Broadening the Perspective on E-Commerce: A Comparative Analysis of Mobile Shopping and Traditional Online Shopping

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Prior research has considered online retailing mainly as equivalent to customers shopping through “the Internet channel”. With regard to the advancing evolution of mobile shopping, this perspective is no longer applicable for research and retail. This paper addresses the issue if online retailing and mobile online retailing are perceived and utilised as two different ways of online shopping by consumers. Moreover, we also aim to identify relevant factors of consumers’ intention to shop online among diverse e-channels. Therefore, we investigate consumers’ evaluations of individual electronic distribution channels (e-channels) in comparison and consolidated to a retailer’s multichannel e-commerce system. We empirically test a research model to capture consumers’ evaluations of stationary online shopping (using a PC) and mobile shopping (using a mobile device). By conducting a scenario-based experimental design study, we examine and compare consumers’ post-experience evaluations of both e-channel formats. The findings provide evidence for significant differences in the evaluation of the stationary e-channel and the mobile e-channel. In particular, the online shopping experience with the PC was evaluated more positively than the mobile shopping experience. Therefore, we suggest a more differentiated perspective for the definition and conceptualisation of online retailing.

1. Introduction

Current retailing trends show a shift from stationary online shopping with a personal computer (PC) to an increased use of mobile shopping devices, particularly of smartphones. In 2011, sales of smartphone devices exceeded PC sales (Canalys 2012). Moreover, smartphone penetration has already surpassed 50% in the US and will do so in most developed countries through 2013 (Forrester 2013). Within one year, total US m-commerce grew by 81% to $24.66 billion in 2012, as more customers chose mobile shopping over traditional online shopping (eMarketer 2013). This development encourages researchers to describe mobile retailing as “a powerful new channel format” and to underscore its importance for multichannel research (Zhang et al. 2010, p. 177). While some authors regard m-commerce as a subdomain or extension of e-commerce (e.g., Davis/Sajtos 2009) or define it simply as “M-commerce = E-commerce + Wireless Web” (Ullah/Khan 2012, p. 27), we argue that traditional online retailing and mobile online retailing are perceived and utilised as two different ways of online shopping by consumers. With our study, we follow Neslin et al. (2006, p. 96) who regard a channel as “a customer contact point, or a medium through which the firm and the customer interact”. We thus define e-channels as individual online retail channel formats as perceived by the consumer, and for this study we distinguish two categories of e-channels: stationary e-channels and mobile e-channels. In particular, we consider e-commerce and m-commerce as two different but still interdependent distribution channels.

Many retailers already provide diverse formats of electronic distribution channels (e-channels). For example, pure online players such as Amazon or Zalando as well as traditional retailers such as H&M or Tesco offer mobile shopping applications (apps) in addition to their traditional online shop (web site). New formats of e-channels, such as mobile shopping apps, obviously differ from traditional online web sites in terms of the e-channel characteristics. In particular, end devices are heterogeneous with regard to attributes such as screen size, utilisation scenario or capabilities (e.g., localisation services on smartphones). While a PC is usually used at a desktop and controlled via keyboard and computer...
mouse to access a retailer’s web site, mobile devices can be used almost everywhere to shop online, either by visiting a (mobile) web site or, if available, by using a shopping app. In contrast, both types of e-channels offer similar shopping functions, e.g., searching the assortment, purchasing products or reading customer reviews. In multichannel management, it is seen as a crucial first step to identify similarities and differences across alternative shopping formats to fulfill customer needs (Mon- sued/Dellaerd/de Ruyter 2004).

Knowledge of the evaluation of traditional online retailing compared to new formats of online shopping is essential to understand the contribution of alternative e-channels to consumers’ holistic online shopping experience. Therefore, the following research questions are addressed:

- Does consumers’ evaluation and intention to shop online differ, depending on the utilised e-channel format?
- What factors influence consumers’ intention to shop online among diverse e-channels?

The first research question seeks to determine if there are significant differences in consumers’ evaluations of online shopping when using diverse e-channels. This knowledge is essential for marketing practice to understand if e-channels are perceived as interchangeable (i.e., substitutable). Moreover, for researchers it is necessary to know if online shopping is still generalisable or has to be investigated in a more differentiated way. With the second research question, the underlying factors of the intention to shop online with a specific e-channel are investigated and their individual relevance is compared across e-channel formats. Marketing researchers will benefit from the knowledge, if existing models and theories for online shopping are still applicable to a system of multiple e-channels. For online retailers it is relevant to know what antecedents affect the intention to purchase with an e-channel, to provide services adjusted to consumer’s expectation towards the e-channel.

