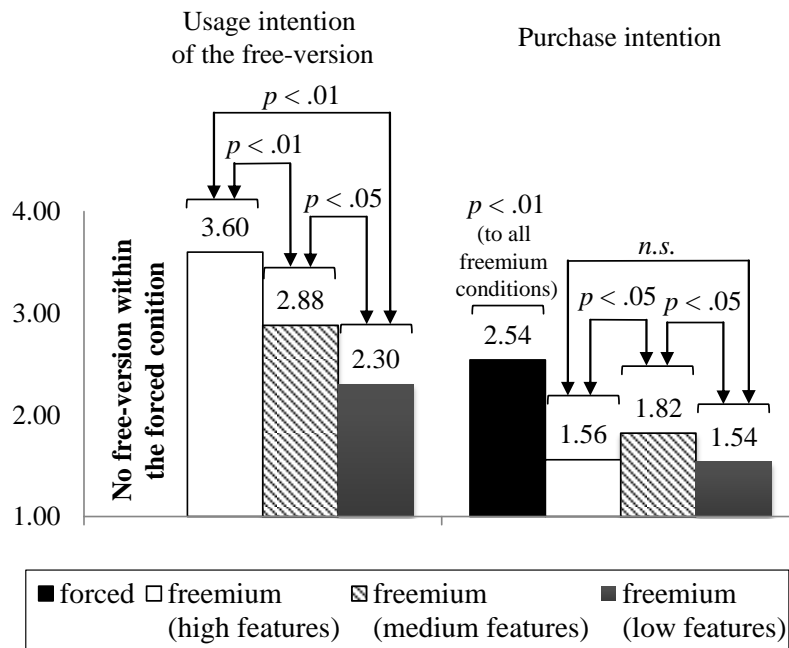
2.88, SE = 1.63;  $M_{\text{low features}} = 2.30$ , SE = 1.59; all means different at  $p < .05$ ). For purchase intentions of the fee-based product, the results were mixed. As expected, compared to the medium feature level in the free version, the high level of features led to lower purchase intentions for the fee-based product ( $M_{\text{medium features}} = 1.85$ , SE = .93;  $t(192) = 2.20$  vs.  $M_{\text{high features}} = 1.60$ , SE = .71,  $p < .05$ ). Contrary to our expectations, the low feature level of the free version also led to lower purchase intentions of the fee-based product compared to the medium feature level ( $M_{\text{low features}} = 1.54$ , SE = .64;  $M_{\text{medium features}} = 1.85$ , SE = .93;  $t(205) = 2.86$ ,  $p < .01$ ). Thus, H4b is only partly supported, as the results indicate an inverted U-shaped relationship between the feature level of the free product and purchase intentions of the fee-based version.

Further, as shown in **Figure 22b**, the level of features had a significant effect on fairness perceptions ( $F(1,301) = 6.35$ ,  $p < .01$ ). The low feature level of the free version led to lower fairness perceptions ( $M_{\text{low features}} = 3.25$ , SE = 1.09) compared to the medium (vs.  $M_{\text{medium features}} = 3.72$ , SE = 1.08;  $t(209) = 2.97$ ,  $p < .01$ ) and high feature levels (vs.  $M_{\text{high features}} = 3.71$ , SE = 1.06;  $t(217) = 3.03$ ,  $p < .01$ ). No significant differences in fairness perceptions existed between the medium and high feature levels ( $t(198) = .03$ , *n.s.*). The effect of level of features on attitude toward the company was also significant ( $F(1, 301) = 18.05$ ,  $p < .01$ ), indicating a lower attitude for the low feature level of the free version ( $M_{\text{low features}} = 3.36$ , SE = 1.06) compared to the medium (vs.  $M_{\text{medium features}} = 3.85$ , SE = .84;  $t(209) = 3.67$ ,  $p < .01$ ) and high levels (vs.  $M_{\text{high features}} = 4.09$ , SE = .81;  $t(217) = 5.67$ ,  $p < .01$ ), while the medium feature level also led to less favorable attitude compared to the high level ( $t(198) = 2.03$ ,  $p < .05$ ).

A comparison with the control group (a forced switch) indicated that, consistent with Studies 1 and 2, purchase intentions for the fee-based product were significantly lower in all three freemium conditions compared to the forced condition ( $M_{\text{forced}} = 2.54$ , SE = 1.32, all means different at

$p < .01$ ). However, the freemium condition with low features in the free version revealed no significant differences in fairness perceptions compared to the forced switch ( $M_{\text{low features}} = 3.27$ ,  $SE = 1.06$  vs.  $M_{\text{forced}} = 3.25$ ,  $SE = .94$ ;  $t(192) = .16$ , *n.s.*), while attitude toward the company was even less positive in the low feature freemium condition ( $M_{\text{low features}} = 3.36$ ,  $SE = 1.06$  vs.  $M_{\text{forced}} = 3.77$ ,  $SE = .90$ ;  $t(192) = 2.72$ ,  $p < .01$ ) (see **Figure 22b**).

(A) Usage intention and purchase intention



(B) Fairness perception and attitude toward the company

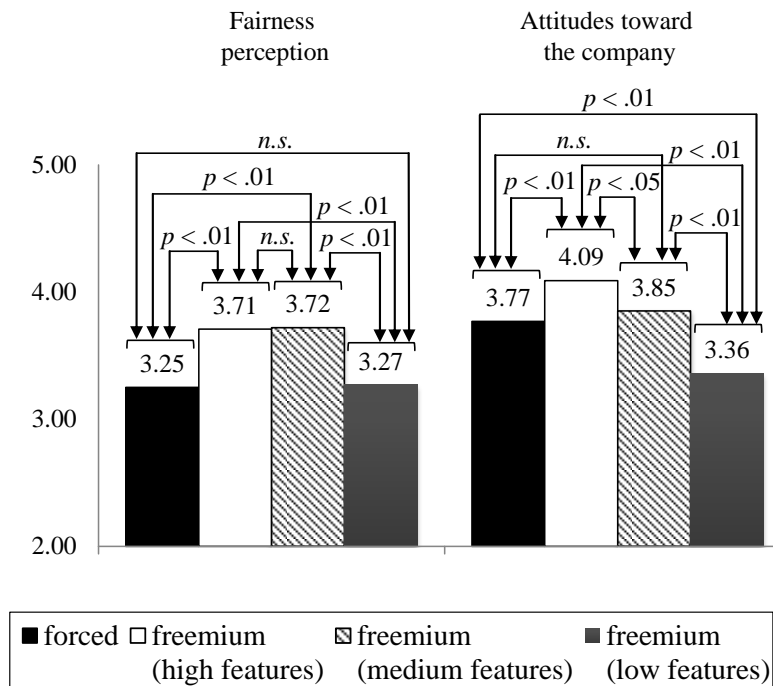


Figure 22: Paper 2 - Study 3: Comparison of means (high vs. medium vs. low features of the free version in a freemium switch) with forced switch as control group

### 3.8.3. Discussion

Study 3 shows that both high and low feature levels of the free version in a freemium switch lead to lower purchase intentions for the fee-based product than a medium level of features. Examination of the theoretical mechanism behind these effects indicates that the negative effect of the high feature level is due to an increased cannibalization stemming from high usage intention of the free version, while the negative effect of the low feature level can be explained by a sharp decrease in customers' fairness perceptions.

Interestingly, high and medium levels of features in the free product version are perceived as equally fair, while a medium feature level directly leads to higher purchase intention of the fee-based product due to lower cannibalization. A low feature level is perceived as less fair, which negatively affects purchase intentions. In this case, perceived unfairness prevails, while in the case of a high feature level, cannibalization wins out. Thus, the level of features of the free version in the freemium switch determines which mechanism is dominant, product cannibalization or perception of unfairness. Combined, these findings suggest that a medium level of features provides an optimal balance between the two effects, leading to most favorable customer responses among freemium conditions overall, with no reduction in perceived fairness and an increase in purchase intentions for the fee-based product relative to both low and high feature levels.

The results show that an attempt to enhance purchase intentions of the fee-based product by offering a free product version with greatly reduced features, as suggested by Haruvy and Prasad (2001), can backfire, as customers may perceive it as an unfair offer. Moreover, a greatly re-

duced free version leads to an even less favorable attitude toward the company than a forced switch.

### 3.9. Enhancing fairness in free-to-fee-switches: justification effects

Focusing on the freemium free-to-fee switch option, Study 3 examined the effects of changing the output by considering the level of feature reduction of the free version. Compared to a freemium switch, however, a forced free-to-fee switch does not allow for variation in different output alternatives. Instead, a forced switch is similar to a price increase in that it requires an increase in customer sacrifice (input), while the output (product features) remains the same. Thus, an alternative way to enhance fairness perceptions in a forced switch needs to be identified. We propose that in a forced free-to-fee switch, companies can influence the procedural aspects of the switch in order to enhance the perceived fairness.

When forming fairness perceptions, customers may not only consider the outcome, but also the procedure that leads to the outcome (e.g., Collie et al. 2002; Tarrahi et al. 2016). Procedural justice pertains to a judgment of whether a process is based on prevailing norms or behaviors (Thibaut and Walker 1975). For instance, a price increase that results from an increased cost of the material may be judged as more acceptable based on the prevailing norms than one that is a result of increased marketing costs (Bolton et al. 2003).

Research on price increases suggests several approaches to enhance fairness perception based on the principles of procedural justice, including providing an understandable and credible justification (e.g., Kachelmeier et al. 1991; Martin et al. 2009) or inducing customers to infer a positive seller's motive for the price increase (e.g., Campbell 1999a; Campbell 1999 b).

Integrating extant price fairness research and extending it to the free-to-fee switching context, we adopt the procedural justice concept of offering a justification for a price increase in order to enhance customers' fairness perceptions of the free-to-fee switch. In addition, when consumers face an unexpected price, as, in our case, a newly introduces price, receiving an explanation should increase their feelings of control over the situation and allow them to adapt to the change more easily (Folkes 1990). Thus, we propose that providing a justification for the switch will enhance fairness perceptions. Moreover, as proposed by the fair process effect (Collie et al. 2002), perceived procedural fairness of the switching process should consequently drive behavioral responses to the outcome itself. In sum, we predict:

**H6:** *The presence of a justification (vs. no justification) for a free-to-fee switch leads to (a) higher fairness perceptions, (b) more favorable attitude toward the company, and (c) higher purchase intentions for the fee-based product.*

### 3.10. Study 4

#### 3.10.1. Method

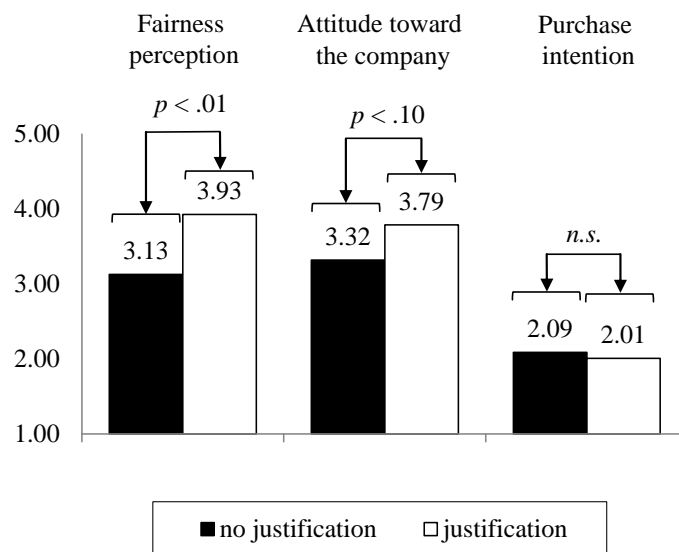
To test hypothesis 6, a between-subjects online experiment with two manipulated factors (switching option: a forced vs. a freemium switch and justification: yes vs. no) was conducted. The justification stated that the company had to introduce a price due to higher product development cost. This justification was selected because product costs were found to be an acceptable basis for charging a higher price (e.g., Bolton et al. 2003; Kahneman et al. 1986). The analyzable sample consisted of 182 participants ( $M_{\text{age}} = 32.6$ ,  $SD = 9.10$ , 40.1% female), who were recruited via Amazon Mechanical Turk and completed the questionnaire for an incentive of US\$0.50. All participants were shown detailed information about a photo editor app, identical to



Studies 2 and 3. The dependent variables and potential covariates were identical to those in prior studies.

### 3.10.2. Results

ANCOVA results indicated that the effects of justification on fairness perceptions ( $F(1, 176) = 10.57, p < .01$ ) and attitude toward the company ( $F(1, 176) = 5.71, p < .05$ ) were significant and positive, as proposed in H6a-b. However, the effect on purchase intentions was not significant ( $F(1, 176) = .09, n.s.$ ) leading to a rejection of H6c. Providing a justification for the switch led to greater fairness perceptions ( $M_{\text{no justification}} = 3.11, SE = 1.81$  vs.  $M_{\text{justification}} = 3.93, SE = 1.87$ ;  $t(180) = -2.95, p < .01$ ) and more favorable attitude toward the company ( $M_{\text{no justification}} = 3.27, SE = 1.66$  vs.  $M_{\text{justification}} = 3.78, SE = 1.72$ ;  $t(180) = -2.03, p < .05$ ), but did not increase purchase intentions of the fee-based product ( $M_{\text{no justification}} = 2.09, SE = 1.34$  vs.  $M_{\text{justification}} = 2.01, SE = 1.30$ ;  $t(180) = .40, n.s.$ ), see **Figure 23**.



**Figure 23:** Paper 2 - Study 4: Significant mean differences (no justification vs. justification)

Moreover, no interaction effect between justification and the type of switch was evident, which demonstrates that providing a justification for the switch is equally effective in addressing fairness perceptions and attitude toward the company across both switching options. Examining the mediation process, justification indirectly affected attitude toward the company via fairness perception ( $B = .55$ ,  $SE = .19$ , 99% bootstrap CI: .069 to 1.05), but had no indirect effect on purchase intentions via fairness and attitude toward the company ( $B = -.03$ ,  $SE = .06$ , 90% bootstrap CI:  $-.139$  to  $.052$ ).

### 3.10.3. Discussion

Study 4 reveals that providing a justification for the switch reduces negative effects of an unexpected free-to-fee switch on perceived fairness and attitude toward the company for both forced and freemium switches. However, providing a justification does not increase purchase intentions of the fee-based product. Thus, the disadvantages of a forced switch – lower perceived fairness and less favorable attitudes toward the company – can be addressed by providing a justification for the switch, while the disadvantage of a freemium switch – lower purchase intentions of the fee-based product – cannot be improved. The non-significant interaction between the presence of a justification and the type of switch is not surprising, as all companies are likely to incur product development costs, regardless of the type of switch they decide to implement, making the justification based on the product development cost equally effective across the two switches.

