

An Analysis of the Perceived Value of Touristic Location Based Services

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Abstract

Location based services have gained increasing importance for the tourism industry in recent years. However, a real breakthrough to the mass market has not been fully achieved yet, due to a number of potential reasons, inter alia, institutional circumstances, drawbacks in technology and missing understanding of the real values inherent in location based services. Preliminary literature still indicates a lack of research in terms of understanding consumers' perceptions towards location based services from a consumer-centric rather than a technology-focused perspective. Therefore, the aim of this particular study is to investigate the actual consumer perceived value of touristic location based services. An exploratory sequential strategy is applied to develop and test a six-dimensional measurement scale. The findings suggest the extension of the original model by two new value dimensions, namely informational and convenience value. Further need for research and managerial implications are provided.

Keywords: Mobile Services; Location Based Services; Perceived Value; Consumer-centric; Tourism;

1 Introduction

Over the last decade, the continuous advances in information and communication technologies caused a growing proliferation of mobile technologies. The gained mobility in combination with useful applications thereby implied increasing relevance of such services to the tourism industry. The benefits inherent in mobile technologies, such as the delivery of relevant content in real-time and on demand to the tourist consumer without geographical and temporal restrictions (Pihlström, 2008) have rendered mobile services a valuable information channel in tourism. In particular, location based services can be regarded as key services of the 21st century (Egger and Jooss, 2010), as they enable ubiquitous information retrieval (Balasubramanian *et al.*, 2002) and the integration of GPS, allowing geographical positioning and access to location and context relevant information.

Although the high potentials of use are well estimated, a breakthrough to the consumer mass-market is still awaited. Apart from external barriers initially conditioning the adoption of mobile services, such as technological insufficiencies, underlying circumstances of the telecommunication industry or monetary hurdles (Göll *et al.*, 2010), the poor adoption rates can also be explained by attitudinal barriers in terms of lacking understanding of the question of what in particular makes

consumers adopt these new technologies. In other words, what are the decisive values that someone would use location based services? Hitherto, it appears that the question of what specific value location based services deliver is not fully explored yet.

Despite the increasing significance of mobile services for society and industry, to date only limited research has been conducted in terms of investigating mobile services from a consumer-centric perspective (Sweeny and Soutar, 2001). A number of authors (Dickinger, 2006; Rasinger *et al.*, 2007; Pihlström, 2008) argue that most of the literature in the field has predominantly been technology-focused so far by applying prominent models, such as the TAM (Davis, 1989) to assess technology adoption. However, Pura (2005) claims that in the context of mobile services, there is great need for understanding end-users, their relative value perceptions and emotions derived from using a service. This is in line with a number of researchers (Komulainen *et al.*, 2004; Lubbe and Louw, 2010) who highlight the necessity for identifying the values that trigger the intention to use mobile services. This knowledge is particularly essential for the actual creation of value. Once perceived values inherent in mobile services are understood, these can be specifically communicated to both, current users as well as non-users who might adopt mobile services in the future (Pura, 2005).

2 Theoretical Background

2.1 Location Based Services in Tourism

Location based services (LBS) have received increasing attention over the past years, mostly due to the recognition of the benefits gained by the geographical localisation and subsequent provision of relevant information (Pura, 2005). However, a number of recent studies (Pihlström, 2008; Wittmer *et al.*, 2007) have witnessed a remaining breakthrough of location based services to the critical mass. As a matter of fact, market research affirms scarce adoption rates by revealing low numbers of people actually making use of mobile services. Although the mobile phone penetration rate for the EU-27 constitutes 122 % (RTR, 2010), the smart phone penetration rates are comparatively low among the EU5 (UK, France, Germany, Spain, Italy), with Italy having the highest penetration rate of 32 % and France the lowest with 15.2 % (Blanford, 2010). The major impediment thereby constitutes high costs (61.7 %), followed by the missing comprehension of the added value (36.1 %) (Statista, 2010). As a result, the relatively poor adoption rates of mobile services lead to the assumption that much more research is still needed to fully comprehend the real value that consumers gain from using these services.