2. Literature Review

Prior studies on consumer behaviour in e-commerce are mostly limited to customers visiting and purchasing on a retailer’s web site (e.g., Hsu/Stoel 2012; Haasman/Siekpe 2009) or consumers’ intentions to shop online in general (e.g., Liu/Forsythe/Black 2011; McCole/Ramsey/Williams 2010). However, the first mentioned branch of studies excludes customers that use other e-channel formats, for example mobile shopping apps, to shop online. The latter mentioned research does not capture whether shoppers use alternative e-channels and whether consumers’ intentions are moderated by the employed e-channel. Accordingly, findings of studies solely considering behavioural intentions towards web sites are limited because they do not capture the scope of online shopping alternatives consumers utilise. Likewise, studies that measure consumers’ intentions to shop online in general tend to generalise and disregard that online shopping behaviour of individuals who use different e-channels might vary. The utilisation of the mobile Internet, respectively, m-commerce, has received wide attention in research (e.g., Gobakhloo/Zulkifli 2013; Königstorfer/Groeppel-Klein 2012) but either without considering other e-channels (in addition to the mobile channel) or not related to the determinants of online shopping intentions.

Moreover, there is a wide array of studies that examine the role of the Internet channel within a multichannel framework, such as a physical retail store, a mail-order catalogue, and an online store (e.g., Valentin/Montaguti/Neslin 2011; Wikström 2005). In these studies, online retailing is analysed from a “one e-channel” perspective and the existence of alternative e-channels and their effects on consumer behaviour are not considered. Some authors, however, indicate that e-commerce includes a wider range of online shopping formats. For example, Payne/Frow (2004) extend traditional categories of retail channels (e.g., outlets or telephony) by e-commerce and m-commerce. Rapp/ul Islam (2003) introduced the term “multichannel e-commerce” to describe a retail system based on the Internet, mobile phones, and multimedia kiosks in retail stores. Zhang et al. (2010) assume that new digital channel formats will develop and alter the retail landscape and retail practices. From a consumer’s perspective the availability and combinability of alternative e-channels might be perceived as value-added services of the retailer (Zentes/Schramm-Klein 2006).

While there are numerous studies on methods to evaluate the performance of web sites (e.g., Chen/Hsu/Lin 2010; Haasman/Siekpe 2009) or mobile shopping formats (e.g., Gobakhloo/Zulkifli 2013; Ko/Kim/Lee 2009), there is a lack of studies that include the varying characteristics of different e-channels. However, there are few studies that compare mobile shopping with traditional web site access, using a PC. Turel/Yuan (2006) identify differences in the dynamics of e-commerce and m-commerce industries and detect structural barriers to m-commerce diffusion. The authors offer a strategic viewpoint that seeks to explain the slow diffusion and key structural barriers of m-commerce services. Sumita/Yoshii (2010) develop a mathematical model for comparing e-commerce via the traditional PC access with m-commerce. Anyhow, their intention is primarily to explore how the mobile access to the Internet enhances e-commerce and only numerical examples are given without concluding to actual behaviour in m-commerce or e-commerce. Tiwari et al. (2011) use a hypercube model that includes three dimensions (technological components, business models, and stakeholders) to compare e-commerce and m-commerce. The results of their study indicate that m-commerce differs substantially from web-based commerce in some technological components, yet both share a common business model for providers. The authors conclude that m-commerce should not be simplistically regarded as an extension of web-based commerce.
3. Theoretical Foundation and Research Model

To capture the evaluation of online shopping via different e-channels, we apply our research model to mobile as well as traditional online shopping and compare both formats. We extend a well-established model that is frequently applied in both e-commerce and m-commerce, the Technology Acceptance Model (TAM, Davis 1989), and test the applicability of this extended model for two formats of e-channels.

TAM builds on the Theory of Reasoned Action (TRA), which states that one’s action is a function of one’s intention to perform a specific behaviour (Fishbein/Ajzen 1975). TRA is one of the most fundamental and influential theories of human behaviour (Venkatesh et al. 2003). However, the underlying assumptions do not cover situations in which individuals may choose among alternative behaviour (Sheppard/Hartwick/Warschaw 1988), such as choosing a specific e-channel to shop online. While in previous studies TAM or TRA were applied to online shopping in general or limited to a specific device, we consider that the availability of different e-channels offers a set of alternatives that influence the intention to use an e-channel for online shopping. In TAM, the intention to use a technology is determined by one’s attitude towards the technology, which is influenced by the perceived usefulness (PU) and perceived ease of use (PEOU) of the technology. PU refers to the degree to which consumers believe that using a technology will improve their shopping performance or productivity, while PEOU refers to perceptions of the effort to use the technology (Davis 1989; Monsuwé/Dellaert/Rietschoten 2004). This is in line with considerations of the resource-based view in consumer behaviour (Kaufmann/Lane 1996), which implies that the choice of channel format depends on which channel demands the least resources in terms of effort to use the channel (Wiksström 2005). Next to PU and PEOU, perceived enjoyment (PE), as an intrinsic factor, has been found to have a positive impact on the intention to use a mobile device for online shopping (Lu/Su 2009). PE is defined as the extent to which using an information system is perceived as fun in its own right, aside from any consequences of its performance (Davis/Bagozzi/Warschaw 1992). In hedonic system-use settings, many studies have found that perceived enjoyment is more influential than perceived usefulness (see Wu/Lu 2013 for a meta-analysis on effects of extrinsic and intrinsic motivators). When shopping online, individuals are in a playfulness state, i.e. they will interact with the technology intrinsically interesting (Moon/Kim 2001). Hence, in the context of Internet shopping, enjoyment refers to the customers’ direct experience of pleasure and joy from using the technology (Davis/Bagozzi/Warschaw 1992). Therefore, we assume that the use of a specific e-channel to shop online depends on the intention to choose this e-channel after weighting the ease of use, enjoyment and usefulness of all available e-channels.