## 3.11. General discussion

This research provides important theoretical contributions and managerial implications by bridging the gap between research on freemium business models and price introductions. Utilizing

different samples (students, general population through a market research company, and M-Turk participants) and different experimental designs (longitudinal, cross-sectional) across four studies, we investigated customers' responses to unexpected free-to-fee switches and different ways of attenuating their negative consequences. Our findings suggest that there is a conflict between the goal of maximizing purchase intentions for the fee-based product and minimizing negative customers' reactions, such as perceived unfairness and deteriorated attitudes toward the company. The results of Studies 1 and 2 provide evidence that unexpected free-to-fee switches negatively affect customers' fairness perceptions, attitude, and purchase intention for both utilitarian and hedonic products. Moreover, compared to a forced switch, providing customers with an option to keep using a functionally reduced version of the product for free can attenuate negative consequences of the switch on perceived fairness and attitude toward the company. At the same time, however, this option reduces purchase intentions for the fee-based product, as more customers opt for using the free version.

Building upon these results, Study 3 focuses on identifying how to increase purchase intentions for the fee-based-product in a freemium switch. The findings suggest that offering a free version which is greatly reduced in functionality may be unwise, as it does not increase the intention to purchase the fee-based product, but rather indirectly reduces intentions due to lower fairness perceptions. A free version with a medium feature level presents an optimal balance between enhancing purchase intentions of the fee-based product, while maintaining fairness perceptions.

Lastly, Study 4 demonstrates that the disadvantages of a forced switch (i.e., lower fairness perceptions and less favorable attitude toward the company) can be reduced by providing a justification for the switch. Providing a rationale for the fee increases perceived fairness and, subsequent-

ly, attitude toward the company in a forced and in a freemium switch, but does not affect intentions to pay the introduced fee.

### 3.11.1. Contributions to theory

The results of our research contribute to behavioral pricing theory by integrating concepts of product cannibalization and price fairness. Studies 1 and 2 provide evidence that the restriction of choice in a forced switch leads to a decline in customers' fairness perceptions and attitudes; however, it also provides an opportunity to avoid negative cannibalization effects. In combining price fairness and product cannibalization perspectives and applying them to the context of free-to-fee switches, the research sheds light on the complex psychological mechanism of customers' reactions to different types of unexpected free-to-fee switches. This provides an explanation for the finding by Arora et al. (2017) that the availability of a free version cannibalizes the fee-based product. Study 3 demonstrates the delicate balance between the two theoretical mechanisms in a freemium switch. The nature of the prevailing mechanism is found to depend on the feature level of the free version. At a high feature level, the mechanism based on cannibalization prevails, while at a low feature level, the mechanism based on perceived fairness wins out. A medium feature level proves to have the best balance between the two effects, leading to the least negative responses.

Also in Study 3, a boundary condition for the assumption that offering a choice has positive effects (Brehm and Brehm 1981) is identified, as a free option with severely reduced features leads to more negative effects even when compared to having no choice in a forced switch, because of lower fairness perceptions. By identifying this boundary condition, we add to Haruvy and Prasad's (2001) research on the level of feature reduction in freemium business models. While they

investigate how many features could be added before cannibalization effects arise, we focus on the extent of features that can be removed before negative effects on fairness and attitude emerge. Our research findings suggest that introducing a free version with sufficiently lower quality to avoid cannibalization of the fee-based product, as advised by Haruvy and Prasad (2001), may actually backfire, as consumers perceive a version with heavily reduced features to be unfair.

Additionally, Study 4 contributes to the literature on the fair process effect (Collie et al. 2002) by demonstrating that perceived fairness of both forced and freemium free-to-fee switches can be increased by offering a justification for the switch, similar as in the case of a price increase.

### 3.11.2. Managerial implications

Our findings offers important managerial implications for companies interested in future implementation of free-to-fee switches (e.g., app and software developers, online content providers, etc.) as well as companies which have already experienced negative reactions after a free-to-fee switch. The results highlight the importance of considering the negative consequences of an unexpected switch on customers' fairness perceptions, attitude toward the company, and purchase intentions. A forced switch is superior to a freemium switch with regard to purchase intentions, as the latter option cannibalizes purchase intentions for the fee-based product. If the firm's key intention is to boost purchase intentions for the fee-based product, a forced switch is recommended. Thus, companies that have a strong focus on short-term sales should consider using the forced switch to maximize their sales.

However, although a forced switch results in greater short-term intentions to purchase the fee-based product, it does lead to deteriorated attitude, which could have damaging long-term consequences for the company and its reputation. Thus, a freemium switch is recommended as a safer

switching option for companies that do not want to compromise customers' attitude. Smaller start-up companies, in particular, may be better off implementing a freemium switch and utilizing the free reduced product version as a marketing tool to increase awareness. This may be particularly appropriate for companies with limited advertising budgets. A freemium model could also be a promising way to establish or strengthen customer relationships by staying in contact with users who do not want to buy the product immediately.

Study 3 highlights the importance of considering the feature level of the free product version in the freemium switch. The strategy of minimizing unfavorable cannibalization effects of the free version on sales of the fee-based product by offering a free version with highly functionally reduced features can backfire due to inducing strong feelings of unfairness. In this case, instead of offering a highly reduced free version, companies should choose an average functionality. This, in turn, should lead to more favorable attitude toward the company and, indirectly, higher intentions to buy the fee-based product.

Lastly, for companies that have decided to implement a forced free-to-fee switch, it is important to carefully consider ways in which customers' attitude could be improved, such as by offering a compelling rationale for the new fee. Study 4 demonstrates that providing an appropriate justification for the switch can lead to positive effects. Receiving an explanation for the switch increases customers' fairness perception, and consequently enhances their attitude toward the company. Even though there is no immediate impact on purchase intentions, the more positive perceptions and attitude should lead to a stronger relationship between the customer and the firm, providing more long-term benefits. Further, justification should be provided regardless of the type of switch, as its positive effects are present in both forced and freemium switches.

### 3.11.3. Limitations and future research

Certain limitations should be considered when interpreting the results of this research. Since the Study context was limited to mobile apps at a medium price level, different product categories and price levels should be considered in the future. The results are also restricted by the scenario-based nature of the experiments. While respondents rated experimental realism as high, a field setting in which participants actually use a product or service over a specific time period should be employed in future research. Future studies should also consider long-term effects of free-to-fee switches. Further, even though our research included three different populations and the results remained remarkably consistent across the samples, other customer populations should be studied in the future.

Another strategy for introducing a fee, but one not investigated in this research, is providing a premium version of the product offering additional value or attributes that can be used to justify the fee (Anderson 2009; Witell and Löfgren 2013). In this case, a premium product version is introduced for a fee, while the original free version remains free. While a price introduction for a premium product is not directly considered to be a free-to-fee switch, it could provide an alternative strategy that may be able to combat negative consequences associated with free-to-fee switches, and should thus be studied in the future.

## **4. Paper 3: To Be Continued... - Effects of Interrupted Previews on Emotional Responses and Purchase Decisions**

### 4.1. Abstract

In many industries gets more and more difficult to earn money with digital content (e.g., online journalism). Therefore, previews are essential to sell products or services online by providing a teasers for paid content (e.g., such as online articles). Some companies offer complete content previews; others seek to increase consumption by interrupting the previews they provide. The Zeigarnik effect postulates that an interrupted activity creates unresolved arousal, resulting in greater recall and desire for completion. Consumers' need for cognitive closure (NFCC) should intensify such outcomes. Four experimental studies, including measures of galvanic skin responses and incentive-aligned designs, reveal that interrupted previews enhance arousal, especially as consumers' NFCC increases. However, this increased emotional reaction translates into fewer, not greater, purchases of the paid content, because consumers feel betrayed when the demand for payment prevents them from satisfying their NFCC. In contrast, for freely accessible content, this higher arousal overcomes negative reactions to interrupted previews and increases content consumption. This study reveals the emotional mechanisms underlying the negative consequences of the Zeigarnik effect for consumer behavior, especially among consumers with a high NFCC, who exhibit stronger negative reactions to interruptions when they cannot satisfy their desire to finish the activity without making some sacrifice. The findings thus call into question some of the managerial practices around content previews and provide actionable insights for companies.



**Additional note:**

- This paper was submitted to the Journal of Consumer Research (JCR), VHB3 Ranking: A+, and invited to be revised and resubmitted.
- Parts of this paper were presented at:
  - » the Academy of Marketing Science (AMS) Annual Conference, Lake Buena Vista, USA, May 2016;
  - » the Winter Marketing Educators' Conference (AMA), Las Vegas, USA, Feb., 2016 (Working Paper).
- A prior version of this paper coauthored with JProf. Dr. Tobias Schäfers (TU Dortmund University) and Ann-Kristin Kupfer (Muenster University):  
Cziehso, G. P., Schaefers, T., Kupfer, A.: „To Be Continued... - Effects of Interrupted Previews on Emotional Responses and Purchase Decisions”.

## 4.2. Introduction

Waiters were observed to remember details from unpaid orders much better than those from orders that had already been paid. It appears that their ability to remember the information decreased right after they had completed the task. This unsystematic observation of Prof. Lewin in 1927 encouraged Bljuma Zeigarnik to investigate that phenomenon systematically (Zeigarnik 1938). But even decades after she found out that people remember uncompleted tasks better than ...

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In digital contexts, text-based online previews such as this one are common, used to attract consumers to commercial websites. Online newspapers, e-books, and scientific journals all seek to catch potential customers' attention to their paid content by using previews, teasers, or abstracts. These "product samples" might feature a comprehensive preview, such that consumers are able to finish reading the last sentence, or use interruptions, such as in the opening example, that cut off the preview before the last sentence. Content providers appear uncertain about the advantages of each approach, so we find examples of both forms in real-world practice, even within the same content providers (see **Appendix F**).

Theoretically, interrupting a task may lead to different emotional and behavioral reactions, according to what scholars call the Zeigarnik effect. Zeigarnik (1938) argues that an interruption creates a feeling of unresolved arousal, which enhances memory by making the information available until the task is completed (see also Boguslavsky and Guthrie 1941; Prentice 1944). A well-accepted consequence of this effect is stronger recall of interrupted activities and uncompleted tasks (e.g., Baddeley 2008; Green 1963; Marrow 1938; Martin and Davidson 1964). The

Zeigarnik effect remains of interest for scholars, who have shown that interruptions can result in greater attention to advertising messages (Hammadi and Qureishi 2013), enhanced evaluations of consumption experiences (Nelson and Meyvis 2008; Nelson et al. 2009), and choices of desirable rather than feasible products (Liu 2008). Beyond these general effects though, Kruglanski (1989) also notes that consumers differ in their individual reactions to interruptions, due to their unique needs for cognitive closure (NFCC). This stable individual characteristic refers to a person's psychological requirement to find an answer to an ambiguous situation, including finishing an incomplete task (Kruglanski et al. 1997; Kruglanski and Webster 1996). Niculescu et al. (2013) combine interruptions with NFCC to investigate interrupted anagrams and their effects on unrelated product evaluations; Kardes et al. (2007) also show that the positive effects of disrupted messages on consumers' willingness to pay are stronger for those with high NFCC. However, most investigations of the Zeigarnik effect consider NFCC as a situational, rather than an individual difference, variable (e.g., Chirumbolo et al. 2004; Heaton and Kruglanski 1991) or mainly seek to show that an interruption leads to an increased desire for cognitive closure (Kupor et al. 2015).

In turn, the majority of psychological and consumer behavior studies point to positive effects of interruptions, such as increased recall (Baddeley 2008), attention (Hammadi and Qureishi 2013), willingness to pay (Kardes et al. 2007), or persuasion effects (Kupor and Tormala 2015). Little is known about the negative effects of uncompleted tasks on consumer behavior, with a few notable exceptions. That is, Xia and Sudharshan (2002) show that different interruption characteristics lead to less satisfaction with the decision process, and Nelson et al. (2009) find that interruptions can worsen negative consumption experiences. Yet, to the best of our knowledge, no re-

search addresses the negative behavioral consequences of interruptions in consumption decisions.

This gap is especially striking in light of research in other fields that highlights the negative effects of interruptions, including medical and pharmaceutical research (e.g., Drews 2007; Flynn et al. 1999), flight safety (Latorella 1996), and other work-related behaviors (e.g., Jett and George 2003; Zijlstra et al. 1999). As Zeigarnik (1938, p. 20) herself observed, her experimental “participants defend against an interruption. Some participants defended so badly that they refuse to hand in their unfinished drawing tasks, even if the examiner urgently requires it. The participants got into a state of affective behavior.” Thus, not all interruptions lead to positive effects, especially if consumers cannot complete a consumption task without facing some closure hindrance (e.g., required payment). This research accordingly investigates whether the Zeigarnik effect applies to the consumption context of strategically interrupted previews, to determine whether this approach results in higher arousal and increased purchases or instead may backfire and cause consumers to feel betrayed and unwilling to purchase.

We examine consumers’ reactions to text-based interrupted previews and the underlying psychological process using multiple methods in four studies, including a skin response experiment and an incentive-aligned experiment. The resulting findings contribute to established literature in three main ways. First, we show that an interrupted preview of online content leads to greater levels of arousal, in support of the relevance of the Zeigarnik effect for consumer research. This arousal results in negative behavioral responses, in terms of purchases, which are mediated by betrayal as a negative emotion, as we show for the first time. Second, we link the Zeigarnik effect to individual NFCC and provide empirical evidence of the moderating effect of consumers’ NFCC. Both the positive effect of an interrupted preview on arousal and its negative effect on

purchases increase in magnitude with greater individual NFCC. These findings stress the importance of accounting for NFCC by revealing that consumer resistance to closure hindrance causes those high in NFCC to refrain from purchasing, but it does not affect those low in NFCC. Third, we demonstrate that the negative emotional reactions to preview interruptions are due to closure hindrance (i.e., payment barrier); they reverse if this hindrance is removed. Thus, when consumers can satisfy their NFCC immediately, without payment, interruptions prompt positive behavioral outcomes (i.e., higher click rates and content consumption). These theoretical insights in turn establish clear recommendations for managers who are designing preview strategies for the paid and free online content they seek to market.