However, Pedersen (2005) argues that existing models in current literature explain the adoption and use of mobile services only to an insufficient extent. Most studies conducted so far have focused on technological aspects of mobile services, such as the Technology Acceptance Model (Davis, 1989), the UTAUT (Venkatesh *et al.*, 2003), the Technology Readiness (Davis *et al.*, 1989) or the Innovation Diffusion Theory (Rogers, 2003) to name but a few. However, despite the great attention in

literature, these models have also received criticism in the course of the past 20 years (Bigné *et al.*, 2010) and have often been subject of revision or extension with non-technology variables. As a result, instead of extending or reworking the TAM model yet another time in order to be applicable to the respective research context, the present study advocates the application of the perceived value construct instead. This is supported by Wittmer *et al.* (2007) who claim that research must become less technology-focused and more end-user oriented, which is in line with Kleijnen *et al.* (2004) who confirm a huge lack of research focusing on the consumer perspective.

Hence, the present lack of breakthrough of location based services coupled with researchers' demands for more consumer-centric work in order to understand the full complexity of the values inherent in location based services, provide the rationale for the present study to explore the perceived value of touristic location based services.

2.2 The Framework of Perceived Value

According to Bettman *et al.* (1998) perceived value can be described as the value that consumers receive by the use of a product or service. Perceived value originally derives from a number of earlier notions, such as perceived price, perceived service quality and perceptions (DeSarbo *et al.* 2001; Oh, 1999). Pihlström (2008) however argues that perceived value has substantially replaced most of these traditional notions to date.

In early literature, the concept of perceived value was regarded as a one or two-fold construct, whereby the emphasis was initially put on the estimation of the overall perceived value and later on the benefit-sacrifice continuum (Zeithaml, 1988). However, in recent years, the two-fold perspective of perceived value has come under increasing attack. Opponents to this simplistic approach argue that due to its dynamic nature, perceived value cannot be regarded as a compromise between getting and giving, but rather constitutes a consideration of irrational and subjective benefits based on affective emotional reactions, experienced by the individual (Sweeney and Soutar, 2001). As a matter of fact, perceived value has undergone a transition from a simplistic model to a multi-dimensional construct (Sweeney and Soutar, 2001). Sheth *et al.* (1991a/b) probably provide one of the most seminal contributions to perceived value, by developing a five-dimensional measurement scale, consisting of *functional, social, emotional, epistemic* and *conditional value*. These original five dimensions have served as a basis for a number of studies in the past (e.g. Sweeney and Soutar, 2001; Pihlström, 2008, Wang *et al.*, 2004). Sweeney and Soutar (2001) claim that Sheth *et al.*'s (1991b) model constitutes the currently best existing value construct applicable to different fields, however, indicate the potential for extension.

Pihlström (2008) for instance, applied Sheth *et al.*'s (1991b) original model and highlighted the need for adapting the theoretical framework to the context of mobile services, for the purpose of which a six-dimensional scale was created. Pihlström (2008) points out that for new electronic services a comprehensive conceptualisation is required, especially since mobile services may not be purely used for utilitarian but

rather for experiential and hedonic reasons, which has been supported by various empirical studies (e.g. Pura, 2005; Yang and Jolly, 2008).

Thus, for the scope of the present study the development of an appropriate multi-dimensional scale that meets the requirements of touristic location based services is imperative. In order to incorporate all value dimensions which best support the investigation of touristic location based services, a new research model had to be created for this study, which was based on the theoretical foundations of two existing models by Sheth et al. (1991a/b) and by Pihlström (2008). The conflation of both models allowed adopting a six-dimensional value scale by incorporating *functional, social, emotional, epistemic, conditional* and *monetary value*.

In addition to that, perceived value constructs often comprise so-called moderator and mediator variables. In this study, *attitude* as mediating variable to investigate users' attitudes towards using LBS as well as the outcome variable *behavioural intention* to determine users' predispositions towards using LBS, were included in the model. In due consideration of the exploratory nature of this research, a correlation between each single value dimension and attitude respectively behavioural intention was hypothesised, as well as a correlation between attitude as strong predictor of behavioural intention, leading to a total of 13 proposed hypotheses.

3 Methodology

The methodological approach of the present research consisted of two major steps. The preliminary research process allowed developing a measurement scale, which was applied in the second step to measure users' perceived values of touristic LBS. Complying with the requirements of researching mobile services, qualitative and quantitative data had to be gathered, a process which is commonly referred to as mixed methods approach (Creswell, 2003). Mixed methods were applied in the frame of a sequential exploratory strategy, which is commonly adopted when exploring new phenomena, testing elements or refining test instruments (Creswell, 2003).

As a first step, comprehensive secondary research of existing literature and primary research by means of a qualitative content analysis and a qualitative expert interview were conducted to generate the pool of items necessary for developing the six-dimensional measurement scale. The second part of the research investigated users' perceived values of location based services by conducting a quantitative survey.

