THE USE OF FREE AND PAID DIGITAL PRODUCT REVIEWS ON MOBILE DEVICES IN IN-STORE PURCHASE SITUATIONS

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Abstract

Digital product reviews provided by users and experts are used as purchase decision cues. In contrast to reviews obtained by websites on the desktop, it is open if they are adopted in in-store purchase situations on mobile devices. In addition, it is an open issue to which degree free digital product reviews provided by users or paid digital product reviews provided by experts are adopted and influence consumers' preferences for stores that offer access to them. To answer these questions, a theoretical model is proposed based on Innovation Diffusion Theory (IDT), Technology Acceptance Model (TAM) and Theory of Planned Behaviour (TPB). Then, the model is empirically evaluated by conducting a study with 116 subjects. Analysis of variance (ANOVA), one-sample t-tests and Pearson correlation coefficients are used to examine the data. Results indicate that digital product reviews are adopted on mobile devices in in-store purchase situations, especially when they are provided for free and refer to consumer electronics. On average, consumers are willing to pay 2.9 percent of the product's price for a corresponding review. Based on these findings, new business models for providers of reviews and store managers are conceivable that extend physical products with free or paid digital content through the use of product identification technologies at the point of sale.

Keywords: Product reviews, retailing, free content, paid content, mobile device, adoption study

1 INTRODUCTION

Word-of-mouth has long been recognized as a major driver of product sales as quality uncertainty and high search costs for identifying relevant product information may prevent customers from making purchases (Chen et al. 2004). Particularly in online purchase situations, almost the half of the 5500 participants of a BizRate survey said that they have consulted opinion sites before they made a purchase (Piller 1999). In addition, the Internet has not only significantly reduced the consumers' information-retrieval cost but also the reviewers' information-delivery cost (Chen and Xie 2005). Thus, a lot of free digital product reviews are available on Amazon.com, DooYoo.co.uk, Ciao.de, eOpinions.com and Ask.com among other Web 2.0 review platforms. In addition, several expert magazines provide digital product reviews for free, e.g., PC Praxis, Car and Driver or Runner's World. But there are also paid digital product reviews available from experts. For instance, consumer and test magazines such as Consumer Reports, AudioVision, or Stiftung Warentest regularly publish paid reviews on their websites.

As digital product reviews are adopted through websites at home, they may also be used on mobile devices in in-store purchase situations. Correspondingly, mobile applications are being developed for consumers to communicate with products (Maass and Varshney 2008). Thus, mobile shopping assistants such as MASSI (Metro AG), the Tip'n Tell client (Maass and Filler 2007, Kowatsch et al. 2008), the Mobile Prosumer (Resatsch et al. 2008), or APriori (von Reischach and Michahelles 2008, von Reischach et al. 2009a) allow to request product information directly at the point of sale. For example, an electronic consumer good is identified by a mobile barcode or RFID reader device and then provides its information, which is obtained from a web service, such as the recommended sales price, its producer or other products that fit with it (see Kowatsch et al. 2008, Maass et al. 2008). In that case, physical products can be enriched with a new digital content service in the form of product reviews. This would not only change the way retail stores are perceived by consumers, e.g., they might request reviews directly at the point of sale instead at home, but would also have managerial implications for retailers and providers of reviews. In this sense, several research questions are relevant such as are digital product reviews in retail stores adopted at all, how much (if at all) should the provider charge for product reviews, how should reviews be designed, which technology is accepted and usable for consumers, or how should interfaces for mobile devices be designed in order to retrieve product information fast and efficient.

In this paper, we focus on the first two questions stated above, because costs of digital product reviews are a main concern from the consumer's perspective and may influence their adoption predominantly. Up until now and to the best of our knowledge, it is open (1) whether digital product reviews are adopted at all by using mobile devices in retail stores, (2) how costs influence their adoption when provided for free by users or for a fee by experts, (3) how costs influence the store preference of consumers, and finally, (4) whether the review's adoption rate positively influences consumers' preferences of stores that have access to digital product reviews. This paper provides first answers to these questions by conducting a preliminary study. It is organized as follows. In the next section, related work is described. Then, our research model and hypotheses are developed, followed by the methodology section that explains the design of the study, the instrument selection and the data analysis. After this, results are presented and discussed with respect to managerial implications and design guidelines for further lab experiments and review information systems. Finally, we conclude our work and provide an outlook on future research.

