

Paper or Screen – Differences in Customer Preferences and Willingness to Pay between Traditional and Digital Content Services

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Abstract

The digitalization and the diffusion of connected mobile devices have urged media companies to deliver their content in digital formats such as apps. We evaluate differences in customers' preferences and willingness to pay between traditional and digital content services conducting an adaptive conjoint analysis. Within this analysis we compare subscriptions to a printed newspaper with subscriptions to the website, e-paper, smartphone app or tablet app of this newspaper. Our results show that customers still prefer the printed newspaper over any digital format. The acceptance of digital newspaper formats depends on device ownership but the website is most popular in general. Our findings have profound implications for multi-platform publishing strategies. Content providers have to examine carefully in which situations their products might be used and which devices their potential customers own in order to choose the right formats and prices.

1. Introduction

The advent of mobile devices and ubiquitous connectivity has changed media consumption patterns substantially. By now, consumers can access almost any type of content whenever and wherever they want. This has urged content providers to deliver their content in new ways. Despite the business opportunities these developments provide, publishing companies still struggle to adapt their business models successfully [1]. Apparently, changes in content distribution and consumption require changes in the monetization of content as well. Whereas the printed edition of a newspaper generates both advertising and sales revenue composed of newsstand sales as well as subscriptions, the monetization of digital newspaper formats proved to be more difficult. Since early attempts to charge

customers for online content had failed, the majority of newspaper publishers decided to apply a pure advertising revenue model on their websites [2]. This strategy led to declining print circulations [3, 4] without providing sufficient revenue to compensate for the losses [5]. Prominent shutdowns such as that of the American Newsweek or the German edition of the Financial Times resulted from this failure. The advent of touchscreen-enabled smartphones and tablets refueled the attempts to create sales revenues because the proprietary operating systems of these devices are conducive to content services in the form of small applications, commonly referred to as apps. These are believed to be capable of monetization by subscriptions and an increasing number of newspapers have introduced such offers lately [6].

While the advantages of a subscription revenue model from the publishers' perspective are obvious, less clear are the reasons for customers embracing subscriptions for digital newspaper formats. The most cited reason why newspapers failed to sell subscriptions online is low willingness to pay (WTP) [7-9]. However, the question if and why customers are not willing to pay for digital newspaper subscriptions has not been answered satisfactorily in academic literature so far. We can think of two causes of a low WTP. On the one hand, the value of content services to the customers may to a large extent depend on the format. That would be the case if subscribers to the traditional newspaper value primarily the printing and the delivery of the newspaper instead of the content itself. On the other hand, a low WTP for digital newspaper formats might be due to the fact that customers prefer alternatives that are available for free; even if these are of lower quality.

In this explorative study we therefore want to examine how the perceived value of a content service and the willingness to pay for it changes if the content is delivered in a digital instead of a traditional format. We investigate this issue using the example of newspaper subscriptions because the newspaper industry is one of

the content industries that struggles most transforming their established business model into the digital world. An adaptive conjoint analysis enables us to compare print newspaper subscriptions with subscriptions to digital newspaper formats and to determine the importance of format within the customers' decision between these content services as well as differences in WTP. Because digital newspaper subscriptions in form of apps can only be accessed on smartphones and tablets we furthermore draw comparisons between customers who own these devices and those who do not.

Our work sheds light on the customers' evaluation of content services and the relation between content and format within these services. Additionally, we show how the ownership of mobile devices impacts preferences and WTP for newspaper subscriptions. At the same time our research provides insights into whether digital newspaper formats are capable of transferring the traditional subscription revenue model into digital life. Although we choose a customer-oriented approach for our research, our results have important managerial implications for content providers regarding digital subscription models.

The remainder of the paper is structured as follows: We first present the current research on multi-platform publishing and news consumption on digital devices as well as on WTP for digital newspaper subscriptions. After explaining our methodology, we present our results. These are subsequently interpreted. We conclude by discussing the managerial implications and limitations of our study as well as ideas for further research.