With regard to sampling, the prior use of location based services constitutes a prerequisite for people participating in the survey. This is in line with the participation criteria of previous studies (Pura, 2005; Dickinger, 2006; Pihlström, 2008; Kumar and Lim, 2008) who argue that in the mobile service context, non-users do not know what to expect since they have never used these services and therefore are not able to validate them properly. As a consequence, the target population is limited to LBS users only, which justifies the sampling method of a self-selection online survey. Respondents were asked to evaluate the pool of items of the six value dimensions as

well as the variables attitude and behavioural intention. The items were measured by means of a five-point Likert-scale (Saunders *et al.*, 2007) by asking for the extent of agreement, respectively disagreement, ranging from 1 (strongly agree) to 5 (strongly disagree). The online questionnaire was started 275 times, whereby an initial screening question ensured that only LBS users continued the survey, by means of which 101 people were filtered out. After data cleaning, a total number of 122 questionnaires could be retained for further analysis.

4 Findings

4.1 The Development of the Multi-Dimensional Measurement Scale

A step-by-step process was undertaken to develop the multi-dimensional scale for the present study. First of all, existing value scales and associated items were obtained by drawing from secondary literature research of mobile services and perceived value. Thereby, suitable items were adopted one-to-one, whilst others were slightly adapted in terms of wording in order to be more applicable to the context of touristic location based services. Items could be adopted from following studies (Sweeney and Soutar, 2001; Pura, 2005; Yu *et al.*, 2005; Dickinger, 2006; Yang and Jolly, 2009; Kumar and Lim, 2008; Ruiz-Mafé *et al.*, 2010). Secondly, items were generated by means of a qualitative content analysis which proved to be crucial, as items from literature could be either partially confirmed or deemed irrelevant in the context of LBS. Thereby, frequently mentioned value aspects were incorporated in the corresponding value dimension of the construct. As a third step, the pool of items was judged by an expert interview to evaluate the semantic content of the items derived from both, literature and content analysis, which was crucial at this stage to ensure the validity of the scale. Eventually, a measurement scale with a total of 44 items divided into six value dimensions and two variables, *attitude* and *behavioural intention*, could be developed.

Previous studies (Pura, 2005; Dickinger, 2006; Yang and Jolly, 2008) suggest a separate analysis of the measurement model and the structural model in order to get a more comprehensive understanding of each single construct. On that account, firstly a factor analysis was performed to measure the proposed model in terms of items and corresponding dimensions. Secondly, a regression analysis was conducted to measure the hypothesised relationships between all perceived value dimensions and the dependent variables *attitude* respectively *behavioural intention*.

4.2 Results of the Factor Analysis

In order to test the factorability of the variable sets, a few indicators had to be considered. Kaiser-Meyer-Olkin Measure of Sampling Adequacy (MSA) was used, which indicated a value of 0.848 and hence exceeded the threshold of 0.8, being considered as meritorious (Backhaus *et al.*, 2006). Bartlett's Test of Sphericity was significant 0.000. The communalities range between 0.691 and 0.880, whereby all communalities are higher than 0.40, which is considered good in social sciences. The factors show a high variance explained ranging from 3.570 % to 33.157 % with a total

variance explained of 77.243 %. As a result, the adequacy of data for conducting a factor analysis can be assumed (Tabachnik and Fidell, 2001).

According to literature (Fabrigar *et al.*, 1999), there exist a number of extraction procedures for the conduction of a factor analysis. In this particular study, a Principal Component Analysis (PCA) was applied. Although there is disagreement in literature (e.g. Fabrigar *et al.*, 1999; Costello and Osborne, 2005) about PCA being a true factor analysis method, since it constitutes a data reduction method by reducing variables to principal components accounting for the maximum of the variance of observed variables (Suhr, 2005), it nevertheless is one of the most applied techniques in practice. In terms of rotation, the most commonly applied method constitutes the orthogonal Varimax rotation, although literature strongly favours oblique rotation as it yields slightly better results (Costello and Osborne, 2005). The present study came to the conclusion to adopt a PCA with the oblique rotation method Promax (Kappa 4).

In terms of number of extracted factors, broad consensus suggests the extraction of factors with an Eigenvalue greater than 1.0 (Backhaus *et al.*, 2006), whereby the number of factors revealing the clearest loading picture shall be retained (Costello and Osborne, 2005). Literature additionally proposes a scree plot test, which allows the researcher to manually search for the appropriate number of factors based on a graph of Eigenvalues, which reaffirmed eight extracted factors in this particular study. The results of this study indicate that the same six value dimensions (*functional, social, emotional, epistemic, conditional, monetary*) as initially proposed in the research model (Sheth *et al.* 1991a/b; Pihlström, 2008) could be extracted from the data. In addition to that, two new dimensions could be extracted loading on separate constructs, which were named *convenience value* and *informational value*. The Pattern Matrix obtained by the PCA is depicted below in Table 1.