2 RELATED WORK

Context-aware applications have the potential to provide users with commerce-relevant information and services (Dey and Abowd 1999). According to Konana and Ray (2007), physical products

increasingly incorporate information technology that facilitates the differentiation of products in competitive markets. For instance, RFID-based Electronic Product Codes (EPC) attached to products allow the retrieval of associated product information that can be used for differentiation (Maass and Lampe 2007). Products that actively use information services for adaptations to situations, users and other products provide dynamic product interfaces and are denoted as smart products (Maass and Janzen 2007, Maass and Varshney 2008). They are claimed to be situated, personalized, adaptive, pro-active, business-aware and network-capable (Maass and Janzen 2007). The potential of new business models and services for smart products (e.g. products may be able to sell themselves) is suggested to be very high (Konana and Ray 2007). In particular, product review services provided by third parties can be implemented by attaching the corresponding information to the smart product information sphere.

On the other side, Mobile Commerce (mCommerce) is starting to become a promising and lucrative growth market (Kim et al. 2007). It allows Electronic Commerce activities on mobile devices such as on mobile phones or PDAs (Lee and Benbasat 2003). Thus, product recommendation services will be not only available within online shopping situations at home where they have recently gained major interest in the Information Systems research community (Bo and Benbasat 2007) but also in retail stores on mobile devices (Maass and Kowatsch 2008). Bo and Benbasat (2007) define integrated sets of recommendation services as "software agents that elicit the interest or preferences of individual users for products either explicitly or implicitly, and make recommendations accordingly" (p. 137). Several studies showed that recommendation agents provide value-added services that help to reduce customer's information overload in shopping situations and reduce search complexity (Häubl and Trifts 2000) and trust in decisions (Komiak and Benbasat 2006). According to this paper, those agents may also recommend product reviews with all the benefits described above.

Already ten years ago, the diffusion of reviews was remarkable as the opinion collector BizRate.com, which compiles consumer ratings of e-commerce Web merchants, had nearly 2.1 million users (Piller 1999). Jiang and Wang (2008) discuss economic impacts of reviews depending on their informativeness, the number of product attributes and competitive markets. For digital cameras and multivitamin products provided by Amazon, they find that a monopolist benefits from positive product ratings whereas companies in competitive markets can be hurt by it. Li and Hitt (2008) suggest to change marketing strategies to get positive reviews based on empirical findings of online reviews at Amazon as they may be subject to self-selection biases influencing consumer purchase behaviour and consumer surplus. For the same review platform, Chen et al. (2004) investigate the impact of user reviews on sales. They find that the number of consumer reviews is positively related to sales, in particular when products (here books) are less popular. A DoubleClick study in 2004 revealed that for some product categories such as electronics online review sites have a greater influence on purchase decisions than any other medium (DoubleClick 2004).

Corresponding to the current work, first prototypes of mobile applications are being developed that facilitate the use of product reviews in bricks-and-mortar stores. For example, the APriori concept allows to access and to generate product reviews on mobile phones (von Reischach and Michahelles 2008, von Reischach et al. 2009a). Other prototypes enable to access carbon footprints of products for ecology-minded consumers (Dada et al. 2008), user-generated reviews from Amazon (Pfefferle 2007) or diet and nutrition information of groceries (Mistry et al. 2009, Maes and Mistry 2009)[1].