The focus of this study is to measure a user’s post-utilisation evaluation of online shopping technologies. Service management literature proposes to view selling through an e-channel as an e-service process that determines online customer satisfaction (Böhjohansson 2008). In the post-utilisation stage, satisfaction is an evaluation of pre-consumption attitude (Liao/Chen/Yen 2007). Therefore, we include satisfaction (SAT) into our research model. Another reason for the inclusion of satisfaction is that most consumers already have made manifold experience with online shopping technologies. Nowadays, online shopping is widely accepted and utilised for purchases of any kind. Hence, we believe that satisfaction with an e-channel might serve as a valid predictor of the (continued) usage intention. SAT has a transient, experience-specific effect, i.e., SAT with the prior use of a service determines consumers’ intention to repurchase a product or continue to use an e-channel (Oliver 1980). When the online shopping experience results in satisfactory outcomes, consumers are likely to continue shopping at an online retailer in the future (Shim et al. 2001). Consumers use an e-channel with pre-use expectations about its anticipated performance and evaluate the perceived performance of the online channel compared with their primary expectations about it. Accordingly, ex-post expectation might be enhanced when consumers discover new benefits from using an e-channel beyond their ex-ante expectation. For our study, we adapt PU and PEOU from TAM and add PE and SAT to predict the (continued) usage intentions of different e-channels. The research model is shown in figure 1.

4. Hypotheses

Davis (1989) demonstrated that usefulness is positively influenced by the ease of use of a technology, and these findings were confirmed by Venkatesh/Davis (2000). Based on the results of an empirical study, Van der Heijden (2004) concludes that PEOU positively affects PE, which plays a pivotal role for the user acceptance of hedonic information systems. Therefore, we assume that the easier an e-channel is to use, the less effort is required to handle it and thereby the more useful and joyful it will be perceived to shop online. Ease of use has been con-

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firmed as a key factor leading to online channel satisfaction (Devaraj/Fan/Kohli 2002). In addition to the indirect effect through PU, PE and SAT, most studies (e.g., Van der Heijden 2004, Venkatesh 2000) propose PEOU to have a direct impact on consumers’ INT to shop online. Because consumers attempt to minimise the effort in their behaviour, they tend to choose the way of shopping that is most effortless (Venkatesh 2000). Thus, we hypothesise the following:

**H1:** The perceived ease of use of an e-channel has a positive effect on
   a. perceived usefulness of this e-channel.
   b. perceived enjoyment with the e-channel.
   c. satisfaction with the e-channel.
   d. intention to re-use the e-channel.

Several studies have shown that PU is a key factor in determining consumers’ intentions to adopt a new technology (e.g., Davis/Bagozzi/Warschaw 1989; Venkatesh/Davis 2000; Yu et al. 2005). In addition, Bhattacherjee (2001) indicates that the perceived usefulness of a technology is a relevant antecedent of how satisfied a user is. In research on online shopping behaviour, Montoya-Weiss/Voss/Grewal (2003) suggest that overall SAT with a web site is affected by the PU of the web site content. Following this view, we assume that the degree of SAT with an e-channel depends on how useful the e-channel is perceived to be for online shopping. Thus, we postulate the following:

**H2:** The perceived usefulness of an e-channel positively affects
   a. satisfaction with the e-channel.
   b. intention to re-use this e-channel.

Since TAM originally was developed to capture work-related acceptance of information systems, the model is based on a user’s extrinsic motivation to use a technology (Davis 1989). For hedonic information systems, an intrinsic motivation such as enjoyment of the technology can be a key factor to determine usage intention (Davis/Bagozzi/Warschaw 1992). The positive effect of PE on INT has been shown by numerous studies in consumer behaviour literature. For example, Lu/Su (2009) investigated factors affecting the purchase intention on mobile shopping web sites and found that enjoyment, as an intrinsic motivation, affects the intention to engage in mobile online shopping, rather than an extrinsic motivation (e.g., usefulness). These thoughts lead to the following assumptions:

**H3:** Consumers with a higher level of perceived enjoyment will express a higher intention to re-use the e-channel.

In consumer satisfaction literature, a high level of SAT is regarded as the main antecedence for a consumer’s decision to re-use a service or to re-purchase products (e.g., Cronin/Brady/Hult 2000; Oliver 1980). Merrilees/Fenech (2007) found that behavioural intentions towards the catalogue channel for purchasing purposes are primarily driven by the overall SAT with this channel format. Hence, we conclude that higher levels of SAT should reduce the perceived benefits of switching to another e-channel format and thus increase re-purchase intentions of the satisfying e-channel:

**H4:** Satisfaction with an e-channel will positively influence consumers’ intention to re-use the e-channel for online shopping.
5. Data Collection and Measures

Scenario Design and Procedure

To test our hypotheses, we constructed a scenario-based experimental laboratory study. Advantages of experimental design techniques – in comparison to the often chosen alternative of conducting an online survey – are the ability to control for the influence of extraneous factors of variation (e.g. varying devices, retailers or products) and the possibility to determine interaction effects between variables. Moreover, a realistic experimental setting allows us to capture post-experience evaluations of consumers who utilised e-channels in a specific shopping situation, instead of hypothetical expectations about an unfamiliar technology or retailer. The experiment employed a 2 (PC vs. mobile device) × 2 (search vs. purchase assignment) × 2 (DVD movie vs. lever arch file) between-subjects factorial design. The first group was equipped with a stationary PC and the second group with a mobile device to complete an online shopping related task. As stationary PC, a common desktop computer with keyboard, mouse and Windows operating system was chosen. Participants used the Internet Explorer as browser to visit a genuine online shop. As mobile device, an Apple iPod Touch with Wi-Fi Internet connection was employed. A pre-installed mobile shopping app of the same online retailer was utilised to access the online shop. Both shopping systems allowed the respondents to undertake the same processes and complete the whole shopping process with the mobile or stationary device, respectively. However, the mobile app is adapted to features of the mobile device, e.g. to use the camera as barcode-scanner to search for products. The user interface of both e-channel formats is illustrated in figure 2.

The generalisability of the results may be limited by the characteristic of the assignment or the product chosen for online shopping (Churchill/Suprenant 1982). Therefore, the task was manipulated for two different products (a DVD movie and a lever arch file) and two distinct assignments (searching a product and purchasing a product). A relevant consideration affecting the choice of products and assignments for the study was the ability and believability to shop for these goods online, respectively, to search for them in an online shop. DVD movies and lever arch files are both standardised and familiar products that have a high potential to be considered when shopping on the Internet because the quality uncertainty in such products is marginal and usually no physical assistance or trial is needed (Grewal/Iyer/Levy 2002). The participants were provided with scenarios, giving them a buying (browsing) task for a DVD movie (lever arch file), and they had to use a stationary PC (a retailer’s web site) or a mobile device (a retailers mobile shopping app) to conclude the task. The experiment was conducted in a laboratory room at a German university. As an incentive, free coffee and pastries were offered.

Sample

A total of 402 voluntary participants were randomly assigned to one of the eight conditions. After completing this task, the respondents answered an online questionnaire to evaluate the e-channel. Accordingly, all answers were given in the post-experience context with one of the two e-channels. This approach allows us to compare real experiences with an e-channel instead of hypothetical expectations. The respondents ranged in age from 18 to 57 years (M = 23.90, SD = 3.48), and 50.5 % of the participants were female. 98.5 % of the participants have already used a PC to search online for product information and 94.5 % have used the stationary e-channel for online purchases. A mobile device has been utilised by 74.1 % of the respondents to search online for product information and 34.8 % have already mobile shopped.

Figure 2: Screenshots of e-channel formats: PC (web site) and mobile (shopping app)
Measures

Questionnaire items were adapted from previous studies to fit the context of online shopping with both e-channel formats. To measure PU, we adapted three items from Bhattacherjee (2001) and Davis (1989). PEOU was measured with five items (Davis 1989). We applied two items to assess the degree of PE (Bhattacherjee 2001). Following Homburg/Koschatz/Hoyer (2005), SAT was measured using three items. Three items to measure INT were adapted from Bhattacherjee (2001). All items were assessed using 5-point Likert scales, ranging from “strongly disagree” (1) to “strongly agree” (5). A pretest with 20 respondents was conducted to assess the clarity of the items and scales. A complete list of constructs and related items is given in appendix.

All constructs were measured as reflective constructs. For evaluation of internal consistency among the items, Cronbach’s alpha was analysed. Scale reliability was assessed using average variance extracted (AVE) and composite reliability measure (see chapter 6). We compared chi-squares between the measurement model and the nested models to assess discriminant validity. The results of the validity assessment and scale-level reliability were satisfying.

6. Data Analysis and Results

To control for significant differences with regard to the utilised e-channels, shopping assignments and two different products, ANOVA was conducted. E-channel and task were employed as fixed factors and product as random factor. We included age, sex and experience (self-reported experience with the device) as control variables to test whether the evaluation of an e-channel is affected by demographic influences or personal traits. Experience with the device had a significant effect on all tested variables: PU (F=19.422, p<.000), PEOU (F=44.405, p<.000), PE (F=26.624, p<.000), SAT (F=13.181, p<.000), INT (F=19.023, p<.000). A further analysis of the bivariate correlations between experience and all constructs. With regard to the utilised e-channel formats we found significant differences for PU (F=144.16, p=.004), PEOU (F=23.85, p=.029), and INT (F=1053.94, p<.000).