2. News consumption on digital devices

The development of mobile devices and its impact on the publishing industry have been investigated extensively from a publishers' perspective. Important issues within this area include the distinguishing characteristics of digital newspaper formats [10], how these formats should be designed [11], interaction and substitution effects between the formats [12, 13], and effects on production processes as well as journalism [11, 14]. Conversely, how customers perceive content services on mobile devices and how much they are willing to pay for these remains mostly unexplored. Three current research streams are related to this question: the differences in the user experience between reading news on screen and reading news on paper, the use of mobile devices for news consumption, and the WTP for online news services.

To determine differences between the perception of digitally and physically distributed content Tewksbury and Althaus [15, 16] conducted a multi-day experiment which revealed different agenda-setting effects of the website and the printed edition of the New York Times.

Readers of the printed newspaper were exposed to more international, national, and political news topics, were able to recall significantly more of the stories covered, and ascribed significantly higher importance to these events than readers of the website. However, a replication study by d'Haenens et al. [17] did not find evidence for these effects. Mitchelstein and Boczkowski [18] conclude that news consumption on screen and paper does not differ considerably.

Studies uniformly confirm that reading news belongs to the most frequent activities on connected mobile devices and that news consumption habits change with device ownership [19, 20]. Before the introduction of touchscreen-enabled smartphones, though, the use of mobile phones for reading news was rather limited with uncertainty about costs and low usability being obstacles to adoption [21, 22]. Typically, mobile devices were used to access news during commute [23]. Since the advent of tablets, however, mobile devices are used in additional contexts such as in bed, on the couch or at a table with media consumption being one of the key activities in these situations [24]. Research insights into news consumption on tablets and smartphones in relation with previously existing newspaper formats are rare. Chyi and Chadha [25] calculated a "newsfulness" ratio by dividing the number of users who use a device for news purposes by the number of owners of this device. Results show that smartphones and tablets were very likely to be used for news access at least once a week. On a daily basis, though, desktop computers remained the most "newsful" device. Nonetheless, the enjoyment level of news consumption was still higher when reading the printed newspaper than on electronic devices.

While the academic literature agrees on the fact that reading news is one of the main online activities, the users' paying intent and WTP remains low [26]. In a telephone survey by Chyi [7] among Hong Kong residents, about 22 % of the respondents said they are likely to pay for online news in the future. Among U.S. Internet users 60 % stated they are very unlikely to do so [27]. Lopes and Galletta [28] observe an average bid of \$ 28.63 for an annual subscription to a fictitious sports-related website. In another survey by Chyi [1], U.S. Internet users on average indicate a WTP of \$ 3.10 per month for online news content. To the best of our knowledge, the only insights regarding WTP for various newspaper formats stem from this study as well. Respondents' paying intent and WTP were highest for the printed newspaper and lowest for apps. A conjoint analysis including the attributes price and format revealed that price is three times as important as format.

Our literature analysis reveals that no study has systematically investigated the role of format in the customers' evaluation of content services and the impact of device ownership on format preferences and WTP.

Our research seeks to fill this gap by integrating format as an attribute in an adaptive conjoint analysis for newspaper subscriptions and by analyzing the differences in WTP for printed and digital newspaper formats. In addition, we account for potential differences in preferences and WTP between owners and non-owners of new mobile devices.

3. Research methodology

3.1. Adaptive conjoint analysis

The theoretical foundation of conjoint analysis (CA) comprises several assumptions [29]. The fundamental supposition says that a product consists of a set of attributes, which can adopt various levels. Each of these levels can be assigned numerical values, which express the amount of value this level provides to a specific respondent. In their entirety these part-worths describe the preference structure of that particular person [30]. The difference between the part-worths of the most preferred and the least preferred level is called the importance weight of an attribute. The importance reveals the impact of an attribute in the overall preference structure. It is assumed that the respondent determines the total utility of a product configuration by adding the part-worths of its attribute levels. This implies that the part-worths of different product attributes can compensate each other [31]. CA reverses the composition process and deducts the part-worths of the attribute levels from the evaluation of the product as a whole.