### 4.3. Conceptual model

#### 4.3.1. Effects of preview interruptions on purchase behaviour

An interruption represents an externally generated disruption of ongoing activity (Coraggio 1990). In our study context, an interrupted preview offers a teaser for a text-based product or service that gets cut off in the middle of a sentence, making it impossible for consumers to finish reading. A concluded preview instead refers to a self-contained teaser that can be read in its entirety; consumers may finish reading the last sentence without being interrupted. Both concluded and interrupted previews give consumers only a brief idea of the full content though, such that they offer similar amounts of information for a yet-to-be-consumed product or service. They also have a similar aim, namely, to exploit the effects of an unfulfilled goal and enhance consumers' desire to consume the full content. According to Zeigarnik (1938), an interrupted preview, compared with a concluded one, should result in different emotional responses, because the initial goal of finishing the preview remains incomplete. Task interruptions create emotional arousal,

which would be absent for consumers who have completed the initial task of reading the entire preview (Zeigarnik 1938). This increase in arousal due to task interruption has been well supported in psychology studies (e.g., Worchel and Arnold 1974). Accordingly, we expect the Zeigarnik effect to arise in the setting of interrupted previews of online content. Formally,

**H1:** *An interrupted preview leads to higher levels of arousal than a concluded preview.*

Increased arousal due to interrupted activity also should increase consumers' desire to finish the interrupted task. Previous research reveals a general human desire to complete ongoing activities rather than leaving them unfinished (e.g., Kruglanski and Webster 1996). In their investigations, Kupor et al. (2015) and Kupor and Tormala (2015) also show that interruptions lead to closure-seeking behavior. As such, the interruption-initiated arousal seemingly could lead to an increase in purchases, an intended outcome that drives the practices of content providers in reality, such as the Wall Street Journal.

However, in this context, consumers also confront a demand for a required payment that prevents them from completing the unfinished task without some monetary sacrifice. In contrast with a situation in which the task interruption naturally gets resolved after some period of time (e.g., Kardes et al. 2007), this payment acts as a "closure hindrance" that might trigger negative emotional responses, because the offering of an interrupted preview in a paid context might lead consumers to question the content provider's practices. According to Grégoire and Fisher (2008, p. 250), consumers react with a feeling of betrayal when they "believe that a firm has intentionally violated what is normative" by taking advantage of them, tricking them, or trying to exploit them (Elangovan and Shapiro 1998). An interrupted preview might be perceived as an attempt to take advantage of consumers' NFCC, by deliberately creating greater arousal that cannot be resolved

without an (unpleasant) payment. According to Holloway et al. (2009), feelings of betrayal even can lead consumers to “recast” their relationship with the company, with detrimental behavioral consequences (e.g., fewer purchases). A negative emotional response to payment-induced closure hindrance also is consistent with Zeigarnik’s (1938) assertion that an abrupt interruption, without the possibility of finishing the task, provokes negative emotions and behavioral consequences. Thus, we expect negative emotions to dominate when a closure hindrance exists and requires consumers to make sacrifices to satisfy their NFCC.

**H2:** *When closure hindrance exists, an interrupted preview leads to fewer purchases than a concluded preview, because increased arousal leads to higher perceived betrayal. Without closure hindrance, no such negative emotional reactions arise.*

#### 4.3.2. Moderating effect of consumers’ need for cognitive closure

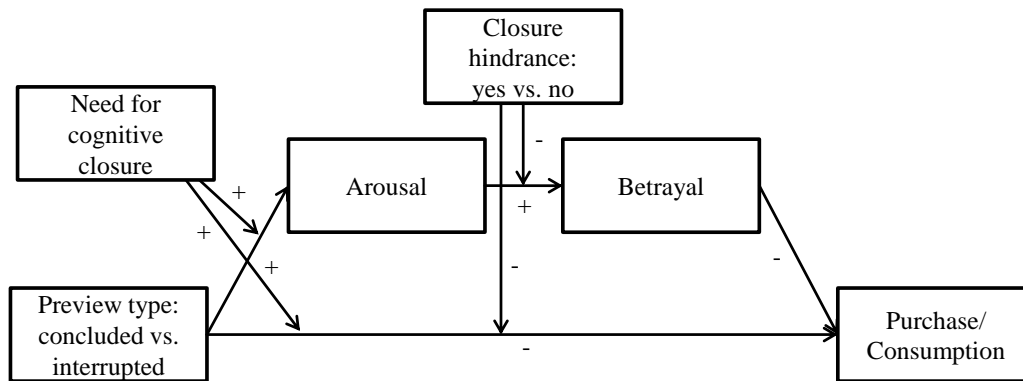
Although intrapersonal differences in NFCC may reflect situational variables (Heaton and Kruglanski 1991), NFCC also is a stable personal trait (Houghton and Grewal 2000; Kruglanski 1989) that comprises five dimensions: (1) desire for predictability, (2) preference for order and structure, (3) discomfort with ambiguity, (4) decisiveness, and (5) close-mindedness (Webster and Kruglanski 1994). An urgent desire to reach cognitive closure and strong tendency to seek conclusions, as reflected in the decisiveness dimension (Kruglanski et al. 1993), should be highly pertinent to interruptions and reactions to them. That is, consumers who experience an interrupted preview might react differently, depending on their score on the decisiveness dimension of NFCC. If they exhibit strong decisiveness and thus high NFCC, consumers likely experience stronger psychological arousal after being interrupted, due to their great sensitivity to unfinished tasks. Kruglanski and Webster (1996) show that individuals with high NFCC experience the

absence of cognitive closure as more unpleasant than those low in NFCC, which should lead to stronger emotional reactions. Thus, we postulate that consumers high in NFCC experience stronger arousal when exposed to an interrupted preview than do consumers low in NFCC.

Moreover, Kruglanski and Webster (1996) describe two tendencies that are common to high NFCC individuals: urgency and permanence. An urgency tendency leads people to seek to achieve cognitive closure as quickly as possible, because their need to find a conclusion is more urgent than it is for those low in NFCC. The permanence tendency instead reflects their desire to perpetuate this sense of cognitive closure. However, reaching cognitive closure faster (urgency) and trying to protect it in the future (permanence) both are unreachable in the case of an interrupted preview, unless consumers make an unpleasant sacrifice (i.e., spend money). Consequently, consumers high in NFCC should exhibit not only a greater level of arousal but also stronger negative emotions when they are unable to satisfy their enhanced NFCC without hindrance. Because they must sacrifice money to complete their task, consumers high in NFCC who confront an interrupted preview for paid content should express higher levels of emotional arousal (vs. consumers low in NFCC), leading to stronger feelings of betrayal, which in turn should negatively affect their purchase decision. Thus, completing our conceptual model illustrated in **Figure 24**, we hypothesize that:

**H3:** *Need for cognitive closure moderates the effects of an interrupted (vs. concluded) preview, such that as NFCC increases, (a) the positive influence on arousal and (b) the negative influence on purchases increase.*






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**Figure 24:** Paper 3 - Conceptual model

#### 4.4. Overview of studies

We test our hypotheses using four experimental studies. Study 1 uses galvanic skin response measures to show that interrupted previews increase arousal (hypothesis 1) and provide initial empirical support for the moderating role of NFCC (hypothesis 3). With an incentive-aligned experiment, Study 2 reveals a negative effect of interrupted previews on purchases (hypothesis 2), again moderated by NFCC (hypothesis 3). Then in Study 3, we integrate these findings in a comprehensive model that explains the negative effect on purchases by including betrayal as an additional mediator (hypothesis 2). Studies 1–3 focus on situations marked by a closure hindrance (i.e., required payment), whereas Study 4 provides a comprehensive test of hypothesis 2 by manipulating its existence (i.e., free vs. paid content). We thus can show that the negative effects of an interruption are attributable to the payment required to consume the content. Study 4 also affirms the robustness of our findings, by featuring a different product type (i.e., hedonic instead of utilitarian).

## 4.5. Study 1

In Study 1, we apply physiological observations obtained from galvanic skin responses (GSR) as valid measures of arousal. This method measures changes in the electrical conductivity of the skin caused by moisture on the skin's surface (Dawson et al. 2011), so it provides an indication of arousal, in that the sweat glands are controlled by the sympathetic nervous system, which reacts to environmental stimuli (Critchley 2002). When the sympathetic branch of the nervous system is aroused, sweat gland activity increases and accordingly increases skin conductance, as measured by GSR. Thus, skin conductance recording is a valid method for investigating consumers' physiological reactions to stimuli (Critchley 2002).

### 4.5.1. Research method

We recorded participants' skin conductance responses (GSR) when they confronted an interrupted or a concluded preview. The 51 participants were graduate students ( $M_{\text{age}} = 25.0$  years,  $SD = 4.47$ , 58.8% female), invited to a behavioral lab to complete a voluntary study. They were informed that their physiological responses to different tasks would be measured. Participants were seated in front of a computer and began by filling out a short questionnaire that captured demographic information (e.g., age, gender), covariates (technological anxiety, interest in the article, frequency of reading online articles, along with gender, and age), and NFCC (decisiveness dimension) (Webster and Kruglanski 1994). The detailed scales, individual items, and coefficient alpha values appear in **Appendix G**. After they completed the questionnaire, we placed a pair of silver chloride electrodes on the participants' left index and middle fingers, where the density of sweat glands is greatest (Dawson et al. 2011). Subsequently, they completed a filler task (maze labyrinth) and were assigned randomly to one of the experimental conditions (concluded vs. in-

errupted preview) or else a control group. Participants assigned to the experimental conditions read a short, text-based preview of a newspaper article (88 words, see **Appendix H**); those in the control group saw a typical Zeigarnik task in which they were interrupted after 20 seconds of trying to solve another maze. The previewed news article described the job market outlook in the participants' field of study (business), such that it was of interest to the respondents, as confirmed by an "interest in the article" measure with four items (7-point agreement scale,  $\alpha = .84$ ;  $M = 4.61$ ,  $SD = 1.12$ ; see **Appendix G**; Mathwick and Rigdon 2004). After reading the preview, these participants read that they would have to pay €0.50 to be able to complete the full article. The two experimental groups differed only in the preview type; in the concluded preview condition, the last sentence of the text-based preview was completed, rather than being interrupted in the midst of an additional last sentence, as follows: "In addition, it has been shown that ..." (see **Appendix H**). In a pretest with 58 undergraduate students ( $M_{\text{age}} = 21.3$  years,  $SD = 2.50$ ; 41.4% female), both articles were perceived as equivalent in their information quantity ( $M_{\text{interrupted}} = 3.53$ ,  $SE = .93$ ;  $M_{\text{concluded}} = 3.74$ ,  $SE = .79$ ;  $t(56) = .95$ , *n.s.*) and article quality ( $M_{\text{interrupted}} = 4.53$ ,  $SE = 1.44$ ;  $M_{\text{concluded}} = 4.20$ ,  $SE = 1.33$ ;  $t(56) = .91$ , *n.s.*), on 7-point Likert scales (1 = low to 7 = high).

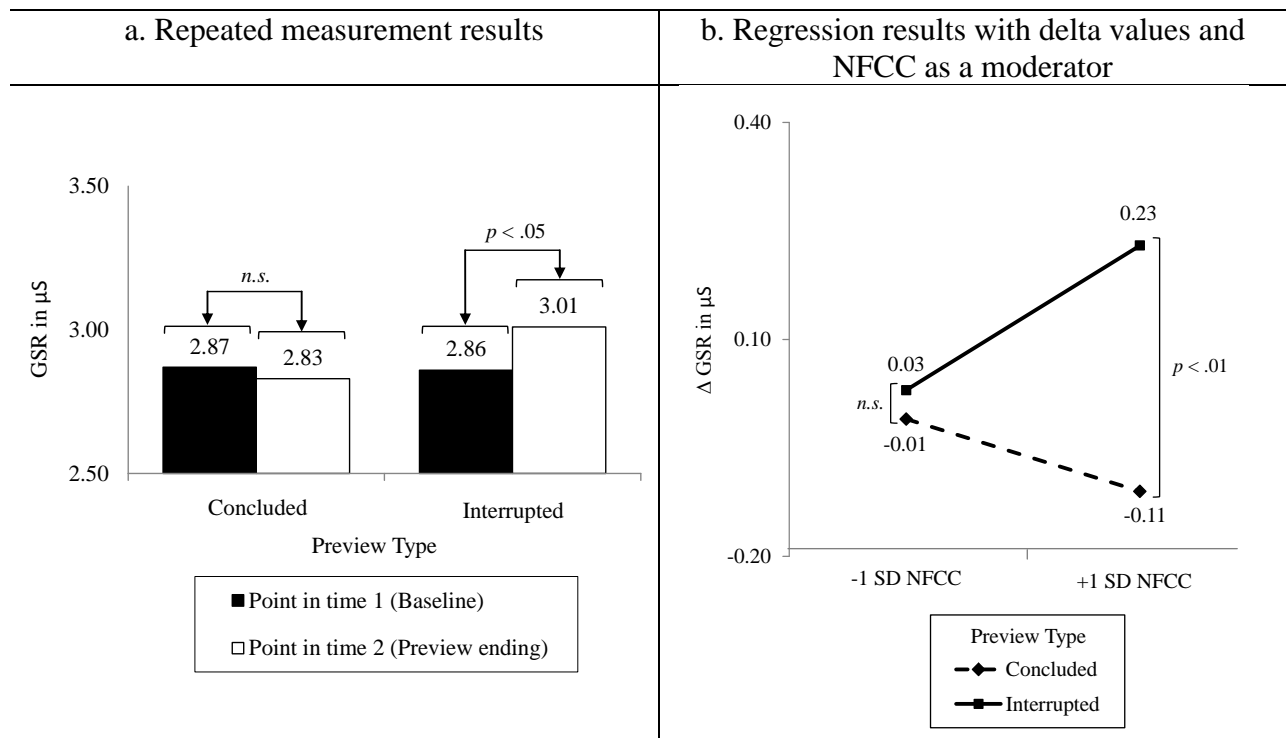
We took a 5-second baseline measure at the beginning of the manipulation, while participants read the identical beginning of the preview article. We compared this baseline to a 5-second window directly after participants finished reading the different preview endings (concluded vs. interrupted). The second time window also included the period in which they read the payment information. The total average reading time was 27 seconds (min: 21 seconds, max: 64 seconds), so overlaps of these two time windows can be excluded. After the experiment, we removed the silver chloride electrodes and debriefed the participants.

#### 4.5.2. Results

Using skin conductance responses measured by GSR, we identify changes in emotional arousal (Dawson et al. 2011) when the amplitude of these changes is greater than .05 microSiemens ( $\mu\text{S}$ ) beyond the baseline (Boucsein 1992). Thus, in addition to conventional significance testing, we include .05  $\mu\text{S}$  as a threshold for our hypotheses tests. To account for the within-subjects design, we used a mixed-measures analysis of covariance (ANCOVA) with time as a within-subjects factor ( $\text{GSR}_1$  = mean of first 5 seconds of reading preview article vs.  $\text{GSR}_2$  = mean of first 5 seconds after reading the preview and payment information) and the two experimental conditions as a between-subjects factor. This repeated measures ANCOVA indicates no significant effects of the covariates and no main effect of time (i.e., difference between reading the beginning of the preview and seeing the different types of preview endings) on GSR ( $F(1, 28) = 1.98, n.s.$ ). However, we find differences across the experimental conditions, such that the interaction between time and preview endings is significant ( $F(1, 28) = 7.74, p < .01$ ): The interrupted preview had a positive effect on GSR. Participants exhibited stronger physiological reactions in the interrupted preview condition ( $\text{GSR}_1 = 2.86, \text{SE} = 1.15; \text{GSR}_2 = 3.01, \text{SE} = 1.17; t(18) = 2.21, p < .05; \Delta(\text{Means}) > .05 \mu\text{S}$ ), but we found no such difference in the concluded preview condition ( $\text{GSR}_1 = 2.87, \text{SE} = 1.91; \text{GSR}_2 = 2.83, \text{SE} = 1.86; t(18) = 1.41, n.s. ; \Delta(\text{Means}) < .05 \mu\text{S}$ ), as illustrated in **Figure 25, panel a**.