Based on a comparison of means illustrated in table 1, it becomes apparent that traditional online shopping with a PC is preferred to mobile shopping, when both e-channel alternatives are utilised in the same context. We found no significant interaction effects.

To test our research model, we calculated a structural equation model (SEM), using AMOS 21. Several fit indices were examined to assess the fit of the hypothesised underlying factor structure. The chi-square/degree of freedom ratio is less than three. GFI and AGFI exceeded the recommended values of .9 for GFI and .8 for AGFI. Root mean square error of approximation (RMSEA) is less than .1, and Tucker-Lewis index (TLI) and comparative fit index (CFI) both exceed .9, which indicates a good model fit. All calculated values to evaluate the model fit are given in figure 3 and indicate a satisfactory global fit. To assess convergent validity of the instrument, we performed the test introduced by Fornell/Larcker (1981). All factor loadings are highly significant (p<.01) and exceeded .7, all construct reliabilities exceed .7, and average variances extracted (AVE) are higher than the .5 level, with the exception of the PEOU (AVE=.46) and INT (AVE=.47). Since, these values are only marginal below the recommended threshold and other studies report that an AVE higher than .4 is acceptable (Zhou/Yim/Tse 2005), we find support for the convergent validity of the measures.

Because both predictor and criterion variables were obtained from the same respondent, Common Method Variance (CMV) might bias our findings. To address the CMV issue, we followed the recommendations suggested by Podsakoff et al. (2003). First, we considered procedural remedies related to questionnaire and item design (e.g., to eliminate item ambiguity or to avoid social desirability). Respondents were told that there are no right or wrong answers.

Table 1: Means and Standard Deviations for each scenario

<table>
<thead>
<tr>
<th></th>
<th>Movie DVD</th>
<th></th>
<th>Lever arch file</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>PC Mean (SD)</td>
<td>Mobile Mean (SD)</td>
<td>PC Mean (SD)</td>
<td>Mobile Mean (SD)</td>
</tr>
<tr>
<td>Browsing task</td>
<td>4.56 (.42)</td>
<td>3.84 (.77)</td>
<td>4.36 (.69)</td>
<td>4.01 (.61)</td>
</tr>
<tr>
<td>Buying task</td>
<td>4.34 (.50)</td>
<td>3.94 (.59)</td>
<td>4.22 (.65)</td>
<td>4.01 (.69)</td>
</tr>
<tr>
<td></td>
<td>4.59 (.47)</td>
<td>3.94 (.82)</td>
<td>4.11 (.80)</td>
<td>3.98 (.60)</td>
</tr>
<tr>
<td></td>
<td>3.70 (.75)</td>
<td>2.68 (1.08)</td>
<td>3.87 (.97)</td>
<td>3.65 (.91)</td>
</tr>
<tr>
<td>N</td>
<td>49</td>
<td>51</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
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Legend: PU = Perceived Usefulness, PEOU = Perceived Ease of Use, PE = Perceived Enjoyment, SAT = Satisfaction, INT = Intention.

Scales: strongly disagree (1) to strongly agree (5).
wrong answers and that they should answer all questions honestly. Second, we conducted Harman’s single-factor test (for one single method factor), to control the results for CMV, using factor analysis across all variables. Since the majority of the variance cannot be accounted for by one general factor, there is no indication for CMV. However, the validity of Harman’s single-factor test has been criticised (e.g. Malhotra/Kim/Patil 2006, Podsakoff et al. 2003). Hence, as a third step, we controlled for the effects of a single unmeasured latent method factor. For this purpose, a first-order factor with all of the measures as indicators has been added to the model. This approach allows to control for any systematic variance among the items that is independent of the covariance due to the constructs of interest (Podsakoff et al. 2003). Fourth, we included a marker variable in the model that is not theoretically related to the latent variables in our study (Williams/Hartman/Cavazotte 2010, Lindell/Whitney 2001). In our model, we used recommendations of the retailer (if respondents have noticed product recommendations when searching for the product) as marker variable. A comparison of the “marker model” with “the no marker model” revealed no bias in substantive relations due to marker variable variance (Williams/Hartman/Cavazotte 2010). These results suggest that our analysis is not subject to an inherent CMV in the responses to the survey.