3 RESEARCH MODEL AND HYPOTHESES

Digital product reviews are digital contents (Shapiro and Varian 1999). They can be classified into free contents or paid contents (Stahl and Maass 2006). In the following, stores, in which consumers

[1] See also the website of the project sixth sense: http://www.pranavmistry.com/projects/sixthsense/index.htm

have access to digital product reviews, are denoted as review-enabled stores. According to the research questions stated in the introduction, we study the use of free and paid digital product reviews that are obtained by mobile devices at the point of sale in general and under the conditions (1) that a fee has to be paid for them and (2) that they are provided for free. In addition, the relationship between the presence of fees, the adoption of reviews and the intention to prefer review-enabled stores is evaluated. As an overview, our research model is depicted in Figure 1.

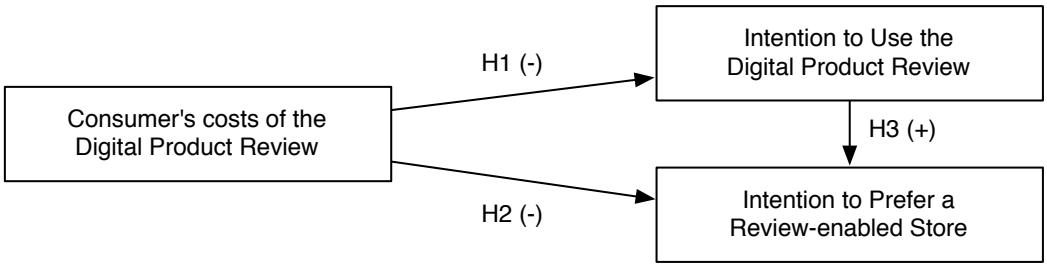

Figure 1. Research Model.

We study the adoption of digital product reviews by using models of diffusion of innovation and technology acceptance research because reviews represent an innovation that the consumer can adopt for application in purchase decision situations. Two streams of research can be identified in the adoption of innovations. First, diffusion of innovation research takes a social science perspective into account, whereby perceived characteristics of innovations such as relative advantage, compatibility and complexity among others are identified as determinants for adopting or rejecting new innovations (Rogers 2003). The second line of research studies intention-based models to understand the adoption of innovations. Accordingly, the theory of reasoned action (Ajzen and Fishbein 1980) and the theory of planned behaviour (Ajzen 1991) are taken from the field of social psychology to identify attitudes, social influences and facilitating conditions that predict the intention of usage. Thus, the behavioural intention to use product reviews predicts their adoption. For instance, TAM is based upon this line of research (Davis 1989). In addition, several studies successfully integrate both research domains (Moore and Benbasat 1991, Venkatesh et al. 2003). Consistent with the latter, this article takes both perspectives into account, too.

According to Venkatesh et al. (2003, p. 453), facilitating conditions include aspects of the technological and/or organizational environment that are designed to remove barriers to use. Here, the barriers are the costs the consumer has to pay before using a review. We consider costs by means of a review's price tag. On the other side, consumers may pay for a digital product review provided by an expert if they expect to reduce negative emotions related to the product after the purchase when consulting the expert review (Bettman et al. 1998). In this sense, consumers may adopt paid content (Stahl and Maass 2006). Thus, the consumer needs to make a trade-off between costs for the review in advance and the expected outcome of the product purchase. But with the availability of user-generated and expert reviews (see Li and Hitt 2008, Chen et al. 2004), which can be obtained for free (e.g., reviews from Amazon), the perceived value of paid reviews may decrease and consumers may intend to use free product reviews rather than reviews they have to pay for. We therefore propose the following hypothesis.

H1: The intention to use a digital product review on a mobile device at the point of sale is lower if the consumer has to pay for it and higher otherwise although an expert provides the paid review.

As costs of a review may prevent its adoption, also retail stores that provide them may be less preferred. Thus, we suggest that the consumer's costs of a review negatively influence the intention to prefer a review-enabled store. This construct is related to the *intention to return* measure used by

Kamis et al. (2008) as it is an indicator of repeated usage of a store, which is relevant for retailers and their sales.

H2: The intention to prefer a review-enabled retail store is lower if the consumer has to pay for the digital product review and higher otherwise.