To investigate the moderating effect of NFCC, we conducted a regression with the individual delta values of the GSR results ( $\text{GSR}_2 - \text{GSR}_1$ ) as the dependent variable. The independent variables were preview type, mean-centered NFCC, the preview type  $\times$  NFCC interaction, and the covariates (i.e., interest in the topic of the article, technological anxiety, frequency of reading online newspaper articles, age, and gender). This analysis revealed a main effect of preview type

on GSR ( $B = .19$ ,  $SE = .07$ ,  $t(32) = 2.57$ ,  $p < .01$ ) and a significant interaction ( $B = .12$ ,  $SE = .06$ ,  $t(32) = 2.11$ ,  $p < .05$ ), but no significant effects of the covariates. According to a spotlight analysis (Irwin and McClelland 2001), the interrupted preview led to a greater increase in arousal for participants with high levels of NFCC (+1 SD) ( $B = .34$ ,  $SE = .10$ ,  $t(32) = 3.28$ ,  $p < .01$ ). However, no such effect was evident for respondents with low NFCC (-1 SD) ( $B = .04$ ,  $SE = .10$ ,  $t(32) = .35$ , *n.s.*), as illustrated in **Figure 25, panel b**.



**Figure 25:** Paper 3 - Study 1: Effect of preview type on galvanic skin response (GSR)

As robustness checks, we conducted all these analyses with another baseline (first 5 seconds after starting the survey, instead of first 5 seconds of reading the preview article) and different time windows for both baselines (10 seconds vs. 5 seconds). The results were similar.

A comparison with the control group showed no significant differences between the interrupted preview condition and the control condition of an interruption in solving a maze either ( $F(1, 25)$

= 1.67, *n.s.*). However, the results for the comparison between the concluded preview condition and the interrupted maze-control condition revealed the same pattern as those reported for the concluded vs. interrupted preview conditions, with significantly higher GSR in the control group ( $F(1, 26) = 3.49, p < .05$ ).

#### 4.5.3. Discussion

Consumers react with greater arousal when seeing an interrupted, rather than a concluded, preview, consistent with hypothesis 1. However, this effect only occurs for consumers with high and medium levels of NFCC; it is not present for those low in NFCC, in support of hypothesis 3a. Furthermore, when we compare the two experimental groups with a control group, the result pattern significantly differs from the concluded preview condition but mirrors the findings from the interrupted preview condition. Thus, an interrupted preview elicits reactions similar to interrupted tasks, as reported in previous research. We cautiously interpret this observation as empirical evidence that the effects of interrupted previews are rooted in the Zeigarnik effect.

#### 4.6. Study 2

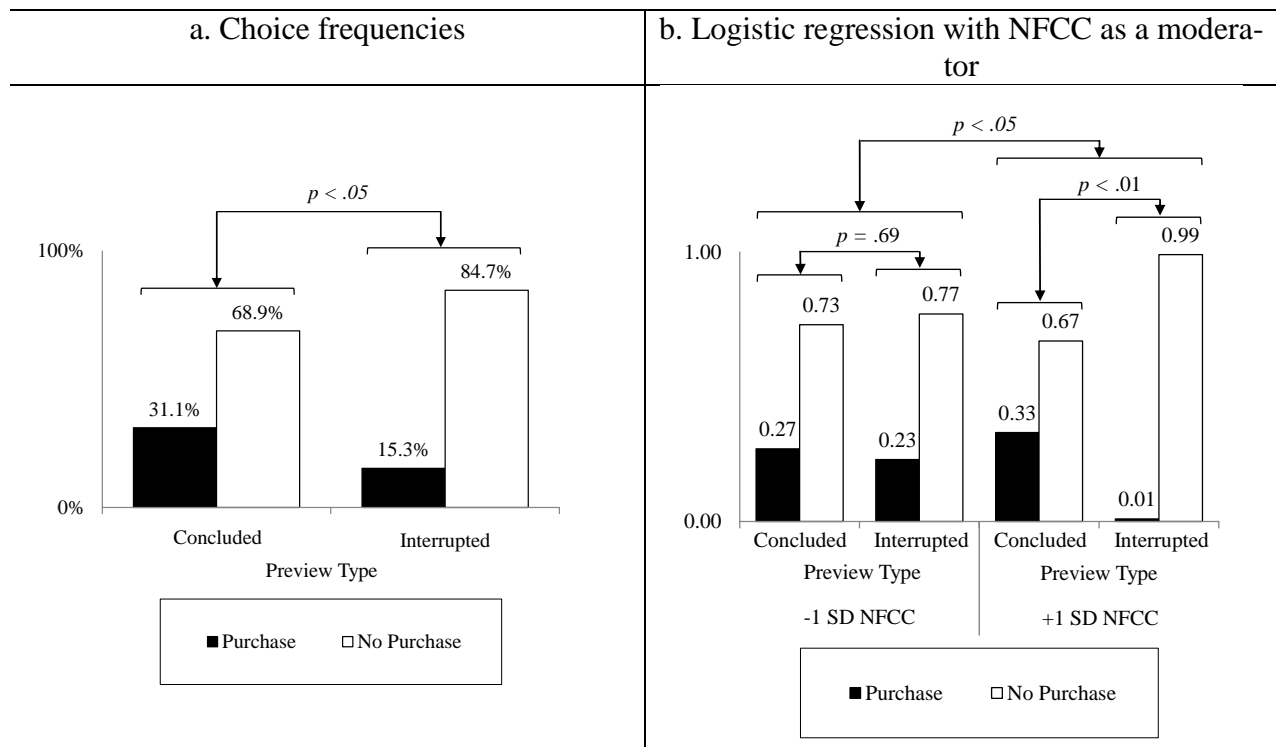
To assess the effect of preview type on actual purchases while integrating a moderating effect of NFCC, we conducted an incentive-aligned, between-subjects experiment with one manipulated factor (preview type: concluded vs. interrupted). Incentive-aligned studies offer good estimates of consumers' preferences, because they provide a realistic setting for measuring actual purchase decisions (Ding et al. 2005). We thus can test the behavioral consequences of the Zeigarnik effect in an empirical context, when a true sacrifice is required.

#### 4.6.1. Research method

A total of 120 undergraduate students (Mage = 20.8 years, SD = 2.11; 50.8% female) were recruited for a lab experiment, in exchange for extra class credit. Upon entering the computer lab, each participant received two vouchers with a value of €0.50 each and learned that the vouchers could be used to make purchases during the experiment, whether for fun incentives (chocolate bar, lollipop, and pencil) or a newspaper article. Participants first completed a questionnaire that assessed their NFCC (Webster and Kruglanski 1994;  $\alpha = .78$ ) and the same covariates from Study 1 (see Appendix G). After reading the same preview article from Study 1, with the same manipulation across groups, participants decided if they wanted to purchase access to the full article by redeeming one of the two vouchers or use both vouchers to purchase fun incentives.

#### 4.6.2. Results

The descriptive results, as illustrated in **Figure 26, panel a**, show that 15.3% of participants in the interrupted condition bought the full article, compared with 31.1% in the concluded preview condition ( $\chi^2(1) = 4.24, p < .05$ ). In a logistic regression, preview type, mean-centered NFCC, the preview type  $\times$  NFCC interaction, and the same covariates served as the independent variables; it revealed a negative effect of the interrupted (vs. concluded) preview on purchase decisions ( $B = -1.99, SE = .80, z(120) = 2.48, p < .05$ ). The significant interaction also indicated that this effect depended on the level of NFCC ( $B = -1.15, SE = .50, z(120) = 2.30, p < .05$ ). According to a spotlight analysis, a negative effect arose for respondents with high NFCC (+1 SD) ( $B = -3.73, SE = 1.43, z(120) = 2.62, p < .01$ ), but we found no effect for those with low NFCC (-1 SD) ( $B = -.25, SE = .63, z(120) = .40, n.s.$ ), as illustrated in **Figure 26, panel b**.



Notes: The values in panel b are the estimated probabilities of purchasing the article, based on the logistic regression estimates.

**Figure 26:** Paper 3 - Study 2: Effect of preview type on purchases

#### 4.6.3. Discussion

The results of Study 2 thus confirm that, compared with a concluded preview, an interrupted preview leads to fewer purchases of the paid content, in initial support of hypothesis 2. Moreover, NFCC acts as a moderator of the influence of the preview type on purchases, such that the negative effect of interrupted previews on actual purchases is enhanced when NFCC increases, in support of hypothesis 3b.

#### 4.7. Study 3

With Study 3, we seek to integrate the previous findings into an overall model of the detrimental effect of preview interruption on purchase that can depict the underlying process. It includes perceived betrayal, so that we can test for the postulated mediation.



#### 4.7.1. Research method

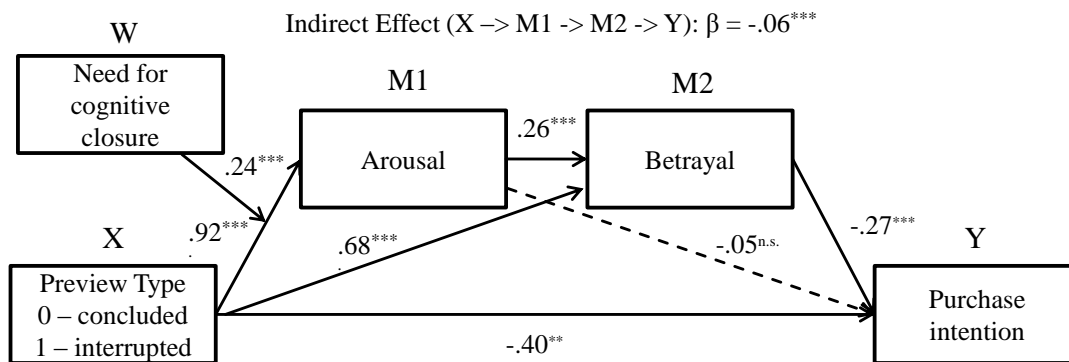
We used a between-subjects online experiment with one manipulated factor (preview type: concluded vs. interrupted). The 125 undergraduate students ( $M_{\text{age}} = 21.0$  years,  $SD = 3.22$ ; 56.8% female) who completed the Study for extra class credit. These participants read the same short, relevant, text-based preview of a newspaper article as appeared in studies 1 and 2, and they learned that they would have to pay €0.50 to read the full article. The experimental conditions only differed in the preview endings (concluded vs. interrupted). Before the manipulation, we captured NFCC (decisiveness dimension) (Webster and Kruglanski 1994;  $\alpha = .90$ ) and the same covariates as in Study 1 and 2 (**Appendix G**). After the manipulation, participants indicated their perceived level of arousal (Mehrabian and Russel 1974;  $\alpha = .88$ ), feeling of betrayal (Grégoire and Fisher 2008;  $\alpha = .78$ ), and purchase intentions (Chattopadhyay and Basu 1990;  $\alpha = .93$ ).

#### 4.7.2. Results

A regression analysis for arousal, with preview type, mean-centered NFCC, the preview type  $\times$  NFCC interaction, and the covariates as independent variables, provided further support for hypothesis 1. The interrupted preview again led to higher levels of arousal than the concluded preview ( $B = .92$ ,  $SE = .19$ ,  $t(120) = 4.71$ ,  $p < .01$ ;  $M_{\text{interrupted}} = 2.98$ ,  $SE = 1.34$ ;  $M_{\text{concluded}} = 2.05$ ,  $SE = .93$ ;  $t(123) = 4.52$ ,  $p < .01$ ), even as the covariate interest in the article topic exerted a significant influence ( $B = .20$ ,  $SE = .08$ ,  $t(120) = 2.48$ ,  $p < .05$ ). The significant preview type  $\times$  NFCC interaction revealed an enhancing effect too ( $B = .24$ ,  $SE = .12$ ,  $t(120) = 2.05$ ,  $p < .05$ ), such that an interrupted preview led to a stronger effect of arousal among high NFCC respondents (+1 SD;  $B = 1.34$ ,  $SE = .28$ ,  $t(120) = 4.72$ ,  $p < .01$ ) and had a weaker effect for respondents low in NFCC (-1 SD;  $B = .49$ ,  $SE = .28$ ,  $t(120) = 1.74$ ,  $p < .10$ ).

Another regression, for purchase intentions, showed a significant influence of preview type ( $B = -.69$ ,  $SE = .20$ ,  $t(121) = 3.52$ ,  $p < .01$ ). The significant preview type  $\times$  NFCC interaction ( $B = -.35$ ,  $SE = .12$ ,  $t(121) = 2.96$ ,  $p < .01$ ) affirmed that the negative effect of an interruption on purchase intentions only occurred for respondents with high NFCC (+1 SD;  $B = -1.31$ ,  $SE = .29$ ,  $t(121) = 4.56$ ,  $p < .01$ ), not those low in NFCC (-1 SD;  $B = -.08$ ,  $SE = .29$ ,  $t(121) = .27$ , *n.s.*).

To assess the mediating effects, we used the PROCESS SPSS macro (Hayes 2013) with 10,000 bootstrap samples. The model included both arousal and betrayal as serial mediators, with preview type and covariates as independent variables; it demonstrated the negative indirect effect of preview type through arousal and betrayal on purchase intentions. The 99% confidence interval (CI) around the estimate excluded 0 ( $B = -.06$ ,  $SE = .03$ , CI:  $-.190$  to  $-.010$ ), in support of hypothesis 2. We also uncovered effects of arousal on betrayal ( $B = .26$ ,  $SE = .09$ ,  $t(122) = 2.77$ ,  $p < .01$ ) and of betrayal on purchase intentions ( $B = -.27$ ,  $SE = .08$ ,  $t(122) = 3.26$ ,  $p < .01$ ), along with direct effects of preview type on betrayal ( $B = .68$ ,  $SE = .23$ ,  $t(122) = 2.97$ ,  $p < .01$ ) and of preview type on purchase intentions ( $B = -.40$ ,  $SE = .22$ ,  $t(122) = 1.83$ ,  $p < .05$ ), as displayed in **Figure 27**.



Notes: The covariates are interest in the article topic, frequency of reading online articles, technological anxiety, gender and age. We used a merging models option to combine the standard PROCESS models by Hayes (2013) and thereby integrated the moderating effect of NFCC in the serial mediation model.  
 $*** p < .01$ ,  $** p < .05$ ; the dashed line indicates a non-significant path.