The results of the SEM analysis for the total sample as well as the results grouped by e-channels are illustrated in figure 3. The findings support most of the hypothesised relationships, except for two postulated effects. First, instead of the assumed positive effect of PEOU on INT, the results indicate a negative relationship (β=-.52, p<.01) for the PC sample as well as for the total sample (β=-.20, p<.05), while the effect is not significant for the mobile group (β=.03, p>.1). This finding is quite surprising and would imply that the intention to use a stationary e-channel decreases the easier it is to use. We assume that this negative effect might be due to the mediating effect of PU, SAT and PE which are positively influenced from PEOU. In the same manner, Venkatesh et al. (2003) found that a positive effect of effort expectancy on usage intention in a model with direct effects, turns negative in a model that includes moderating influences. In the absence of a theoretical explanation, we believe that this counterintuitive relationship might be due to the effect of unconsidered variables that moderate the link between PEOU and INT. Second, we found no significant effect of PU on INT. Therefore, H2b has to be rejected. This finding could result from the specific kind of products utilised and evaluated in the experiment, which might be of low relevance for respondents or which consumers would prefer to buy in another channel. Therefore, the application of two low involvement and low priced products as stimuli might have led to a framing effect (Tversky/Kahneman 1986). This means that respondents potentially did not express their general usage intention, but their intention to use an e-channel to purchase these specific products. Another possible reason for the insignificant relationship has been discussed by Mallat et al. (2009), who discovered that the effect of usefulness on use intention was fully mediated by the use context (such
as local conditions, time pressure, availability of other shopping means). Nevertheless, the majority of highly significant path coefficients indicate that the research framework is suitable to evaluate consumer behaviour for both formats of e-channels as well as for a combination of e-channels (total sample). However, a sole observation of the total sample would be attended by a loss of information, with regard to the differences across e-channels. The results of the comparative analysis of e-channels reveal interesting differences between the effects of the two sub-samples (PC/mobile group) in the dataset. For example, the effect of PU on SAT is stronger in the total sample ($ß=0.71, p<0.01$) and for the mobile group ($ß=0.74, p<0.01$) compared to the PC group ($ß=0.57, p<0.01$), which underlines the relevance of a more differentiated perspective on e channel formats. In other cases, the effect size is quite consistent between the individual group effects. For example, the impact from PEOU on PU is quite similar for the total sample ($ß=0.79, p<0.01$), the PC group ($ß=0.76, p<0.01$) and the mobile group ($ß=0.79, p<0.01$).

Consumers’ evaluations of a channel in a shopping process must be considered with regard to the process and final outcome of using the channel (Balasubramanian/Raghunathan/Mahajan 2005). Distribution channels differ in their functions and utilisation, thereby creating unique customer experiences in different stages of the buying process (Berry et al. 2010). The evaluation of a specific e-channel may also differ according to a consumer’s motivation, which is determined by a given situation (Balasubramanian/Raghunathan/Mahajan 2005). Konu¸s/Verhoef/Neslin (2008) indicate that the perceived utility of a channel also depends on consumers’ multi-channel adoption levels, varying shopping patterns, and their perceptions of channels. Moreover, customer evaluations and preferences drive channel-using intentions, e.g., the customer may prefer the e-channel that is easier to use (Neslin et al. 2006). Therefore, we tested whether the revealed distinctions across path coefficients of the subsamples are statistically different. To test for significant differences across e-channels, we conducted multigroup analysis (Keil et al. 2000). The same procedure was conducted by Choi/Kim/Kim (2010) to test for moderating effects of consumer experiences on the acceptance of Internet protocol television (IPTV) services or by Klapper/Schlichthorst/Schnell (2006) to analyse the long-term effect of advertising attitude. By conducting a multigroup comparison, we were able to analyse if there is a moderating effect of the e-channel format on consumer behaviour. We calculated the significance level of the observed differences between the two e-channel alternatives by using critical ratios ($z$-scores) to identify significant differences between groups, using chi-square difference tests. The results indicate a significant difference between the mobile channel and the stationary e-channel in terms of the link from PEOU to INT ($z$-value = 2.97, $p<0.01$). One explanation might be that mobile devices provide further opportunities to use this kind of devices in a more innovative and easy way (e.g. touch screen, augmented reality, etc.) that consumers are missing when they shop online with a PC. With regard to the results of the ANOVA presented in table 1, the findings indicate that PEOU is evaluated quite positive for the PC group but much weaker for mobile devices. The less positive evaluation of the mobile e-channel might be due to its limited options, e.g. the small screen size. Hence, we believe that individuals evaluate the ease of use of one e-channel with regard to other available e-channels and that both e-channel formats are believed to be insufficient to shop online because of their limited ease of use. For all other path relationships no further significant differences were found.

7. Discussion and Implications

Considering recent developments of mobile shopping, we assume that the pluralisation of Internet-enabled devices will reshape the Internet retailing landscape as well as online consumer behaviour. Therefore, this study extends former research by investigating consumers’ evaluation of online shopping regarding the utilisation of varying formats of electronic distribution channels (e-channels). By developing and testing a research model, we compare two different formats of e-channels, a stationary e-channel and a mobile e-channel, incorporating that consumers’ evaluation and intention to shop online depend on the utilised e-channel format. To capture post-experience evaluations of e-channels, instead of hypothetical expectations, we conducted a scenario-based experimental laboratory design to collect data with a data set of $N=402$ e-channel users, composed of $N=201$ mobile shoppers and $N=201$ PC shoppers.