And finally, with regard to the theory of reasoned action (Ajzen and Fishbein 1980) and the theory of planned behaviour (Ajzen 1991) the usage of electronic reviews in retail stores is predicted by the subjects' behavioural intention. Correspondingly, the action can only be performed in review-enabled stores as they allow the behaviour in question, the usage of the review.

H3: The intention to use a digital product review has a positive relationship with the intention to prefer a store that offers them.

4 METHODOLOGY

4.1 Study Design

We employed a 2 x 3 factorial design as shown in Table 1. The treatments were the type of the product review (free reviews versus paid reviews) and the product type (digital camera versus yogurt versus wine). Both were between-subject factors. We used three different products for greater generalizability of the results. Thus, the product condition in the factorial design was not part of our research model but was included in our data analysis to ensure that the results were the same for all three products used.

		Product Review	
		Free (costs = 0)	**Paid (costs > 0)**
Product	**Digital Camera**	Group A (n=21)	Group B (n=19)
	Yogurt	Group C (n=21)	Group D (n=18)
	Wine	Group E (n=18)	Group F (n=19)

Table 1. Study design; Note: 116 subjects were randomly assigned into the six groups

A total of 116 subjects were recruited from a German university, which was composed of 83 male and 31 female students with two subjects giving no answer. Their age ranged between 18 and 19 (n=4), 20 and 24 (n=71), 25 and 29 (n=37) and from 30 to 34 (n=3) with one subject giving no answer. The students were interested in design (n=51), computer science (n=37) and economics (n=12) with 16 subjects giving no answer. We chose digital cameras, yogurt and wine for three reasons: (1) the products belong to different price segments, (2) differ in their domains and (3) are nonessential goods. This selection is also consistent with prior research (Jiang and Wang 2008). All three types of products can be consulting intensive. First, digital cameras are technical products that offer a variety of different features. Here, a consumer may want to know about the quality and durability of these features, which could be obtained by product reviews (Pfefferle 2007, Jiang and Wang 2008). Second, yogurt as nutrition good is also consulting sensitive for consumers, which diet, are ecology-minded individuals (Dada et al. 2008), have to avoid lactose or have individual nutrition allergies and therefore have to request reviews (Mistry et al. 2009, Maes and Mistry 2009). And finally, the selection of the right wine is important for consumers, who plan a dinner and want to know which wine fits to a given meal or want to impress their guests.

For each product and product review type, we developed separate questionnaires. First of all, each subject was shown an in-store shopping scenario on a picture. This scenario was not related to the products of this study to reduce an individual bias of the subjects when rating the product-specific items of the questionnaire. It showed product shelves with RFID-tagged mobile navigation units and a

mobile device capable of identifying the products with an RFID-reader as depicted in Figure 2. Subjects were told that they own this mobile device and that they can request product reviews with it after they had touched the product in question with the RFID-reader attached to it. Then, all subjects were asked to rate their intention to use reviews for the product in question on their mobile device (1) in general (all Groups) and (2) when product reviews are provided by a user-community (the Amazon model) and could be accessed for free (groups A, C and E) or when product reviews are provided by professionals and they had to pay for it (groups B, D and F). In Addition, the subjects of the groups B, D and F were asked how much of the product's price they were willing to pay for the review.

4.2 Instrument

For our survey instrument, we adapted scales from Davis (1989) based on the work of Ajzen and Fishbein (1980) for defining the behavioural intention to use digital product reviews. Accordingly, the behavioural intention covers the four behavioural elements action (usage), target (product reviews obtained from a mobile device), context (buying a product in a bricks-and-mortar store), and time (the time of the survey) when measuring the behaviour in question. Likewise, the measure *intention to prefer a review-enabled retail* store was adapted from Kamis et al. (2008). Consistent with prior research, all items with the exception of the maximal amount of the review's fee were based on seven-point Likert scales, ranging from extremely disagree (1) to extremely agree (7). All items are shown in Table 2.