**Figure 27:** Paper 3 - Study 3: Indirect effect of preview type on purchase intention

#### 4.7.3. Discussion

Testing a model that integrates the findings of studies 1 and 2, the results of Study 3 again show that an interrupted preview increases arousal (hypothesis 1), which leads to greater feelings of betrayal and, subsequently, lower purchase intentions (hypothesis 2). In line with hypothesis 3, our moderation analyses reveal that this effect is stronger for participants high in NFCC, whereas there are no significant differences for those low in NFCC.

Overall then, our results are consistent across three studies, using three different methods. However, all three of these studies focus on paid content, which reflected our deliberate attempt to test whether an interrupted preview would lead to negative reactions if a closure hindrance prevented consumers from satisfying their NFCC. To ensure that the findings are due to the existence of the closure hindrance, we thus need to test for these effects in a setting without any closure hindrance (i.e., free content).

Moreover, the article preview about the job market in Studies 1–3 addressed a relevant and functional topic (O’Curry and Strahilevitz 2001). Consumer preferences and choices depend on the nature of the product benefit though, such that hedonic goods, which address consumers’ desire for fun and provide an affective experience (Hirschman and Holbrook 1982), may elicit stronger preferences than utilitarian products (Dhar and Wertenbroch 2000). To enhance the generalizability of our findings and rule out alternative explanations, we consider previews for free content (in addition to paid content) and hedonic (instead of utilitarian) content in Study 4. We accordingly provide additional evidence for our theoretical explanation, according to which an interrupted preview leads to negative emotions because the required payment prevents consumers from alleviating their increased arousal and satisfying their NFCC.

## 4.8. Study 4

### 4.8.1. Research method

Study 4 is a 2 (preview type: concluded vs. interrupted)  $\times$  2 (closure hindrance: yes vs. no) between-subjects online experiment. A total of 132 undergraduate students ( $M_{\text{age}} = 20.65$  years,  $SD = 2.83$ , 55.3% female) completed the Study for extra class credit. The manipulation was similar to those in studies 1–3, except that the excerpt previewed an article about a hedonic topic: a spring break celebration with a focus on students having fun (see **Appendix H, (III) and (IV)**). A pretest with 49 undergraduate students ( $M_{\text{age}} = 25.0$  years,  $SD = 5.02$ ; 72.5% female) confirmed that the preview of the job market article was perceived as more functional ( $M_{\text{job market}} = 4.31$ ,  $SE = 1.08$ ;  $M_{\text{spring break}} = 3.00$ ,  $SE = 1.40$ ,  $t(49) = 3.80$ ,  $p < .01$ ), whereas the spring break article preview appeared more entertaining ( $M_{\text{job market}} = 3.14$ ,  $SE = 1.49$ ;  $M_{\text{spring break}} = 3.94$ ,  $SE = 1.47$ ,  $t(49) = 1.91$ ,  $p < .05$ ) on 7-point Likert scales (**Appendix G**).

The main questionnaire captured respondents' NFCC (decisiveness dimension) (Webster and Kruglanski 1994;  $\alpha = .91$ ) and the same covariates. After viewing the stimulus material, participants indicated their arousal (Mehrabian and Russel 1974;  $\alpha = .94$ ), purchase intentions/intentions to read the entire article (for free content) (Chattopadhyay and Basu 1990;  $\alpha = .93$ ), and feelings of betrayal (Grégoire and Fisher 2008;  $\alpha = .79$ ).

#### 4.8.2. Results

*Preview articles for paid hedonic content.* To compare the results with our previous studies, we first analyzed the two paid content conditions, in which a closure hindrance existed. The regression on arousal revealed an effect of preview type ( $B = .84$ ,  $SE = .27$ ,  $t(56) = 3.12$ ,  $p < .01$ ) and a significant preview type  $\times$  NFCC interaction ( $B = .29$ ,  $SD = .19$ ,  $t(56) = 1.54$ ,  $p < .10$ ), such that the effect of preview type on arousal was only evident for respondents high in NFCC (+1 SD;  $B = 1.26$ ,  $SE = .38$ ,  $t(56) = 3.35$ ,  $p < .01$ ), not those low in NFCC (-1 SD;  $B = .42$ ,  $SE = .39$ ,  $t(56) = 1.07$ , *n.s.*). The regression on purchase intention in turn showed a marginally significant negative effect of preview type ( $B = -.26$ ,  $SE = .17$ ,  $t(56) = 1.55$ ,  $p < .10$ ) and a significant preview type  $\times$  NFCC interaction ( $B = -.20$ ,  $SE = .12$ ,  $t(56) = 1.71$ ,  $p < .05$ ). The diminishing effect of the interrupted preview on purchase intentions only occurred among respondents with high NFCC (+1 SD;  $B = -.56$ ,  $SE = .24$ ,  $t(56) = 2.36$ ,  $p < .05$ ), not those low in NFCC (-1 SD;  $B = .03$ ,  $SE = .24$ ,  $t(56) = .13$ , *n.s.*).

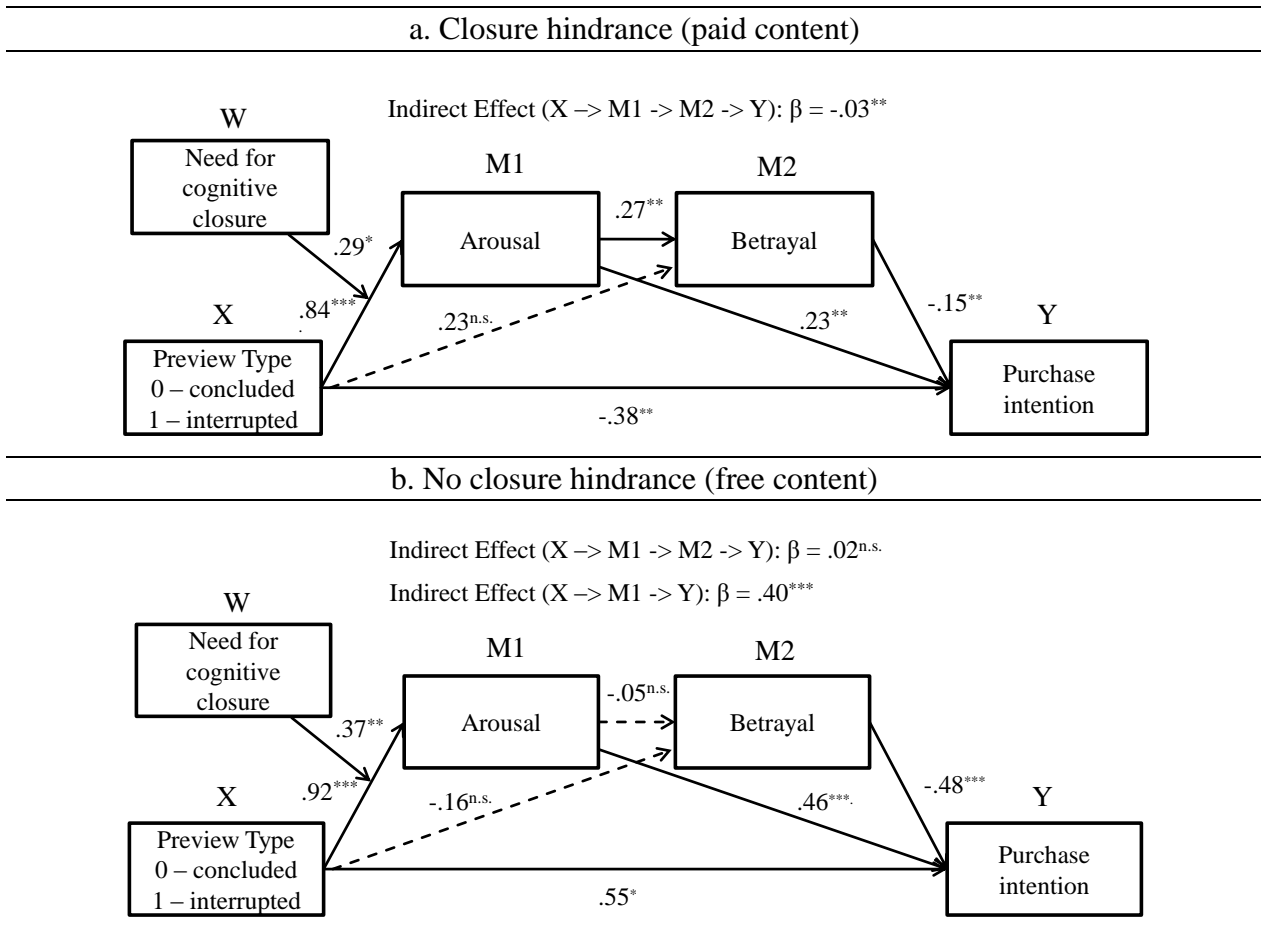
Finally, we analyzed the overall process model to test for indirect effects, using PROCESS with 10,000 bootstrap samples. Serial mediation of the preview type effect through arousal and betrayal was evident ( $B = -.03$ ,  $SE = .02$ , 95% CI:  $-.114$  to  $-.003$ ). As illustrated in **Figure 28**,

**panel a**, the direct effect of preview type on purchase intentions remained significant ( $B = -.38$ ,  $SE = .16$ ,  $t(56) = 2.41$ ,  $p < .01$ ). These results confirm the findings from studies 1–3.

*Preview articles for free content.* Free content creates no closure hindrance, so we conducted a separate regression on arousal, with preview type, mean-centered NFCC, and the preview type  $\times$  NFCC interaction as independent variables. In this case, an interrupted preview again led to greater arousal than a concluded one ( $B = .92$ ,  $SE = .31$ ,  $t(68) = 2.96$ ,  $p < .01$ ;  $M_{\text{interrupted}} = 2.69$ ,  $SE = 1.52$ ;  $M_{\text{concluded}} = 1.81$ ,  $SE = 1.23$ ;  $t(70) = 2.71$ ,  $p < .01$ ). The significant preview type  $\times$  NFCC interaction ( $B = .37$ ,  $SE = .21$ ,  $t(68) = 1.75$ ,  $p < .05$ ) further revealed that this effect occurred only with high NFCC (+1 SD;  $B = 1.46$ ,  $SE = .44$ ,  $t(68) = 3.33$ ,  $p < .01$ ), not with low NFCC (–1 SD;  $B = .37$ ,  $SE = .44$ ,  $t(68) = .85$ , *n.s.*). These findings are consistent with the results for paid content.

However, the free conditions revealed a distinct, positive effect of preview type on intentions to read the entire article ( $B = 1.21$ ,  $SE = .38$ ,  $t(68) = 3.19$ ,  $p < .01$ ) and a significant, positive preview type  $\times$  NFCC interaction ( $B = .46$ ,  $SE = .26$ ,  $t(68) = 1.77$ ,  $p < .05$ ). That is, unlike the paid content setting, an interrupted preview increased intentions to read the whole article among respondents high in NFCC (+1 SD;  $B = 1.88$ ,  $SE = .54$ ,  $t(68) = 3.50$ ,  $p < .01$ ), with no effect for low NFCC respondents (–1 SD;  $B = .52$ ,  $SE = .54$ ,  $t(68) = .99$ , *n.s.*). As **Figure 28, panel b**, reveals, the mediation model indicates an indirect effect of preview type, through arousal, on purchase intentions ( $B = .40$ ,  $SE = .16$ , 99% CI: .061 to .948), but no indirect effect through arousal and betrayal ( $B = .02$ ,  $SE = .06$ , 90% CI: –.033 to .171). We also uncover a direct positive effect of preview type on purchase intention ( $B = .55$ ,  $SE = .34$ ,  $t(65) = 1.59$ ,  $p < .10$ ), as well as effects of the covariates interest in the article topic ( $B = .27$ ,  $SE = .11$ ,  $t(65) = 2.40$ ,  $p < .05$ ), frequency

of reading online articles ( $B = .26, SE = .10, t(65) = 2.54, p < .05$ ), and age ( $B = -.17, SE = .08, t(65) = 2.13, p < .05$ ).



Notes: The covariates are interest in the article topic, frequency of reading online articles, technological anxiety, gender and age. We use the merging models option to combine the standard PROCESS models (Hayes 2013) and integrate the moderating effect of NFCC in the serial mediation model.  
 \*\*\*  $p < .01$ , \*\*  $p < .05$ ; dashed lines indicate non-significant paths.

**Figure 28:** Paper 3 - Study 4: Conditional indirect effects of preview endings on purchase intention

*Comparison of paid and free content.* With a combined, conditional process analysis of all four experimental conditions, using closure hindrance as an additional moderator, we found a moderating effect on the relationship between arousal and betrayal ( $B = -.39, SE = .18, t(128) = 2.19, p < .05$ ). That is, arousal led to betrayal in the paid condition ( $B = .27, SE = .15, t(55) = 1.82, p < .05$ ), but not when the content was free ( $B = -.05, SE = .11, t(128) = .47, n.s.$ ). The direct ef-

fect of preview type on purchase intentions/intentions to read the whole article also was moderated by closure hindrance ( $B = 1.42$ ,  $SE = .46$ ,  $t(127) = 3.11$ ,  $p < .01$ ), so that the effect was negative for paid content ( $B = -.26$ ,  $SE = .17$ ,  $t(56) = 1.55$ ,  $p < .10$ ) but positive for free content ( $B = 1.21$ ,  $SE = .38$ ,  $t(68) = 3.19$ ,  $p < .01$ ).

#### 4.8.3. Discussion

By testing the model with hedonic content, the results of Study 4 provide further support for hypotheses 1–3. We find that the effect of an interrupted preview on the level of arousal is independent of the presence of a closure hindrance (paid vs. free content), but the effect on purchase intentions gets reversed for free content. In line with our predictions in hypothesis 2, this finding implies that a Zeigarnik effect (1938) occurs, regardless of the existence of an access barrier, but its consequences differ depending on whether the barrier exists. Consumers' greater arousal leads to negative emotions (i.e., perceived betrayal) when they are hindered from satisfying their NFCC, which lowers their purchase intentions. When the content is free and there is no such barrier, no negative emotions arise, and consumers react with even higher intentions to read the full article. Thus, Study 4 rules out alternative explanations for the negative effect, by isolating closure hindrance as a main driver. The results also show a direct effect of level of arousal on purchase intentions, beyond its effect on betrayal, which was not present in Study 3. Therefore, higher levels of arousal appear to increase purchase intentions for paid hedonic content. Perhaps the entertaining article topic elicited stronger preferences than the utilitarian one (Dhar and Wertenbroch 2000). However, the overall effect on purchase intentions remains negative and significant for hedonic paid content, thus replicating and confirming our previous results.