The results of our SEM analyses suggest that our research model, an extension of TAM, provides important insights into consumers’ evaluation of both employed e-channel formats. The predictive quality of the model indicates satisfactory model specification for the total sample as well as for the two sub-samples. Most paths were consistent with our expectations and hypotheses (see figure 3). Only the postulated direct effect from PU on INT was found to be non-significant for both sub-groups. Besides, our results show that PEOU is a significant but weak motivator of SAT, compared to the impact of PU, which is in line with other studies (e.g. Liao/Chen/Yen 2007). Moreover, we found a positive effect from PE on INT for both groups of e-channels. With this knowledge, online retailers should create enjoyable shopping environments in all online distribution channels to stimulate the intention to use an e-channel for online shopping. Most surprisingly, the results indicate a negative relationship between PEOU and INT that is significant for the PC sample and for the total sample, while there is no significant effect for the mobile group. These results lead us to reject our hypothesis that PEOU has a positive effect on INT, which has been shown by numerous previous studies. However, in previous research, the effect of
PEOU on INT was found to decrease with increasing experience of the user with the technology (e.g., Davis/Bagozzi/Warschaw 1989), and even to turn negative when moderated by other variables (Venkatesh et al. 2003). To test whether this and other differences are significant across the mobile and PC group, we conducted a multigroup analysis.

The multigroup test underlined the significant difference concerning the impact of PEOU on INT, with PEOU having a negative influence on INT for the group of PC users. One explanation might be that the PC has become an instrument to perform work-related tasks in a “lean-forward” mood for more and more people. Compared to touch screens and further innovative use functions which are offered by new e-channel formats and facilitate a “lean-back” mood, a keyboard and a mouse are still easy to use but quite limited in how they can be used, which might negatively impact the intention to use the traditional e-channel.

Furthermore, we compared the eight experimental conditions to investigate for differences across the evaluation of e-channels, products and assignments by conducting ANOVA (see table 1). The means show considerable differences in the evaluation of online shopping depending on the utilised e-channel format. In particular, the online shopping experience with the PC was evaluated more positively than the mobile shopping experience in all respects. Based on these results, we assume that consumers still perceive m-commerce as a complementary shopping potential than as a substitute for stationary devices. One reason, therefore, might be that consumers have less experience with mobile devices compared to stationary devices. Our results indicate that experience is a significant covariate with regard to the evaluation of e-channels, while there is no difference of age and sex is only significantly different with regard to the perceived enjoyment of an e-channel. This is in line with prior studies (e.g., Koenigstorfer/Groeppel-Klein 2012; Monsuwé/Dellaert/de Ruiter 2004) that found evidence for the moderating role of the experience with a technology on the evaluation of its performance. We believe that easy to understand and intuitively operated shopping applications can provide customers with more control in their process of conducting online transactions which can increase customer satisfaction with mobile devices and their intention to shop mobile (Rust/Kamman 2003). Therefore, retailers should try to explain and train the handling of mobile web sites or applications.

Finally, there are some limitations to discuss that imply motivation for future studies. In our study, we employed an experimental laboratory design. Mobile devices were used next to stationary devices and vice versa, so one specific advantage of mobile shopping, namely the mobility, was not given. Building on status quo bias Falk et al. (2007) show that consumers usually choose the better known alternative, when both e-channels are available and perceived as exchangeable. Therefore, further research should investigate actual shopping behaviour and consider effects of situational and contextual factors. Furthermore, the existence of multiple e-channels entails that in the information stage and actual purchasing stage, diverse e-channels can be used for both tasks (Kollmann/Kuckertz/Kayer 2012). Therefore, research should pay attention to the combined, complementary and parallel utilisation of e-channels as well as online channel switching in the purchasing process. In our study we employed two product categories that are typical online shopping goods with standardised quality. However, usage patterns across e-channels might vary for various product categories. Konus/Verhoef/Neslin (2008) tested multichannel covariates for heterogeneous product categories (mortgage, health insurance, holidays, books, computers, electronics, and clothing) selected in terms of differences in complexity, purchase frequency, and tangibility and found that multichannel-based consumer segments differ across these product categories. For example, their results revealed that shopping enjoyment has a significant effect only for clothing. Therefore, studies that involve multiple products would yield some richer insights on how evaluation of an e-channel would vary across different product categories. Further research may also consider differences between low- and high-involvement goods or products that need physical assistance or pre-trial (Monsuwé/Dellaert/de Ruiter 2004). Past studies have identified attitude towards the online store (Joyawardhana 2004) and attitude towards online shopping (Soopramanien/Robertson 2007) as predictors of intentions to buy online. Attitude towards the e-channel as well as attitude towards online shopping in general might also impact the e-channel usage intentions and should be observed in future studies. Last, it is to mention that in previous studies (e.g., Koenigstorfer/Groeppel-Klein 2012) a moderating influence of age on evaluation and utilisation of a device to shop online was found. In our sample, no direct effect of age or sex was discovered, which might be due to the young average age of the respondents in our study and might become significant in a sample with a balanced age pattern.