Table 1. Final Measurement Model

Nr. / Factor	Indicator	Load	V.E.	α
1 Functional	LBS are usually consistent and reliable	.970	11.237 %	.788
	LBS usually have good functions	.698		
	LBS usually fulfil my needs well	.807		
2 Convenience	LBS are usually easy to use	.886	3.570 %	.700
	LBS usually provide the service in a timely manner	.797		
3 Social	Using LBS helps me to feel accepted by others	.951	33.157 %	.895
	Using LBS improves the way I am perceived by others	.919		
	Using LBS makes a good impression on others	.667		
	Using LBS gives me social approval	.920		
4 Emotional	Using LBS is fun	.569	6.029 %	.867
	Using LBS is enjoyable	.844		
	Using LBS is interesting	.654		

	Using LBS is a good pastime	.844		
5 Epistemic	I use LBS to experiment with new ways of doing things	.844	7.218 %	.819
	I use LBS to test new technologies	.796		
	I use LBS out of curiosity	.819		
6 Monetary	I value if LBS provide good service for the price	.942	3.687 %	.695
	LBS are usually reasonably priced	.866		
7 Conditional	I value the independence of place and time offered by using LBS	.647	7.782 %	.824
	I value the knowledge about places I get by using LBS	.652		
	I value the feeling that by using LBS I can orient myself even in unfamiliar environments	.675		
	I value the permanent availability of information by using LBS	.821		
8 Informational	I value the real time information that LBS offer	.772	4.563 %	.773
	I value the up-to-date information that LBS offer	.877		
Attitude	It is a good idea to use LBS			.905
	I am favourable about using LBS			
	I think using LBS is a positive experience			
Behavioural Intention	Given the chance, I intend to use LBS			.834
	I expect my use of LBS to continue in the future			
	I will use LBS more frequently in the future			
	I will recommend others to use LBS			
	Next time I need travel information, I intend to use LBS for this purpose			
Total Variance Explained		77.243 %		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.848		
Bartlett's Test of Sphericity	Approx. Chi-Square	1680.493		
	df	276		
	Sig.	.000		

4.3 Results of the Regression Analysis

A regression analysis was performed to test the 13 initially hypothesised relationships as well as the four additional relationships between the newly developed dimensions (*informational value* and *convenience value*) and the dependent variables (Table 2). The coefficients indicate that all of the total 17 hypotheses, except one, could be supported. Whilst all values prove to have a significant positive correlation with behavioural intention, convenience value does not show a statistically important relationship but tends to, by slightly exceeding the significance level ($\beta=.176$, p-value .053). All other perceived value dimensions namely *functional*, *social*, *emotional*, *epistemic* and *conditional value* as well as the newly extracted *informational value* have a positive correlation with the mediating variable *attitude* as well as with the outcome variable *behavioural intention*. Thereby, it has become evident that functional value has the strongest influence on attitude ($\beta=.658^{***}$), which was followed by emotional value ($\beta=.587^{***}$) and conditional value ($\beta=.504^{***}$).The

relationship between values and attitude is well established in literature and could also be confirmed in this particular study, by supporting all proposed hypotheses (H1., H2., H3., H4., H5., H6.). In terms of the relationship between values and behavioural intention, conditional value appeared to be the strongest indicator ($\beta=.538^{***}$), followed by epistemic value ($\beta=.522^{***}$) and emotional value ($\beta=.515^{***}$). All initially proposed hypotheses (H7., H8., H9., H10., H11., H12.) could be supported. The new dimension informational value shows a comparably weak relationship with attitude ($\beta=.348^{***}$), respectively behavioural intention ($\beta=.320^{***}$), likewise does convenience value with a weak effect on attitude ($\beta=.255^{**}$) and an insignificant effect on behavioural intention ($\beta=.176$). The latter results can presumably be attributed to the fact that these value dimensions were not tested as a full construct but rather constitute split-offs from other value dimensions. However, the newly developed values can be considered for testing in future research. The relationship between attitude and behavioural intention showed a particularly strong effect, with a coefficient of ($\beta=.742^{***}$), which hence leads to the verification of H13. Table 2 depicts the results of the hypotheses test by outlining the correlation coefficient (Beta Coefficient), significance, t-value, R^2 and the indication of whether the hypotheses are supported or not.