## 4.9. General discussion

For many content providers, previews offer the promise of capturing consumers' attention, yet we know little about the effects of interrupted previews or the theoretical mechanisms that might predict consumers' reactions to them. With this Study, we show that the Zeigarnik (1938) effect of interrupted activities, mainly investigated in the field of psychology, also has great relevance for consumer's purchase decisions. Using preview interruptions of online content as our Study context, we provide the first evidence of the negative consumer behavioral consequences of the Zeigarnik effect. Specifically, our findings show that consumers react with greater arousal to an interrupted preview than to a concluded one (confirming hypothesis 1). This increased arousal does not lead to more purchases though, despite the conventional wisdom shared by many practitioners. Instead, arousal leads to feelings of betrayal, which result in fewer purchases, as we predicted in hypothesis 2. Both the positive effect of an interruption on consumers' arousal and its negative consequence for purchase behavior get enhanced with greater NFCC (confirming hypothesis 3). Furthermore, we show that the negative effect of an interrupted preview is caused by the barrier of a required payment (hypothesis 2), because consumers' responses switch direction in the case of free content access.

The evidence from our four empirical studies, using a variety of methods and experimental designs, contributes to existing literature by demonstrating clearly that the strategic exploitation of the Zeigarnik effect may bring along some negative consequences. This new perspective helps move studies of the Zeigarnik effect beyond the positive potential responses of consumers, such as higher recall (Baddeley 2008; Green 1963), higher attention (Hammadi and Qureishi 2013), greater persuasion effects, or a higher willingness to pay (Kardes et al. 2007). Furthermore, for NFCC literature, we reveal a new element that is characteristic of consumers with high NFCC.

That is, previous research (for a review, see Webster and Kruglanski 2011) suggests that high NFCC implies more judgment confidence (Maysless and Kruglanski 1987), a greater likelihood to seek information (Trope and Bassok 1983), stronger primacy and anchoring effects (Kruglanski and Freund 1983), and stronger stereotypes (Jamieson and Zanna 1989). To the best of our knowledge though, this Study is the first to demonstrate consumers' varying levels of behavioral resistance to closure hindrance, according to their NFCC. We reveal that consumers high in NFCC react more strongly when they cannot finish an activity, which leads to both more negative feelings (e.g., betrayal) and also lower purchase intentions for paid content but increased intentions to consume the whole article if it is offered for free. In this sense, our research extends existing literature (Kupor et al. 2015; Kupor and Tormala 2015) by focusing on individual NFCC as a moderator of the negative effects of interruptions.

With these theoretical contributions, our Study sheds not only light on how consumers react to different teasing strategies for online content but also suggests some interesting managerial implications. When companies use previews to attract potential consumers, they should consider the design carefully. Our investigation shows that a strategic interruption is detrimental in the context of text-based previews for paid content. Companies that currently interrupt their previews in an effort to sell paid content might reconsider their design; they potentially are harming their own sales by evoking negative emotions. Instead, they might achieve better results by providing concluded previews. For companies that use text-based previews for free content though (e.g., google news, yahoo, yelp.com), interrupted previews are likely to be effective, in that they increase consumption of the entire text, which can increase website traffic and potentially advertising-based revenues.

Certain limitations also need to be considered when interpreting the results. First, our investigation is limited to text-based online content, such as online articles or e-books. These findings should not be extended to more visual- or audio-based media without careful consideration, due to the unique ways that interruptions are manifested in these contexts. Second, some content providers promise access to similar products (online news articles) for free, if consumers will accept the display of advertising on the same screen, which is a business model outside of the scope of our investigation. Third, the feeling of betrayal that we identify when consumers must pay to access an article might decrease if the required payment is well accepted or anticipated by consumers (e.g., previews for e-books).

For more general implications, continued research should expand our results to different industries (e.g., audio books, text-based advertising, click-baiting). Additional studies could focus on other variables that might emerge in these psychological processes (e.g., fairness perceptions, dissatisfaction) to provide deeper insights. Moreover, previous research indicates that other preview characteristics (e.g., usefulness or quantity of provided content) and personal traits influence consumers' buying decisions (e.g., Cheng and Tang 2010; Haruvy and Prasad 2001) and information processing (Choi et al. 2008). Further research thus might investigate different preview lengths or various types of interruptions (e.g., at different points in the last sentence).

## 5. Conclusion

### 5.1. General discussion and summary of the results

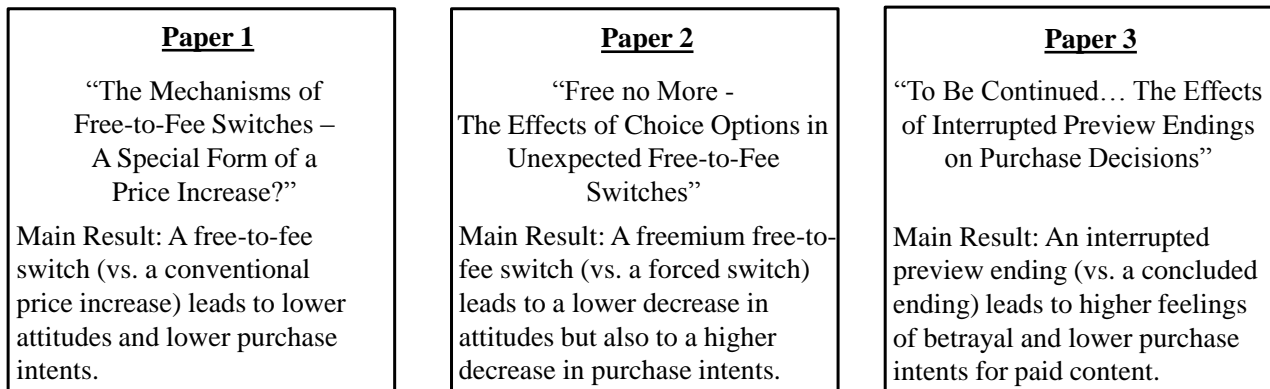
Through the papers outlined in the preceding chapters, this dissertation shed light on three important factors; namely, understanding customers' reactions to free-to-fee switches (Paper 1), minimizing the negative consequences of free-to-fee switches by choosing different switching options (Paper 2), as well as handling text-based preview characteristics after a free-to-fee switch (Paper 3).

The results of Paper 1 showed that key differences exist between free-to-fee switches and conventional price increases. Customers' reactions are characterized by a stronger feeling of betrayal, anger, and lower purchase intentions compared to a conventional price increase. However, these negative consequences can be mitigated by providing a reason for the switch in forms of a justification or by adding extra value while introducing the new price.

Paper 2 contributed to the understanding of reducing negative consequences of free-to-fee switches by considering the option of a freemium switch (which allows customers to continue use to a functional restricted product version for free) in addition to a forced switch (which denies the possibility of using parts of the product for free after the switch). The results showed that using freemium is a double-edged sword; on the one hand, the possibility of giving customers a choice leads to better attitudes but, on the other hand, it reduces purchase intents. Additionally, the findings showed that companies should use an average functionality for the free-version in a freemium switch to obtain the desired positive effects on attitudes. Moreover, companies should work with a justification for both switching types.

Importantly, when companies make a decision to switch to a freemium business model, different preview characteristics have to be considered. Paper 3 demonstrated that companies (e.g., online newspaper providers) should choose their text-based preview endings carefully after a free-to-fee switch. The results revealed that providing an interrupted preview ending for charged content causes emotional arousal that cannot be immediately resolved because of the required payment. This unresolved arousal leads to greater feelings of betrayal and results in lower purchases compared to a concluded preview ending. Conversely, the intention to read the entire article is greater after an interruption – but only when the article is for free.

To summarize, the first paper provides evidence for the negative effects of free-to-fee switches, which can be minimized by justifying the switch. Paper 2 extends this knowledge by considering the possibility of a freemium switch. However, the improvement in attitudes caused by providing an additional free version is accompanied by a decrease in purchase intents. Paper 3 focuses on preview characteristics in freemium business models and illustrates that an interrupted preview ending (vs. a concluded one) is inferior for commercial text-based content. **Figure 29** provides an overview of the main results of the dissertation.



**Figure 29:** Overview of the main results

## 5.2. Managerial implications

The different examples of online newspaper websites (e.g., New York Times), banks (e.g., Bank of America), software developers (e.g., WhatsApp Inc.), educational programs (e.g., museums), as well as supermarkets (e.g., introduction of fees for plastic bags in the UK) show that the switch from free to fee is becoming increasingly more common. However, companies' efforts to introduce prices for products or services that were previously free of charge are quite unsystematic; meanwhile, customers' acceptance of free-to-fee switches remains low (Reid 2002a, 2002b). Even free-to-fee switches of larger companies, such as the New York Times or Bank of America, are characterized by trial and error approaches (Ingram 2015; Mui 2011): an indication of how wide-ranging these haphazard methods are.

This dissertation thus reveals the importance of practical implications for companies planning a free-to-fee switch or having experienced a switch in the past. First, companies should be very careful with unexpected price introductions as they can lead to feelings of betrayal, lower attitudes toward the company, and can cause long-term damage to existing customer relationships. Price introductions should, subsequently, not be treated like normal price increases. Instead, companies should put more planning efforts in an appropriate switching strategy before introducing a new price. Second, a suitable way to minimize these negative consequences is to supply customers with a reason for the switch by using a strong and compelling justification. Another way to justify the switch is to add extra value to the product (e.g., new features, better quality, etc.) when introducing the new price. Third, companies have two main switching options: either a forced switch (without the additional offer of a free version) or a freemium switch, which additionally provides a free reduced version. A forced switch is recommended when companies are primarily interested in short-term sales as freemium causes cannibalization effects of the fee-

based product version. However, from a customer-relationship point of view, a freemium switch is recommended as it reduces detrimental attitudes toward the company. In addition, when companies choose a freemium business model they should consider the feature reduction of the free version carefully. As low and high feature reduction of the free version causes negative effects on purchase intentions of the commercial product, a medium level of feature reduction for the free version is therefore recommended. Fourth, preview characteristics are an important aspect for making freemium work. This can be shown in the context of text-based previews for online newspaper articles. An interrupted preview ending is only recommended for free content; otherwise, companies should choose a concluded ending to increase purchase intents.

Since companies in different areas are affected by free-to-fee switches and freemium business models, these research findings are of practical interest for a wide range of companies (e.g., software and app developers, banks, newspaper providers, etc.). In particular, companies confronted with free-to-fee switches in highly competitive markets (e.g., companies selling software or online content) can particularly benefit from the findings of this dissertation.

### 5.3. Theoretical implications and contribution to existing literature

From a theoretical point of view, this investigation addresses important gaps in the literature and opens new research avenues. First, it contributes to pricing literature; this is an area of study where only a few articles about free-to-fee switches exist (see Chapter 1.6, literature review). While most of the academic literature is focused on price increases and customers' fairness perception (e.g., Bolton et al. 2003, Xia et al. 2004), only a few publications have investigated the phenomenon of switching a business model from free to fee by introducing a price for a product or service that was previously free (Pauwels and Weiss 2008; Tuzovic et al. 2014). This disserta-

tion is, therefore, the first empirical work that shows that the theoretical mechanisms of free-to-fee switches are different compared to conventional price increases. Price introductions subsequently demand a different theoretical framework. By revealing the psychological mechanisms in the first paper, the author makes a fundamental contribution to explain these differences. Additionally, the author also shows boundary conditions by adding different moderators (justification and extra value). Consequently, this investigation also makes a contribution to literature about price effects of free products (zero price effect) (e.g., Baumbach 2016; Hossain and Saini 2015) by showing that different expectations of free products can lead to negative customers' reactions after a price introduction.

This study also supplements current research about justifications within the pricing literature (Schein 2002; Martin et al. 2009), by showing a stronger positive moderating influence of justifications on negative consequences after a price introduction compared to a price increase.

The second paper sheds light on choice situations in free-to-fee switches and has theoretical implications for freemium research. Providing a free product version leads to positive emotions but also causes negative cannibalization effects on the commercial product. The predominance of the positive effect (caused by emotions) or the negative effect (due to cannibalization) depends on the level of feature reduction of the free-version. While the investigation of Cheng and Tang (2010) illustrates the negative effect of low feature reduction of the free version on the commercial product, this dissertation is the first to show that a strong feature reduction can also lead to negative consequences.

Finally, the third paper contributes to research about the Zeigarnik-effect of interrupted activities (Zeigarnik 1938). This examination shows that interrupted preview articles follow the same



mechanisms as other interrupted activities (Worchel and Arnold 1974), leading to a higher level of arousal. In this regard, the author expanded upon prior research findings by indicating that arousal only leads to negative effects when consumers are not able to resolve it (for instance, because of a required payment). However, in the case of free content – without a payment – this arousal can result in positive outcomes. Moreover, the author also adds to the body of literature about individual need for cognitive closure (Webster and Kruglanski 1994) by including it as a boundary condition.

#### 5.4. Limitations and future research

Certain limitations should be considered for this research. The investigations of Paper 1 and Paper 2 were conducted within the context of mobile apps. To generalize and validate the findings, a replication of the study in other areas and with different types of products or services is recommended (e.g., introducing a new fee for withdrawing money at an ATM, etc.). It could also be useful to replicate some of the investigations in other cultures (e.g., China or Latin America) because other cultures are more or less familiar with free-to-fee switches and have different price perceptions (Meng 2011).

Aside from these limitations, the research findings generate a broad array of future research possibilities. Further investigations can focus on providing different kinds of extra values (e.g., product related, an additional service, etc.) and a variety of justifications (e.g., profit-orientated vs. cost-orientated). Additionally, future research should consider different characteristics of freemium business models. While the author provides possible theoretical explanations with mediation models, alternative explanations and different mediators (e.g., justice, price-quality relationship, etc.) should be tested. Another way to extend the provided model could be the in-

investigation of additional moderators (e.g., customers' expectation of a free-to-fee switch, credibility of the company, etc.).

Furthermore, Paper 3 could be extended to include previews for visual (e.g., movies) and audio content (e.g., audio books) in addition to text-based previews to generalize the findings and strengthen the theoretical explanation.

While this dissertation covers free-to-fee switches in a business-to-consumer context (B2C) the investigation of free-to-fee switches in business-to-business areas (B2B), including after-sales services, could be of interest for companies as well (Reinartz and Ulaga 2008). Likewise, research about switching back from fee-to-free (such as in the case of New York Times) could also be an interesting area for future research.

## 5.5. Outlook

Companies selling digital content have to survive in an increasing competitive environment (e.g., the media and entertainment industry). Their business strategy sometimes requires a free product at the beginning and a price introduction after a certain user base is established. In other cases, companies are forced to introduce a price after a period of time because of external restrictions (see Chapter 1.3). While the motivations behind free-to-fee switches are diverse, more and more companies have to deal with the obstacles of introducing a price for a product or service that had initially been provided for free. Indeed, some of these companies have also experienced negative consequences after an unsystematic price introduction (e.g., Bank of America). Considering its practical relevance, it becomes increasingly vital for practitioners and researchers alike to further investigate the phenomenon of free-to-fee switches. This dissertation provides fundamental insights into handling the switch while reducing negative consequences. In doing so, however, it

also opens a wide range of future research avenues that need to be explored to understand and implement unexpected price introductions.