Figure 2. Consumer using an RFID-enabled mobile device within a retail store selling mobile navigation units

	Construct	Item
IUG	Intention to use product reviews in general	I would use digital product reviews on my mobile device at the point of sale to purchase a [digital camera | yogurt | wine].
IUM	Intention to use product reviews (free | fee manipulated)	I would use digital product reviews on my mobile device at the point of sale to purchase a [digital camera | yogurt | wine], if they are available for [free and provided by a user community | a fee and provided by professionals].
IPS	Intention to prefer a review-enabled store	I would prefer a retail store for buying a [digital camera | yogurt | wine] that offers me product reviews on my mobile device if they are available for [free and provided by a user community | a fee and provided by professionals].
MAF	Maximal amount of the review's fee	How much of the product's price would you pay for a product review (in percent)?

Table 2. Constructs and Items of the questionnaires

4.3 Data Analysis and Results

We calculated several metrics to describe the results of the study. Beside the mean values and standard deviations, we used one-sample t-tests to evaluate the fact whether the mean value of the ratings was significantly above or below the neutral test value 4 on the 7-point Likert scales, thus indicating the strength of intentions of the subjects. For all constructs, these descriptive statistics are shown in Table 3.

Construct (product)	Group(s)	N	Mean	SD	One sample t-test, test value = 4
IUG (digicam)	A and B	40	5.51	1.69	p < .001 ***
IUG (yogurth)	C and D	39	3.79	1.86	p = .497
IUG (wine)	E and F	37	4.38	1.95	p = .245
IUM (free, digital cam.)	A	21	5.67	1.39	p < .001 ***
IUM (free, yogurt)	C	21	3.67	1.80	p = .406
IUM (free, wine)	E	18	4.06	1.89	p = .902
IUM (paid, digital cam.)	B	19	2.89	1.78	p < .017 *
IUM (paid, yogurt)	D	18	1.89	1.45	p < .001 ***
IUM (paid, wine)	F	19	2.26	1.44	p < .001 ***
IPS (free, digital cam.)	A	21	4.45	1.19	p = .107
IPS (free, yogurt)	B	19	3.43	1.66	p = .130
IPS (free, wine)	E	18	3.89	2.22	p = .834
IPS (paid, digital cam.)	C	21	2.89	1.75	p < .015 *
IPS (paid, yogurt)	D	18	2.00	1.46	p < .001 ***
IPS (paid, wine)	F	19	2.37	1.57	p < .001 ***
MAF (digital cam.)	B	19	2.17 %	1.58	N/A
MAF (yogurt)	D	18	1.94 %	1.47	N/A
MAF (wine)	F	19	4.45 %	2.63	N/A
MAF (all products)	B, D and F	56	2.85 %	2.20	N/A

*Table 3. Descriptive Statistics for the constructs intention to use product reviews in general (IUG), intention to use product reviews when manipulated (IUM), intention to prefer a review-enabled store (IPS) and the maximal amount of the review's fees (MAF); Note: * significant at 0.05, ** significant at 0.01, *** significant at 0.001*

Results show that the subjects only intend to use product reviews in general when they are to buy digital cameras as the mean value of 5.51 (for digital cameras) lies significantly above 4 at the .001 level, whereas 3.79 (yogurt) and 4.38 (wine) do not. Consistently, the behavioural intention to use free product reviews provided by a user-community applies only for digital cameras. But if subjects have to pay for reviews that are provided by professionals, they do not intend to use them for all three types of products, digital cameras, yogurts and wine. The latter result applies for the behavioural intention to prefer review-enabled stores, too. Thus, subjects do not prefer review-enabled stores if they have to pay for the digital cameras', yogurts' or wine's product reviews provided by professionals. The average amount of the review's fee that the subjects were willing to pay lies at 2.85 percent of the products sales price. This amount is higher for wine (4.45) than for digital cameras (2.17 percent) or yoghurts (1.94 percent).

According to the hypotheses H1 and H2, we used analysis of variance (ANOVA) to determine a significant difference in responses for both constructs, the intention to use product reviews and the intention to prefer review-enabled stores. As grouping variable, the type of the review was used, which was either free and or fee. The results of the ANOVA are shown in Table 4.