Since its first applications in marketing research, CA has seen numerous advancements. In the beginning, the most common conjoint procedure required the respondent to rank or rate an artificially constructed set of product configurations, each of which specified every attribute under consideration. The capability of the so-called full-profile method is limited in that it can handle only small numbers of attributes and levels [29, 32]. Adaptive conjoint analysis (ACA) has been developed in reaction to this problem. ACA combines traditional CA with self-explication approaches. Instead of deducting part-worths from the participants' evaluation of product profiles, a self-explication approach elicits these values from the respondents directly [31]. The ACA process begins with self-explication tasks to gain preliminary estimates of part-worths and attribute importance weights. Afterwards, these initial estimates are refined by graded paired comparisons between two partial product profiles. That is, only a limited number of attributes are displayed in each question. These trade-off questions are constructed by an algorithm with the aim of gaining as much additional information about the respondents' preferences as possible. Therefore, the algorithm

constantly adjusts the part-worth estimates based on a Bayesian updating scheme and displays product profiles with similar utilities [29].

ACA is a suitable approach for our research objectives because it calculates customers' preference structures on the individual level [31]. It allows us to evaluate the role of format within the preference structure for newspaper subscriptions and to compare these preference structures between customer groups, such as users and non-users of smartphones. Additionally, CA can be used to measure WTP for varying product configurations. In fact, pricing studies are a major field of application of CA. The interactive nature of ACA bears the advantage of retaining customers' attention throughout the interview. The use of partial product profiles further reduces complexity for the respondent.

3.2. Identification of attributes

Although we are interested in the attribute format only, we had to identify all attributes involved in the choice process for newspaper subscriptions to analyze the customers' preferences [30]. Specifically, we compared the entire product portfolios of all German newspapers that already sold digital subscriptions on their website, as listed by the Federation of German Newspaper Publishers [33]. Taking into account the formal requirements noted by and Hair et al. [30] we extracted five fundamental attributes of newspaper subscriptions from our product portfolio comparison in addition to format (see Table 1).

Table 1. Attributes and levels

Format	Price per month	Subscription duration
Printed edition	€ 2.00	1 month
E-paper	€ 4.00	2 months
Website	€ 8.00	6 months
Smartphone app	€ 16.00	12 months
Tablet app	€ 32.00	24 months
Geographical focus	Journalistic style	Archive access
Local / regional	Broadsheet	Included
National	Tabloid	Not included

First of all and most important for our research, newspaper products differ in the way the content is delivered to the customer. Beside the printed edition, we found its digital facsimile (the so-called e-paper), websites, smartphone apps, and tablet PC apps to be relevant formats for newspaper publishers. We do not distinguish between regular and mobile versions of a website because both may be accessed from any device being able to run a browser. In contrast, apps for

smartphones and tablet PCs can be installed on the respective devices only. Although e-readers come into question as mobile devices for news consumption as well we omitted a respective format because first research results indicate that e-readers are unsuitable for reading newspapers [34].

To measure WTP for newspaper subscriptions using ACA we had to integrate price as an attribute. This attribute denotes the fee for being supplied with content for one month. The price range was deducted from our product portfolio comparison. This comparison furthermore revealed that some newspaper publishers granted discounts for customers who agree on longer minimum subscription durations. Consequently, we added an attribute named subscription duration. We also found newspapers that included access to a digital content archive in their subscriptions and thus added archive access as an attribute. To account for the different kinds of newspapers available we included two additional attributes. First, we differentiated between newspapers with local or regional and those with nationwide coverage. Second, we drew a distinction between newspapers written in broadsheet style and in tabloid style.