The results hold implications for theory and retail practice. With regard to our first research question the findings show differences of the evaluation of mobile and stationary e-channel and point out that evaluation and intention to shop online is affected by the utilised e-channel format. For researchers, this underscores the need to differentiate between e-channel formats when analysing consumer online shopping behaviour and substantiates the way in which consumers access the Internet needs to be considered. Researchers and retail managers have to be aware of these differences when aiming to capture a holistic online shopping experience and when interpreting consumers’ evaluation of online shopping. The less positive evaluation of the mobile e-channel compared to the stationary e-channel shows that there is still need to improve the mobile shopping environment. Mobile shopping needs to be perceived as more useful,
easier to use and more enjoyable to be able to compete with stationary devices, i.e. those devices with which consumers have extensive experience and that are therefore the preferred alternative to shop online. If retailers are able to improve the mobile shopping experience, this might be a fruitful complementary online distribution channel, as the results of our SEM-analysis show. With regard to our second research question, the findings indicate that satisfaction with an e-channel is the key requirement to stimulate the intention to re-use this e-channel to shop online and that satisfaction is influenced by the usefulness and the ease of use of an e-channel. While for both e-channel formats we found no effect from usefulness on intention, the enjoyment of the mobile and stationary e-channel has an impact on the intention to re-use in equal measure. The only significant difference across both e-channel formats, which was revealed through our multigroup analysis, indicates a differing impact from ease of use on re-use intention. Further studies and theoretical considerations will be necessary to help to explain the negative effect that we found for the PC group. Nonetheless, this difference suggests that diverse e-channel formats do not work in the same manner and transferability across e-channels might be limited. Because more devices, such as tablet PCs or Internet-enabled TVs, provide access to the Internet and online shopping, retailers will have to manage not just one online channel but a multichannel e-commerce system. Therefore, marketing practice will have to consider the perceived risks and benefits of each online channel as well as how and when consumers choose one e-channel over another for online-shopping.

Appendix

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>PU1</td>
<td>By using the e-channel, I would improve my performance to search for products.</td>
<td>Adapted from Bhattacherjee 2001, Davis 1989</td>
</tr>
<tr>
<td>PU2</td>
<td>Using the e-channel to shop online is effective.</td>
<td></td>
</tr>
<tr>
<td>PU3</td>
<td>I would find the e-channel useful to shop online.</td>
<td></td>
</tr>
<tr>
<td>PEOU1</td>
<td>My interaction with the e-channel would be understandable.</td>
<td>Adapted from Venkatesh 2000, Davis 1989</td>
</tr>
<tr>
<td>PEOU2</td>
<td>Learning to operate the e-channel would be easy for me.</td>
<td></td>
</tr>
<tr>
<td>PEOU3</td>
<td>Shopping online with the e-channel would be clear.</td>
<td></td>
</tr>
<tr>
<td>PEOU4</td>
<td>It would be easy for me to find what I am looking for.</td>
<td></td>
</tr>
<tr>
<td>PEOU5</td>
<td>It would be easy for me to become skilful at using the e-channel.</td>
<td></td>
</tr>
<tr>
<td>PE1</td>
<td>Using the e-channel to shop online is enjoyable.</td>
<td>Adapted from Venkatesh 2000</td>
</tr>
<tr>
<td>PE2</td>
<td>It is fun to use the e-channel to shop online.</td>
<td></td>
</tr>
<tr>
<td>SAT1</td>
<td>Overall, I am very satisfied using the e-channel to shop online.</td>
<td>Adapted from Homburg/Koschat/Koschate/Hoyer 2005</td>
</tr>
<tr>
<td>SAT2</td>
<td>My personal needs and wishes concerning the use of the e-channel were satisfied.</td>
<td></td>
</tr>
<tr>
<td>SAT3</td>
<td>Overall, the e-channel would meet my expectations.</td>
<td></td>
</tr>
<tr>
<td>INT1</td>
<td>I intend to continue using the e-channel to shop online.</td>
<td>Adapted from Bhattacherjee 2001</td>
</tr>
<tr>
<td>INT2</td>
<td>In the future, I intend to use the e-channel more often to shop online.</td>
<td></td>
</tr>
<tr>
<td>INT3</td>
<td>I will rather use the e-channel than the access via other end devices.</td>
<td></td>
</tr>
<tr>
<td>SR1</td>
<td>When browsing for a product, I paid attention to recommendations of other shoppers (reviews, ratings, discussions, etc.).</td>
<td>Adapted from Senecal/Nantel 2004</td>
</tr>
<tr>
<td>SR2</td>
<td>When browsing for a product, I paid attention to shopping recommendations of the online-shop.</td>
<td></td>
</tr>
</tbody>
</table>

Table A1: Constructs and corresponding items for the research model

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References


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Multichannel Retailing, Online Shopping, E-commerce, M-commerce