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### III. Appendix

#### Appendix A

##### Informant demographic characteristics (Study 1 – in depth-interviews)

<b>Name</b>	<b>Gender</b>	<b>Age</b>	<b>Occupation</b>	<b>Relationship status</b>	<b>Annual income (€)</b>
Katharina	Female	27	Employed	Single	< 20.000
Tilda	Female	23	Student	Single	< 20.000
Jasmin	Female	23	Employed	Single	< 20.000
Andreas	Male	35	Employed	Married	20.000 – 50.000
Laura	Female	30	Employed	Single	20.000 – 50.000
Paul	Male	20	Employed	Single	< 20.000
Lisa	Female	22	Employed	Single	20.000 – 50.000
Tom	Male	25	Employed	Single	< 20.000
Paulo	Male	24	Employed	Single	< 20.000
Agnes	Female	22	Student	Single	< 20.000
Nadine	Female	21	Student	Single	< 20.000
Eva	Female	66	Retiree	Widowed	50.000 – 80.000
Martin	Male	23	Student	Single	< 20.000
Lars	Male	24	Employed	Single	< 20.000
Dirk	Male	26	Employed	Married	< 20.000
Anette	Female	25	Employed	Single	20.000 – 50.000
Werner	Male	66	Retiree	Married	50.000 – 80.000
Amelie	Female	63	Employed	Married	50.000 – 80.000

## Appendix B

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### Stimuli used in studies 2 for extra value

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#### I: No extra value of the product

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#### II: Extra value of the product

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## Appendix C

### Items and reliability measures (Study 1 time 1 / Study 1 time 2/ Study 2/ Study 3/ Study 4)

	Cronbach's alpha	Composite reliability (AVE)	Factor loadings	Indicator reliability
<b>Fairness perceptions<sup>a</sup></b> (Kukar-Kinney et al. 2007)	.79/.77/.91/.79/.96/.95	.56/.53/.72/.55/.86/.85		
The way in which the company introduced the fee was <sup>d</sup> :				
1. a fair way			.82/.74/.89/.79/.97/.90	.45/.54/.79/.63/.94/.81
2. a satisfactory way			.62/.60/.84/.66/.95/.97	.60/.35/.71/.43/.91/.94
3. an acceptable way			.86/.83/.89/.77/.90/.90	.70/.68/.81/.60/.81/.81
<b>Attitude toward the company<sup>b</sup></b> (Goldsmith et al. 2001)	.82/.78/.95/.89/.98/.97	.61/.55/.87/.74/.94/.93		
My overall impression of the company is:				
1. bad – good			.88/.89/.95/.88/.97/.95	.77/.79/.89/.78/.93/.89
2. unfavorable – favorable			.54/.55/.90/.82/.96/.97	.30/.31/.80/.68/.93/.94
3. negative – positive			.87/.75/.95/.87/.98/.97	.75/.56/.91/.75/.95/.95
<b>Purchase/Usage intention<sup>b</sup></b> (Chattopadhyay and Basu 1990)	.96/.94/.95/.92/.93/.94	.88/.85/.87/.80/.81/.83		
1. unlikely - likely			.99/.97/.94/.95/.91/.91	.99/.95/.89/.90/.84/.83
2. improbable - probable			.95/.96/.98/.96/.93/.99	.89/.91/.95/.92/.87/.99
3. impossible - possible			.87/.83/.87/.75/.85/.82	.75/.69/.76/.57/.72/.68
<b>App use<sup>a,c</sup></b> (Mathwick and Rigdon 2004)	.92/ - /.92/.91/.90/.90	.80/ - /.75/.72/.70/.69		
1 I spend several hours a week with my apps.			.90/ - /.78/.77/.72/.77	.82/ - /.60/.59/.52/.59
2 Compared with most people, I think I spend a lot of time with my apps.			.99/ - /.90/.85/.89/.86	.99/ - /.81/.72/.79/.74
3 I consider myself to be a “heavy user” of apps.			.77/ - /.88/.94/.94/.88	.59/ - /.78/.88/.89/.78
<b>Technological anxiety<sup>a</sup></b> (Barbeite and Weiss 2004)	.93/ - /.95/.92/.96/.95	.78/ - /.83/.75/.86/.81		
1 Working with a mobile service would make me very nervous.			.91/ - /.91/.77/.98/.93	.83/ - /.83/.60/.96/.87
2. I get a sinking feeling when I think of trying to use mobile services.			.89/ - /.93/.88/.82/.90	.80/ - /.87/.78/.68/.81
3. Using mobile services makes me feel uncomfortable.			.88/ - /.94/.95/.94/.82	.78/ - /.89/.90/.88/.68
4. Using mobile services makes me feel uneasy and confused.			.83/ - /.86/.84/.95/.95	.69/ - /.75/.71/.91/.90
<b>Utilitarian product<sup>b</sup></b> (Single Item; I believe the product is necessary (O'Curry and Strahilevitz 2001) (Only used in Study 2).				
<b>Hedonic product<sup>b</sup></b> (Single Item; I believe the product is entertaining (O'Curry and Strahilevitz 2001) (Only used in Study 2)				
<b>Perceived usefulness<sup>b</sup></b> (Single Item; I believe the product is useful (Cox and Cox 2002) (Only used in Study 2)				
CFA model fit Study 1a: (t1): $\chi^2$ (125) = 265.85; $\chi^2/df$ = 2.13; RMSEA = .132; SRMR = .088; CFI = .86; NNFI = .83				
CFA model fit Study 1a: (t2): $\chi^2$ (32) = 64.42; $\chi^2/df$ = 2.01; RMSEA = .125; SRMR = .083; CFI = .91; NNFI = .87				
CFA model fit Study 2: $\chi^2$ (123) = 184.76; $\chi^2/df$ = 1.50; RMSEA = .052; SRMR = .039; CFI = .98; NNFI = .97				
CFA model fit Study 3: $\chi^2$ (123) = 266.79; $\chi^2/df$ = 2.17; RMSEA = .054; SRMR = .034; CFI = .97; NNFI = .96				
CFA model fit Study 4: $\chi^2$ (123) = 162.15; $\chi^2/df$ = 1.32; RMSEA = .042; SRMR = .036; CFI = .99; NNFI = .98				

Note: <sup>a</sup> measured on seven-point scales (1 = totally disagree, 5 = totally agree); <sup>b</sup> measured on a seven-point semantic differential (-3, +3); Items with factor loading under .70 where excluded, except for latent constructs with 3 or less items (Bagozzi and Yi 1988).  
<sup>c</sup> adapted from their original scale: internet usage <sup>d</sup> a different wording was used for Study 1 (“The way the company offered the product was: 1. a fair way, 2. an unfair way, 3. a satisfactory way, 4. an acceptable way”) to be able to compare point in time 1 (where no fee was introduced yet) to point in time 2 (introduction of the fee).

## Appendix D

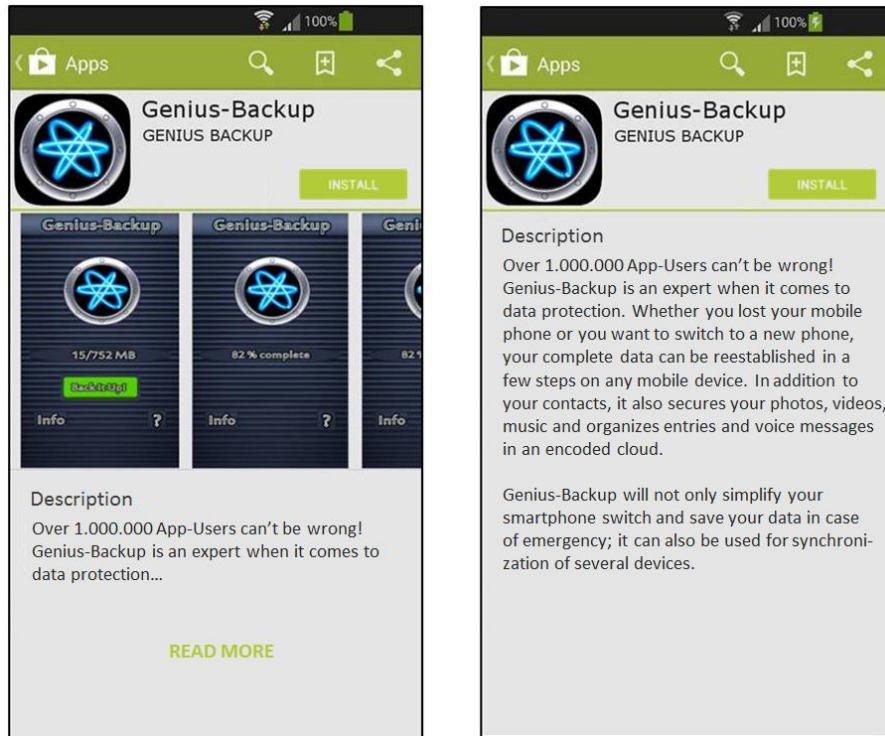
### Construct correlations (Study 1 time 1 / Study 1 time 2/ Study 2/ Study 3/ Study 4)

	1.	2.	3.	4.
1. Fairness Perceptions				
2. Attitude toward the company	.04/.39/.75/.52/.79			
3. Purchase/usage intention	-.05/.04/.43/.05/-.08	.77/.20/.60/.13/-.10		
4. App use	-.05/ - /-.18/-.01/.13	.18/ - /-.31/.02/.01	.18/ - /-.29/.16/.11	
5. Technological anxiety	-.13/ - /-.01/-.01/.08	-.26/ - /-.14/-.06/.15	-.18/ - /-.22/.09/.02	-.56/ - /-.50/-.18/-.31

## Appendix E

### Stimuli used in studies 1-4

#### I: Study 1: Description of the app before the free-to-free switch ( $t_1$ )



#### II: Study 1: Simulated usage ( $t_1$ )

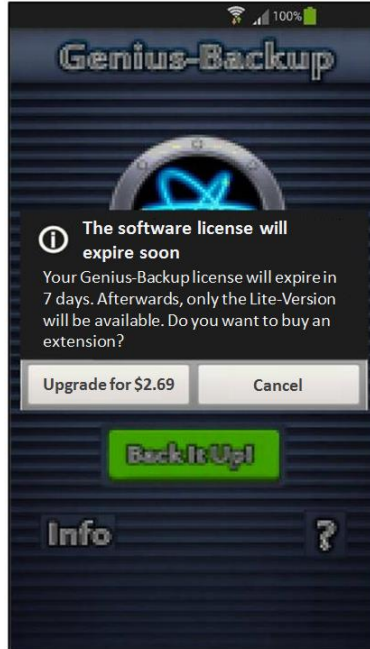


### III: Study 1: Announcement of the free-to-free switch ( $t_2$ ) and reduced version

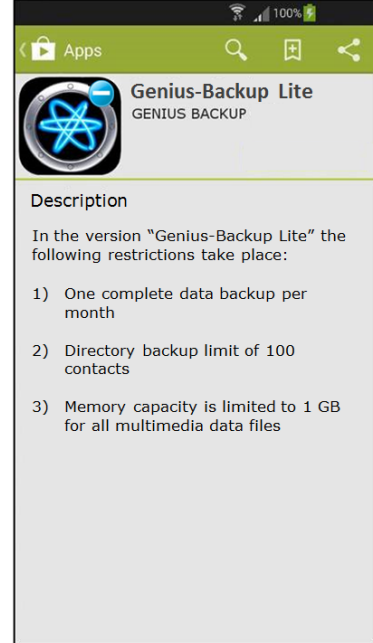
Forced switch announcement



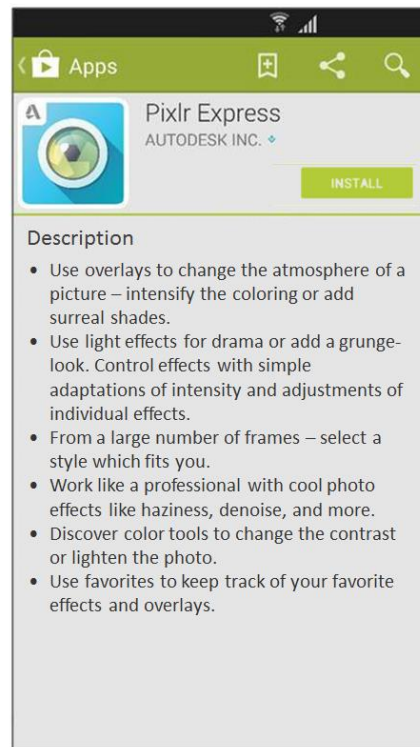
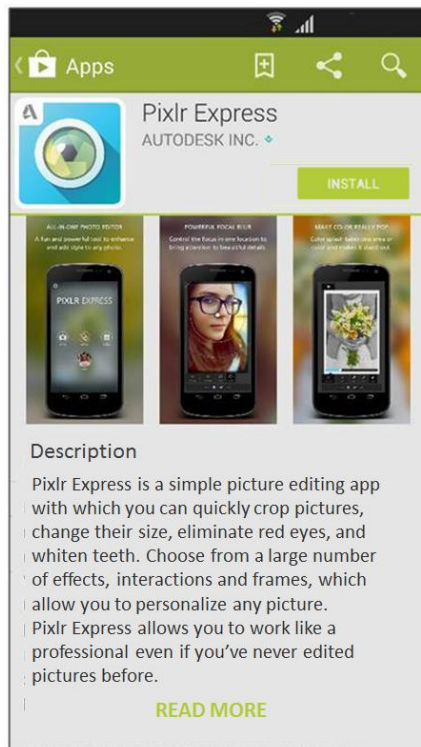
Freemium switch announcement



Free reduced version in the freemium switch condition



### IV: Studies 2 and 3: Description of the app before the free-to-free switch



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V: Studies 2 and 3: Simulated usage

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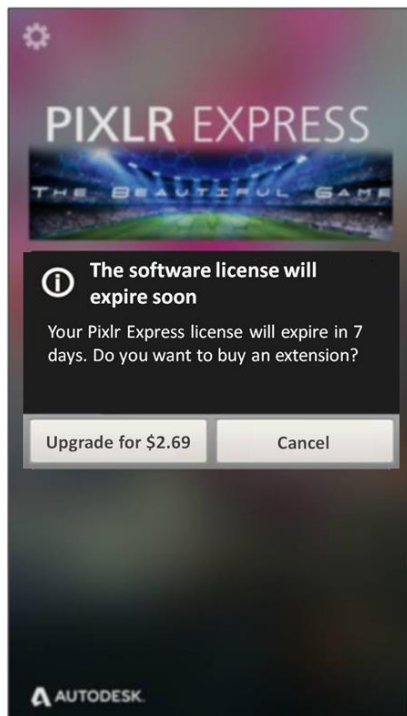