3.3. Data collection and analysis

Because our study investigates preferences for different newspaper subscription formats and the use of most of these formats requires Internet access, the basic population encompasses Internet users only. Consequently, our data was collected by a German online survey running from July 25th to August 19th 2013. Invitations to the survey were sent via Facebook or e-mail requesting that the link be shared among friends and acquaintances. We decided not to provide any incentives for participation to avoid incentive-driven responses.

The survey was built using ACA Web by Sawtooth Software and consisted of three parts: an introduction including the explanation of the attributes and their levels, the four stages of the ACA interview as designed by Sawtooth Software [35], and a set of questions about the ownership and usage time of smartphones and tablets, Internet use and demographic data. Before the roll-out we conducted a pretest to check whether the survey was comprehensible and free of flaws. As a result, the wording was revised and some parts of the questionnaire were rearranged.

To estimate the individual part-worths, we applied the Hierarchical Bayes (HB) method. HB has proven to be more precise in estimating utilities than ordinary least squares (OLS) estimation [36] and offers an improved theoretical basis for combining information from the self-explication and the conjoint part of ACA [37].

We analyzed the differences in preference structures depending on device ownership by splitting our sample into owners and non-owners of smartphones and tablets. After calculating the part-worths averages for each group we used the t-test for independent samples to check whether the sample means differed significantly. To ensure that each respondent has the same impact when part-worth averages are computed we rescaled the raw utilities from HB estimation using the zero-centered diff's method. This was done in two steps. First, from each part-worth the mean utility of that attribute for that respondent was subtracted. As a result, utility levels for each attribute were centered around the zero-point. Subsequently, the part-worths were rescaled so that for each respondent the cumulated utility differences between the best and the worst levels across all attributes equaled the number of attributes times 100.

3.4. Deriving willingness to pay

The first proposal to estimate reservation prices by CA has been made by Kohli and Mahajan [38]. They suggest comparing the total utility of a certain product configuration to the total utility of a reference product, which serves as a threshold. The maximum price at which the total utility of the product is still above the threshold denotes the respondent's WTP for that product. If only a single attribute of the reference product is changed, the difference in WTP between the reference product and the altered product configuration is the WTP for the change of this attribute.

Basically, this approach draws upon three assumptions. Let u_{it} be the total utility of product configuration t to respondent i and u_{iRef} the utility of the reference product to this respondent. The first assumption is that u_{it} may be decomposed into the joined utility of all attributes specifications but price $u_{it|-p}$ and the utility of a price level $u_i(p)$, which is in line with the basic assumption of CA:

$$u_{it} = u_{it|-p} + u_i(p_t)$$

Furthermore, it is assumed that a customer will switch to the product configuration which offers the highest utility. If ε represents an arbitrarily small utility value, customer i would buy product configuration t if price p is chosen such that the following condition holds:

$$u_{it|-p} + u_i(p) = u_{iRef} + \varepsilon$$

To check whether this condition holds we have to calculate the utility of various price points. Our ACA delivers utility estimates for five price points only. Like Strube et al. [39] and Doerr et al. [40] we thus use linear interpolation to derive the utilities for additional price points between € 2.00 and € 32.00. Let p_1 and p_2 denote two of the price points for which the utility is known.

For any arbitrary price $p \in (p_1, p_2)$ the utility is given by:

$$u_i(p) = u_i(p_1) + \frac{(p - p_1)(u_i(p_2) - u_i(p_1))}{(p_2 - p_1)}$$

If utilities of prices below € 2.00 or above € 32.00 are needed we also may use this formula for linear extrapolation. In the first case € 2.00 and € 4.00 and in the second case € 16.00 and € 32.00 are used as p_1 and p_2 respectively.

An essential question remaining is which product may be used as the reference product. Kohli and Mahajan [38] define the reference product as the respondent's "most preferred product among all product offerings in his or her evoked set" (p. 348). In their example of students choosing between different apartments the respondents' reference products are the apartments they are currently living in. Our study mimics the approach by Strube et al. [39] and uses a reference product which is widely available and established in the market: the printed edition of a local newspaper with broadsheet journalism style, no archive access and the possibility to terminate the subscription within one month at a monthly subscription rate of € 30.00. The use of the printed newspaper as a reference is meaningful because it is one of the few products for which solid market prices exist.