Construct	Groups	F-value (ANOVA)	p-Value (ANOVA)
IUM (digital camera)	A (free) x B (fee)	29.93	p < .001 ***
IUM (yogurt)	C (free) x D (fee)	11.28	p = .002 **
IUM (wine)	E (free) x F (fee)	10.54	p = .003 **
IPS (digital camera)	A (free) x B (fee)	23.09	p = .003 **
IPS (yogurt)	C (free) x D (fee)	8.03	p < .007 **
IPS (wine)	E (free) x F (fee)	5.83	p = .021 *

*Table 4. Analysis of variance (free vs. paid) for the constructs intention to use product reviews when manipulated (IUM) and the intention to prefer review-enabled stores (IPS); Note: * significant at 0.05, ** significant at 0.01, *** significant at 0.001*

For both constructs and all product types, we identified significant differences. In particular, the differences were highly significant at the .001 level when looking at the intention to use product reviews construct for digital cameras, whereas the difference was significant at the .01 level for all the other cases except for wine reviews and the intention to prefer review-enabled stores construct. Regarding the latter, we only found a significant difference at the .05 level. But all in all, the first two hypotheses are supported by the empirical data.

In order to prove the third hypothesis, we calculated Pearson's correlation coefficient between the intention to use product reviews and the intention to prefer review-enabled stores as shown in Table 5. As a result, all constructs correlate significantly at the .001 level for digital cameras, yogurt and wine. Therefore, also the third hypothesis is supported.

Constructs	Groups	N	Correlation Coefficient
IUM x IPS (digital camera)	A and B	40	.69 ***
IUM x IPS (yogurt)	C and D	39	.62 ***
IUM x IPS (wine)	E and F	37	.60 ***

*Table 5. Pearson's correlation coefficients for the constructs intention to use product reviews when manipulated (IUM) and the intention to prefer a review-enabled store (IPS); Note: *** significant at .001*

5 DISCUSSION

As shown in the last section, all three hypotheses are supported by the empirical data. In the following, the results are discussed in detail and managerial implications are suggested. First, the fee of the product review influences the intention to use the review negative (see Table 3, Rows 8-10). This is valid for all product types: digital cameras, yogurt and wine. Therefore, fees are barriers for the adoption of reviews. But one have to bear in mind that although fees reduce the intention to use reviews, free reviews provided by user-communities were only adopted significantly for digital cameras as shown in Table 3 (Rows 5-7). Thus, it is suggested that the type of the product plays a major role in evaluating the adoption of product reviews and should be part of the research model, either as an independent or mediating variable. In particular, we suggest to test products that differ in terms of experience and search goods (Franke et al. 2004), their perceived luxuriousness, quality or price (Hansen 2005). This will lead to a better understanding of the adoption of reviews depending on particular product attributes.

Second, the fee of the product review has a negative relationship with the intention to prefer review-enabled stores. This relationship is valid for all product types, too. Thus, the fee prevents review-enabled stores to be preferred. While the ANOVA resulted in stronger differences for the intention to use product reviews ($p < .001$ for digital cameras and $p < .05$ for yogurt and wine), the differences for the intention to prefer review-enabled stores is weaker ($p < .01$ for digital cameras and yogurt and $p < .05$ for wine). One reason may be the fact that for all product types the mean values of the intention to prefer review-enabled stores do not lie significantly above the neutral test value of 4 if product reviews are available for free (Table 3, Rows 11-13); they lie only significantly below the test value for the paid review cases as shown in Table 3 (Rows 14-16). Another more obvious reason may lie in other factors that have a greater influence on store preference. These factors may be the proximity between the store and the customer's location, the price-levels of the products, the customer's relationship to the sales personnel (Ponder et al. 2006) or the physical surroundings (Bitner 1992). Therefore, one has to consider and evaluate the relative importance of product review offerings with those factors that influence the customer's preferences in selecting retail stores, too.