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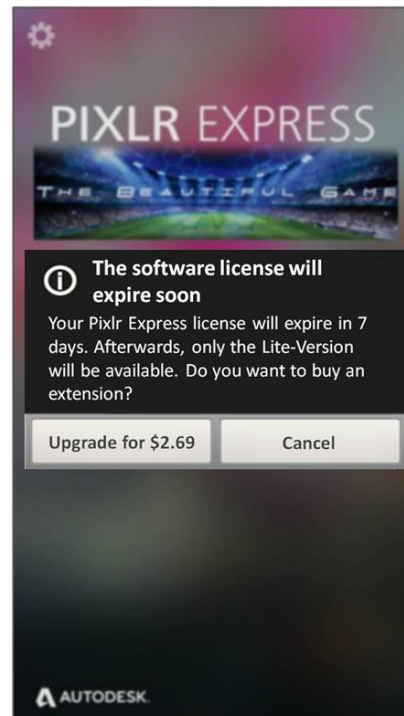
VI: Studies 2 and 3: Announcement of the free-to-fee switch

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Forced switch announcement



Freemium switch announcement

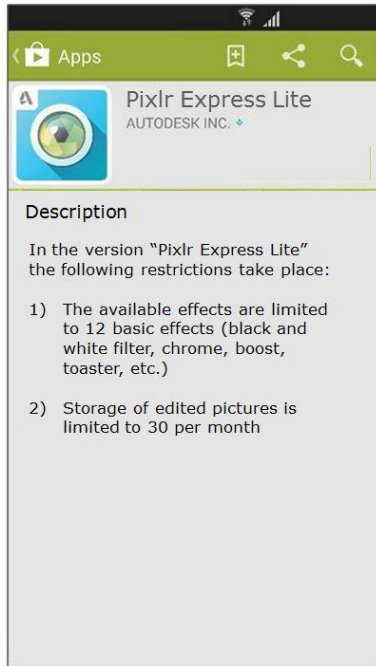


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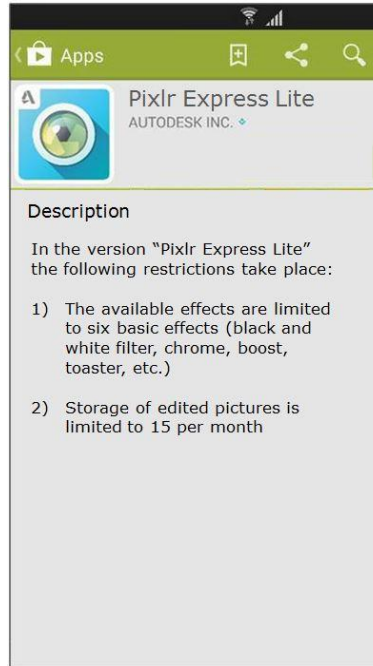
## VII: Study 3: Description of the free version in the freemium switch condition

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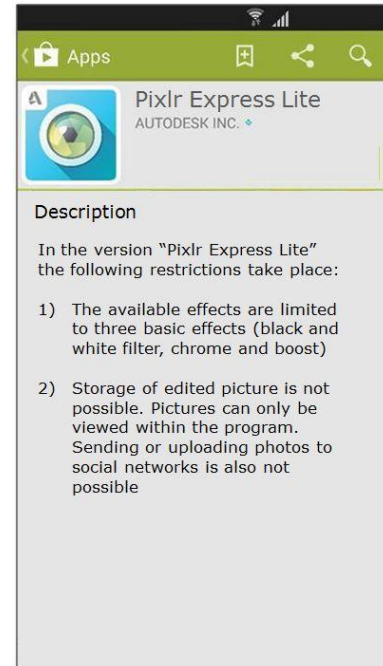
### Low feature reduction (also Study 2)



### Medium feature reduction



### High feature reduction



## Appendix F

### Examples of concluded and interrupted previews

#### The Wall Street Journal

##### Concluded

**Toshiba Warns It May Be Unable to Stay in Business**

The company expressed doubt for the first time over whether it can continue as a going concern, citing huge losses at its U.S. nuclear subsidiary which filed for bankruptcy last month.



(Source: [www.wsj.com](http://www.wsj.com); April 11, 2017)

##### Interrupted

**Toshiba Warns It May Be Unable to Stay in Business**

Japanese conglomerate reported a net loss of \$4.8 billion for nine-month period ended December

*By Takashi Mochizuki and Peter Lenders*  
Updated April 11, 2017 5:39 a.m. ET

**TOKYO**—Toshiba Corp. on Tuesday expressed doubt for the first time over whether it can continue as a going concern after huge losses at its U.S. nuclear subsidiary, which filed for bankruptcy last month.

The company issued the warning alongside its earnings for the December quarter. It released the warning after two delays, but it had to do so...

To Read the Full Story, [Subscribe](#) or [Sign In](#)

(Source: <https://www.wsj.com/articles/after-delays-toshiba-files-earnings-without-auditors-approval-1491901443>; April 11, 2017)

#### Chicago Tribune

##### Concluded

**United Airlines' brand takes a beating after bumped passenger dragged off plane**

By Ally Marotti and Lauren Zumbach  
Chicago Tribune  
APRIL 11, 2017, 6:57 AM

A 30-second video of a United Airlines passenger being dragged from his seat and bloodied on an overbooked Sunday flight at O'Hare International Airport racked up more than 6 million views Monday and sparked plenty of outrage.

For United, the video threatened to unravel more than a year of work by CEO Oscar Munoz to rebuild the airline's battered customer service reputation — and prompted questions about why United didn't try harder to fix the situation rather than apologizing afterward for having to "reaccommodate" passengers.

[Read Full Article](#) →

(Source: [www.chicagotribune.com](http://www.chicagotribune.com); April 11, 2017)

##### Interrupted

**BUSINESS** 6:57 AM

**United Airlines' brand takes a beating after bumped passenger dragged off plane**

A 30-second video of a United Airlines passenger being dragged from his seat and bloodied on an overbooked Sunday flight at O'Hare International Airport racked up more than 6 million views Monday and sparked plenty of outrage. For United, the video threatened to unravel more than a year of work...



(Source: [www.chicagotribune.com/news/local/breaking/](http://www.chicagotribune.com/news/local/breaking/); April 11, 2017)

#### Financial Times

##### Concluded

**Airlines**

**United chief defends staff after man dragged off flight**

Oscar Munoz's apology criticised as airline suffers second PR disaster within a month



**Subscribe to read:**  
United chief defends staff after screaming man dragged off flight

(Source: [www.ft.com/companies](http://www.ft.com/companies); April 11, 2017)

## Appendix G

### Items and reliability measures (Studies 1/2/3/4)

	Cronbach's Alpha
<b>Arousal<sup>a</sup></b> (Mehrabian and Russel 1974)	- / - / .88 / .94
1. nervous	
2. excited	
3. tense	
4. jittery	
<b>Perceived Betrayal<sup>a</sup></b> (Grégoire and Fisher 2008)	- / - / .78 / .79
1. I felt cheated by the provider.	
2. I felt betrayed by the provider.	
3. I felt lied to by the provider.	
4. The provider intended to take advantage of me.	
<b>Purchase Intention/Intention to Read the Article<sup>b</sup></b> (Chattopadhyay and Basu 1990)	- / - / .93 / .93
Please rate the probability that you would buy the full newspaper article:	
1. unlikely–likely	
2. improbable–probable	
3. impossible–possible	
<b>Need for Closure (Decisiveness)<sup>b</sup></b> (Webster and Kruglanski, 1994)	.77 / .78 / .90 / .91
1. When I have made a decision, I feel relieved.	
2. When I am confronted with a problem, I'm dying to reach a solution very quickly	
3. I would quickly become impatient and irritated if I would not find a solution to a problem immediately.	
<b>Technological Anxiety<sup>a</sup></b> (Barbeite and Weiss 2004)	.88 / .93 / .96 / .96
1. Working with the internet would make me very nervous.	
2. I get a sinking feeling when I think of trying to use the internet.	
3. Using the internet makes me feel uncomfortable.	
4. Using the internet make me feel uneasy and confused.	
<b>Interest in the Topic of the Article<sup>a</sup></b> (Mathwick and Rigdon 2004)	.84 / .63 / .86 / .86
1. dull (r)	
2. fascinating	
3. uninteresting (r)	
4. attentive	
<b>Frequency of Reading Online Articles<sup>b</sup></b>	
How often do you read online articles?	
<b>Information Quantity<sup>b</sup></b> (pretest Study 1)	
Please rate the quantity of the provided information in the review (low vs. high).	
<b>Article Quality<sup>b</sup></b> (pretest Study 1)	
Please rate the quality of the preview (low vs. high).	
<b>Utilitarian Product<sup>a</sup></b> (pretest and Study 4; O'Curry and Strahilevitz 2001)	
I believe the article topic is necessary.	
<b>Hedonic Product<sup>a</sup></b> (pretest and Study 4; O'Curry and Strahilevitz 2001)	
I believe the article topic is entertaining.	

<sup>a</sup> Measured on seven-point scales (1 = totally disagree, 5 = totally agree). <sup>b</sup> Measured on a seven-point semantic differential (-3, +3).



## Appendix H

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### Preview articles used as stimuli in studies 1–4

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#### I. Studies 1–3: concluded preview ending (utilitarian article)

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##### Mit BWL sicher in die Zukunft

Für Studierende mit dem Schwerpunkt Wirtschaft gibt es neue Gehaltsprognosen



Eine aktuelle Studie der Universitätsallianz Ruhr (UA Ruhr) zeigt deutlich, dass die Absolventenzahlen der wirtschaftsorientierten Studiengänge in NRW weiter steigen. Viele Studierende befürchten, dass sich die daraus resultierende, größere Nachfrage auf dem Arbeitsmarkt negativ auf die die Einstiegsgehälter auswirken könnte.

Die Technische Universität Dortmund, die Ruhr-Universität Bochum und die Universität Duisburg-Essen sind dieser Frage nachgegangen und kamen zu dem Ergebnis, dass in vielen Bereichen die Einstiegsgehälter voraussichtlich sogar weiter steigen.

##### Translation

Start the future safe with a business degree: New salary predictions for students majoring in business and economics

A recent study carried out by the University Alliance Ruhr shows that the numbers of graduates in North Rhine-Westphalia continues to increase. Many students are afraid that the greater supply in the job market might have negative effects on their future salary. The Technical University of Dortmund, the Ruhr-University Bochum, and the University Duisburg-Essen have conducted a research study regarding this concern and came to the conclusion that the salaries in several areas will likely increase even more.

---

#### II. Studies 1–3: interrupted preview ending (utilitarian article)

---

##### Mit BWL sicher in die Zukunft

Für Studierende mit dem Schwerpunkt Wirtschaft gibt es neue Gehaltsprognosen



Eine aktuelle Studie der Universitätsallianz Ruhr (UA Ruhr) zeigt deutlich, dass die Absolventenzahlen der wirtschaftsorientierten Studiengänge in NRW weiter steigen. Viele Studierende befürchten, dass sich die daraus resultierende, größere Nachfrage auf dem Arbeitsmarkt negativ auf die die Einstiegsgehälter auswirken könnte.

Die Technische Universität Dortmund, die Ruhr-Universität Bochum und die Universität Duisburg-Essen sind dieser Frage nachgegangen und kamen zu dem Ergebnis, dass in vielen Bereichen die Einstiegsgehälter voraussichtlich sogar weiter steigen. Darüber hinaus hat sich gezeigt, dass ...

##### Translation

Start the future safe with a business degree: New salary predictions for students majoring in business and economics

A recent study carried out by the University Alliance Ruhr shows that the numbers of graduates in North Rhine-Westphalia continues to increase. Many students are afraid that the greater supply in the job market might have negative effects on their future salary. The Technical University of Dortmund, the Ruhr-University Bochum, and the University Duisburg-Essen have conducted a research study regarding this concern and came to the conclusion that the salaries in several areas will likely increase even more. In addition, it has been shown that ...

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### III. Study 4: concluded preview ending (hedonic article)

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#### Springbreak statt Hörsaal

Fünf Studierende der Fachrichtung BWL testen für uns die besten Springbreak Partys



Eigentlich bedeutet „Spring Break“ übersetzt ganz harmlos Frühlingsferien. Was so unschuldig klingt, ist in Wahrheit jedoch eine Party ohne Tabus. Die versexte Studentensause wurde in den USA erfunden und mit verrückten Spielen, literweise Alkohol und viel nackter Haut zur Legende. Doch im Feiern stehen die Europäer den Amis in nichts nach und so schickten wir unsere fünf Studenten zur Mega Party „Spring Break Europe“ nach Kroatien. Fester Bestandteil des Party-Marathons sind die sexy Wettbewerbe: Die Wahl zur „Miss Wet-T-Shirt“ und zum „Mr. Knackarsch“ dürfen nicht fehlen.

#### Translation

Spring break instead of the lecture hall: Five business students are testing the best spring break parties. Literally, “Spring Break” means nothing more than a vacation in the spring. But what sounds so innocent is actually a party without any limits. Uncontrolled student parties started in the United States and became legendary because of their crazy drinking games, endless flow of alcohol, and lots of nudity. But when it comes to partying, the Europeans are not far behind the Americans, and so we sent five students to join the Mega Party “Spring Break Europe” in Croatia. The party marathon in Croatia included sexy competitions, like voting for “Miss Wet T-Shirt” and “Mr. Bootylicious,” which are not to be missed.

---

### IV. Study 4: interrupted preview ending (hedonic article)

---

#### Springbreak statt Hörsaal

Fünf Studierende der Fachrichtung BWL testen für uns die besten Springbreak Partys



Eigentlich bedeutet „Spring Break“ übersetzt ganz harmlos Frühlingsferien. Was so unschuldig klingt, ist in Wahrheit jedoch eine Party ohne Tabus. Die versexte Studentensause wurde in den USA erfunden und mit verrückten Spielen, literweise Alkohol und viel nackter Haut zur Legende. Doch im Feiern stehen die Europäer den Amis in nichts nach und so schickten wir unsere fünf Studenten zur Mega Party „Spring Break Europe“ nach Kroatien. Fester Bestandteil des Party-Marathons sind die sexy Wettbewerbe: Die Wahl zur „Miss Wet-T-Shirt“ und zum „Mr. Knackarsch“ dürfen nicht fehlen. Dabei wurde schnell klar, dass ...

#### Translation

Spring break instead of the lecture hall: Five business students are testing the best spring break parties. Literally, “Spring Break” means nothing more than a vacation in the spring. But what sounds so innocent is actually a party without any limits. Uncontrolled student parties started in the United States and became legendary because of their crazy drinking games, endless flow of alcohol, and lots of nudity. But when it comes to partying, the Europeans are not far behind the Americans, and so we sent five students to join the Mega Party “Spring Break Europe” in Croatia. The party marathon in Croatia included sexy competitions, like voting for “Miss Wet T-Shirt” and “Mr. Bootylicious,” which are not to be missed. It quickly became clear that ...