4. Results

4.1. Sample description

During our data collection period the survey was started 452 times and we received 247 complete answers. We had to exclude 20 data sets because the participants were either not German residents or had finished the survey in a time that does not allow for meaningful responses. Of the remaining 227 respondents 56.8 % were male and 43.2 % female. The respondents were between 16 and 82 years old with an average age of 36 years. 74.0 % of the participants owned a smartphone, 37.0 % a tablet, and 58.2 % regularly read a printed newspaper.

4.2. Attribute importance and preferred levels

To determine how important the format of a newspaper subscription is to customers we computed the mean of all individual importance weights. The results are presented in Table 2. Our results show that the format (22.53) of a newspaper subscription is almost as important to the customer as its price (24.32) and the journalistic style (23.89). In contrast, geographical focus (12.84), subscription duration (11.88) and archive access (5.23) are less important.

Table 2. Average importance weights

Attributes	Average importance	Standard deviation
Price per month	24.32	11.40
Journalistic style	23.89	10.31
Format	22.53	8.85
Geographical focus	12.84	7.71
Subscription duration	11.88	5.06
Archive access	5.23	4.37

The average part-worths of the attribute levels answer the question which newspaper subscription format is most preferred. Table 3 lists the average utilities for the format attribute after the zero-centered diffs transformation.

Table 3. Average part-worths

Attribute levels	Average part-worths	Standard deviation
Printed edition	46.43	53.49
Website	6.44	31.35
Smartphone app	-13.49	48.67
E-paper	-20.34	39.94
Tablet app	-19.05	46.73

When interpreting part-worths we have to keep in mind that this is interval data and the absolute magnitudes of the utilities convey no meaning across attributes. However, the differences between part-worths of the same attribute can be compared to the differences between the part-worths of another attribute. We took advantage of this when calculating the attribute importance weights and the WTP differences. According to the utility values, respondents still favor a print newspaper subscription over any digital format. Of these, websites are the most and e-papers the least popular. It is noteworthy that the utility difference between the printed edition and the website already accounts for more than half of the total utility difference within this attribute.

4.3. Comparison between customer groups

Findings about average preferences of customers may be misleading because the average customer does not necessarily exist. The strength of ACA lies within the derivation of information about individual respondents. We thus split our sample into groups according to their device ownership. Subsequently, we compared the average part-worths of the format levels. For the first comparison we distinguished between smartphone owners and non-owners. Table 4 contains the average utility values for the five different formats and the results of the t-tests for two population means.

Applying the t-test for two population means, our results show that participants who do not own a smartphone assign significantly higher utility values to the printed edition than smartphone owners. Conversely, the part-worths of smartphone app and tablet app are significantly lower and even the least preferred levels for non-owners. Among smartphone owners the smartphone app has the third highest utility value following the printed edition and the website.

When comparing tablet owners and non-owners we find that the average part-worth of the printed edition is significantly lower and the average part-worth of tablet app is significantly higher for owners. For non-owners, however, the tablet app is the least popular format. The differences in means for the website, the smartphone app, and the e-paper are not significant. Further details can be obtained from Table 5.