Third, the intention to use product reviews predicts strongly the intention to prefer review-enabled stores. This correlation applies for all product types as shown in Table 5 and thus successfully applies prior research, i.e., the theory of reasoned action (Ajzen and Fishbein 1980) and the theory of planned behaviour (Ajzen 1991), to the adoption of product reviews.

As managerial implication, the extension of physical products with free or paid content may change the way of retailing. New business models may consider extended product services such as digital product reviews. In detail, reviews for consumer electronics should be provided at first and for free as our findings indicate. If a fee is required, then it should range between 1.94 and 4.45 percent of the product's price (see Table 3). In addition, ease of use of applications with fast product identification technologies are enablers for those systems to be adopted (Kowatsch et al. 2008, von Reischach et al. 2009b). Therefore, software applications with fast identification technologies need to be developed and evaluated. For instance, developers may use the camera of a mobile phone to identify products with barcodes or QR codes, e.g., by using Google's Android development kit or Apple's iPhone platform. But also radio frequency technology as used in Nokia's NFC devices may be suitable for fast product identification assuming the existence of products tagged with RFID antennas. Correspondingly, a recent evaluation of product identification techniques for mobile phones indicates that barcode recognition is almost as fast and convenient as scanning RFID tags (von Reischach et al. 2009b). Although there exist some of these applications already such as MASSI (Metro AG), the Tip'n Tell client (Maass and Filler 2007, Kowatsch et al. 2008) or the Mobile Prosumer (Resatsch et al. 2008), they have two shortcomings: they show a slow performance and the link to value added services such as product reviews is still missing. But prototypical applications are currently being

developed that may overcome these shortcomings, in particular with a focus on product reviews (Pfefferle 2007, Dada et al. 2008, von Reischach and Michahelles 2008, von Reischach et al. 2009a, Maes and Mistry 2009). Finally, we recommend store managers to provide a free wireless network infrastructure (e.g. WLAN) and products, which can be easily identified by RFID or QR codes, to their customers. This would not only enhance the retailer's competitive advantage as it may attract more customers, which would otherwise find and buy adequate products online at home, but this may also increase the customer's shopping experience in retail stores.

6 CONCLUSION AND FUTURE WORK

In this paper, we studied the use of free and paid digital product reviews. In contrast to prior work, this paper provides new insights as the reviews are requested on mobile devices in in-store purchase situations. For this purpose, we developed a research model and tested it empirically. Results indicate that (1) product reviews of digital cameras obtained by mobile devices are adopted in general at the point of sale, (2) the adoption rate of digital product reviews is higher when they were available for free and were provided by user-communities instead of experts, (3) that those stores were preferred which offer these reviews and (4) that the intention to use product reviews strongly predicts the customer's intention to prefer review-enabled stores. Thus, digital product reviews should be designed for mobile devices, such that they can be used fast and easily in bricks-and-mortar stores. Correspondingly, store managers should offer a free communication infrastructure to increase consumer frequency through the availability of digital product reviews. Furthermore, we suggest that digital product reviews can increase perceived confidence in purchase decisions and therefore reduce purchase time and increase customer satisfaction.

Consistent with the suggestions above, future work should study the impact of digital product reviews on the duration of purchase decisions to see if search effort can be reduced using cognitive load theory (Häubl and Trifts 2000, Bo and Benbasat 2007). Accordingly, another important research question concerns how the information of reviews can be visualized adequately on small screens such as on mobile devices and at the same time reduce cognitive effort for purchase decision making (Lee and Benbasat 2003). In addition, future work should consider product attributes such as price or quality and should evaluate if reviews are more relevant for search or experience goods. Then, investigations should be made into the relative importance of product reviews compared to other factors that influence a consumer's product choice such as personal relationships between buyers and sellers. Finally, perceived trust in the review provider may also play a major role in the adoption of digital product reviews under trust and relevance considerations (see Komiak and Benbasat 2006) and thus needs further investigation, too.

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