Table 4. Average format part-worths for smartphone owners and non-owners

Attribute levels	Smartphone non-owners n = 59		Smartphone owners n = 168		Mean difference
	Mean	SD	Mean	SD	
Printed edition	81.81	42.61	34.01	51.42	47.61 ***
Website	5.51	33.29	6.77	30.74	-1.25
Smartphone app	-44.43	36.68	-2.61	47.76	-41.82 ***
E-paper	-11.30	32.18	-23.51	41.96	12.21 **
Tablet app	-31.58	41.70	-14.65	47.72	-16.93 **

* $p < .10$; ** $p < .05$; *** $p < .01$

Table 5. Average format part-worths for tablet owners and non-owners

Attribute levels	Tablet non-owners n = 143		Tablet owners n = 84		Mean difference
	Mean	SD	Mean	SD	
Printed edition	58.54	45.91	25.82	59.18	32.72 ***
Website	8.14	31.86	3.54	30.44	4.60
Smartphone app	-16.02	45.93	-9.17	53.01	-6.86
E-paper	-17.73	35.13	-24.78	46.91	7.05
Tablet app	-32.93	42.98	-4.59	43.47	-37.51 ***

* $p < .10$; ** $p < .05$; *** $p < .01$

4.4. Willingness to pay for digital formats

The WTP for a certain product configuration depends on three factors: the utility of the reference product, the utility of the alternative product configuration without the attribute price, and the price whose utility matches the utility difference between the former two. We computed the average differences in WTP between the reference product and the alternative product configuration if both differ with respect to format only. That is, we calculate how the average WTP for a newspaper subscription changes if the format is altered from the printed edition to different digital formats. The findings are shown in Figure 1.

Because the printed edition has the highest average utility value, customers' WTP for any of the digital formats is lower. However, taken the current market prices of printed newspapers into account, we see that there is residual WTP for every digital format as well. For example, a website creates the same utility as the printed edition if the content is € 14.13 cheaper per

month on average. Similarly, WTP for a smartphone app, a tablet app, or an e-paper is € 18.64, € 19.89, or € 20.18 lower.

In parallel to our comparison of the average utilities between customer groups we derived the differences in WTP depending on format for owners and non-owners of smartphones and tablets. As can be observed from Figure 2 the differences in WTP between the printed edition and both the smartphone app and the website are more than twice as high for smartphone non-owners than for smartphone owners. In fact, people who do not own a smartphone are unlikely to buy any digital newspaper subscription.

Please note that there is no linear relationship between the differences in the average part-worths and the differences in WTP. Although smartphone owners and non-owners exhibit similar average part-worths for the smartphone app, their average WTP for the smartphone app compared to the printed edition shows a high discrepancy. This is because of two reasons. First, the average utilities for the printed edition and thus for

the reference product deviate significantly. Second, the spread between the part-worths of the lowest and the highest price estimated in the ACA varies. In other words, both customer groups exhibit different price elasticity in demand.

Turning towards owners and non-owners of tablets (see Figure 3) we find that the WTP differences between these groups are comparably smaller. Nevertheless, the

WTP for a newspaper subscription in form of an e-paper, a tablet app, or a smartphone remains on a low level within the group of non-owners. In contrast, the WTP for a tablet app or paid content on a website ranges only € 7.24 and € 7.59 below that for a printed newspaper among tablet owners. Thus, it is these two formats within this group that come closest to a printed edition in terms of monetary value.



Figure 1. Average differences in WTP between the printed edition and digital formats

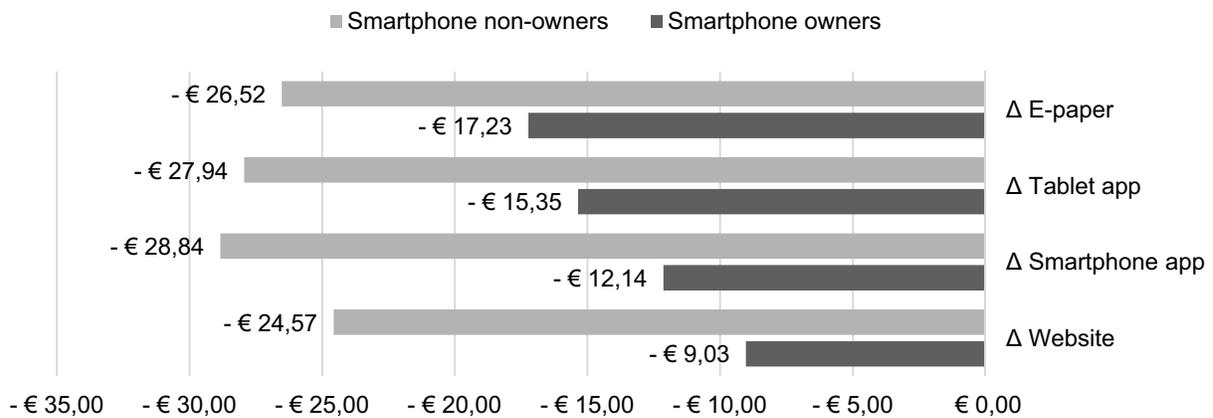


Figure 2. Average WTP differences depending on format for smartphone owners and non-owners

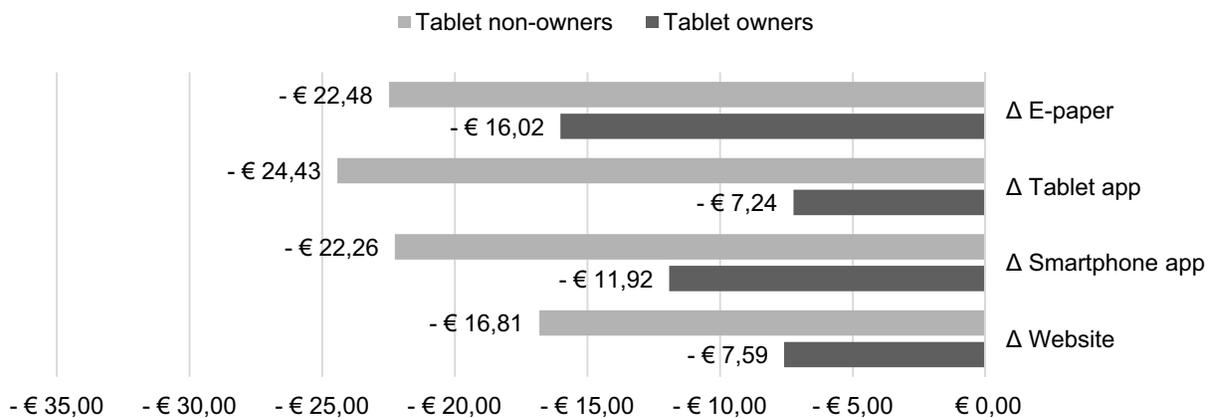


Figure 3. Average WTP differences depending on format for tablet owners and non-owners

5. Discussion

The aim of our research was to investigate how customer preferences and WTP change along with format, and how the differences in preferences and WTP are affected by the ownership of mobile devices. We observe that the format of a newspaper subscription has a slightly lower importance than its price and journalistic style. Our findings differ substantially from those of Chyi [1], who found price to be three times as important as format.

Our intergroup comparisons reveal that the printed edition is still the most preferred format within all customer groups. Nevertheless, the strength of this preference decreases with ownership of mobile devices. The differences in preferences for printed editions are also reflected by the highest standard deviation among all levels within this attribute. We may infer that the printed newspaper is still the format with the highest utility for almost all customers. However, while for some it is probably the only format they consider at all, digital formats come close in utility for others. In second place, with significantly lower part-worths, are websites. The preference for websites is comparably stable; it has the lowest standard deviation of all format levels. Unsurprisingly, the average part-worths for smartphone and tablet apps are significantly higher for owners of the respective devices. However, even within these groups the part worths of the apps remain the third highest only.

Furthermore, we find that customers' WTP for newspaper subscriptions in general is substantially lower for any digital format than for the printed edition. Whereas across all customers the digital format that customers are willing to pay most for is the website, the tablet app exhibits the highest WTP among tablet owners. The smartphone app lacks such potential. Even smartphone owners are not willing to pay as much for a newspaper subscription in form of a smartphone app as on a website. Lastly, the e-paper mostly ranges among the worst options and seems to be of interest only for those who do not own any mobile device, if at all.

Our results indicate that the perceived value of content printed on paper and delivered to the customers' doorstep is higher than the perceived value of the same content provided electronically. Possible reasons for the lower value perception of digital content services are that customers are aware of the lower costs of digital content distribution or are less involved with digital content formats than with their traditional counterparts [41]. On the other hand, taking monthly prices for printed newspaper subscriptions of about € 30 into account, we also observe that the average WTP for the digital formats is still substantially higher than zero. With that being said it becomes evident that digital newspaper formats do not only lack WTP because of a lower perceived value but

also because similar content is offered for free somewhere else. We may describe the situation in the market based on the prisoners' dilemma from game theory. If all content providers would find an agreement that none of them offers any content for free, they probably could earn higher revenues. At the same time this situation would create a strong incentive for each provider to deviate from this agreement, offer content for free and reap excessive advertising revenues at the expense of the competitors.

6. Conclusion

6.1. Implications

Our study provides valuable insights regarding differences in the perception of digital and traditional content services. Because the product configurations we compared differed with respect to format only, differences in the perceived value of these products can be ascribed to the way in which the content is delivered to the customer. In fact, the perceived value of media products depends to a large extent not on the content but on the distribution channel. The acceptance of subscription-based services therefore varies strongly between different formats. How large the differences in preferences and WTP between different formats are is moreover influenced by device ownership.

These insights have important implications for content providers. To establish a suitable multi-platform publishing strategy, media companies can compare the differences in WTP we estimated for the various formats with the differences in the costs for providing these. For media companies who wish to establish a direct revenue model on the Internet it is encouraging that the website proved to be the second-most popular platform for media consumption in almost every customer segment. Content providers may target a broad audience using this format. However, this also implies that if content is given away for free online, people will not be willing to sign up for a paid subscription-service in any other format either. When determining their revenue model content-providers therefore may not only take into account their own revenues but also consider what is in the mutual best interest of all market participants.

For content providers it is important to examine the device ownership and usage habits of their customers thoroughly in order to prevent investments in less promising formats. Our results show that it is rather unlikely that it will be possible to charge high prices for subscription-based news apps or e-papers. Nevertheless, many newspaper publishers still cling to the idea of providing a facsimile of the printed edition for digital devices. Although an app for tablets is interesting for few

customers only, their WTP for content delivered in this format is high compared to other digital formats. Thus, a suitable strategy might be to launch a tablet app as a high-priced premium product which is specifically designed to meet the requirements of this customer segment. Providers of any type of content basically have to evaluate in which situations their products are used and choose formats that fulfill the customers' needs in these situations best. While long articles and movies can probably be consumed more satisfactorily on tablets, smartphones might be sufficient for streaming music. Future research may therefore more closely examine the fit between different types of content and the formats these are delivered in as well as the customers' demands on design and functionality of specific formats.

6.2. Limitations and further research

Foremost, our sample has not been drawn randomly. The snowball sampling we applied may have introduced biases due to self-selection of the respondents. Nonetheless, our sample provided sufficient diversity to draw comparisons between groups of consumers with similar media consumption habits. Because we can only segregate our analysis by one factor at a time we think that an in-depth cluster analysis could generate valuable insights in this area.

Secondly, for reasons of complexity we examined the different newspaper subscription formats individually. However, many newspaper publishers offer their products in packages. For example, subscribers of the printed edition are often also granted access to paid content on the website. To bundle their products successfully, however, newspaper publishers have to know the specific needs of different customer segments and must determine the profit-maximizing prices for their product packages as well as the standalone versions. This makes subscription-based content services an interesting field for research on bundling strategies.

Finally, our analysis is restricted to the comparison of part-worths and WTP means. Examining the actual distributions of the part-worths within certain customer groups would yield a richer picture of the customer preferences and provide additional information for content providers.

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