Table 2. Hypotheses Test

	Hypotheses	β	t-value	Sign.	R^2	Supported
H1.	Functional value -> Attitude	.658***	9.564	.000	.433	Yes
H2.	Social value -> Attitude	.322***	3.722	.000	.103	Yes
H3.	Emotional value -> Attitude	.587***	7.939	.000	.344	Yes
H4.	Epistemic value -> Attitude	.453***	5.559	.000	.205	Yes
H5.	Conditional value -> Attitude	.504***	6.389	.000	.254	Yes
H6.	Monetary value -> Attitude	.438***	5.333	.000	.192	Yes
new	Convenience value -> Attitude	.255**	2.885	.005	.065	(Yes)
new	Informational value -> Attitude	.348***	4.063	.000	.121	(Yes)
H7.	Functional value -> Behavioural Intention	.447***	5.478	.000	.200	Yes
H8.	Social value -> Behavioural Intention	.430***	5.223	.000	.185	Yes
H9.	Emotional value -> Behavioural Intention	.515***	6.583	.000	.265	Yes
H10.	Epistemic value -> Behavioural Intention	.522***	6.702	.000	.272	Yes
H11.	Conditional -> Behavioural Intention	.538***	6.984	.000	.289	Yes
H12.	Monetary value -> Behavioural Intention	.460***	5.681	.000	.212	Yes
new	Convenience Value-> Behavioural Intention	.176	1.954	.053	.031	(No)
new	Informational Value -> Behavioural Intention	.320***	3.695	.000	.102	(Yes)
H13.	Attitude -> Behavioural Intention	.742***	12.111	.000	.550	Yes

5 Discussion

The findings gathered by the factor analysis did not only confirm the initially proposed six-dimensional scale but also revealed two additional factors, which led to the suggestion of an extended model by proposing two new dimensions labelled informational value and convenience value. The conceptual idea of the latter value is consistent with findings by Pura (2005), who, in the context of electronic services split Sheth *et al.*'s (1991a) original functional dimension into convenience and monetary value, by acknowledging the importance of convenience in the field of mobile service use. The items of the informational value dimension were predominantly drawn from the qualitative user content analysis, indicating a strong need for multiple types and sources of information when using LBS. Due to the fact that these items loaded on a distinct factor and were not associable to the conditional value dimension, as proposed earlier, the actual need for an informational value factor when dealing with LBS has evidently been confirmed.

The results gathered from the regression analysis of the structural model demonstrate that, apart from one, all hypothesised paths between the value dimensions and the dependent variables, could be supported. This leads to the argumentation that all values positively affect the user's attitude and behavioural intention to use touristic location based services. However, the findings also reveal that the effects of value dimensions on the former and latter variable do not necessarily correspond. As a matter of fact, it is evident that functional value of LBS, for instance, constitutes the strongest determinant of attitude towards using LBS, whereas conditional value is the strongest predictor of behavioural intention. In this sense, results indicate that in terms of attitude, functional value could be revealed to have the strongest correlation, followed by emotional value and conditional value. With regard to behavioural intention, conditional value proved to be the strongest indicator, followed by epistemic value and emotional value.

6 Conclusion

Location based services are predicted to find wide application within the tourism industry in the coming years. However, to date, LBS have not found yet the foretold adoption by the mass market, arguably due to generally missing understanding of the real values inherent in location based services. As a result, the aim of the present study was to investigate the perceived value of touristic location based services from a user-centric perspective. For this purpose, the study adopted the framework of perceived value rather than traditional technology-oriented theories, which have been numerously applied in the past. This allow to gain a more comprehensive understanding in order to explore the full complexity of the underlying value perceptions of location based services. The study developed a six-dimensional research model for the particular context of location based services by conflating elements of the original models developed by (Sheth's, 1991a/b) and Pihlström (2008).

The adoption of a sequential exploratory strategy by implementing qualitative and quantitative methods in a sequential manner ensured the development of a valid measurement scale with dimensions and items appropriate for the context of LBS. The subsequent conduction of a quantitative survey had the aim to explore the value perceptions of location based services. The statistical analysis by means of a factor analysis affirmed all six initially proposed value dimensions from literature and extended the original model by two new value dimensions, namely informational value and convenience value. A consequent regression analysis tested the structural model in terms of the hypothesised correlations between all values and the mediating, respectively outcome variable, the majority of which could be supported.

7 Implications and Future Research

The application of the framework of perceived value contributed to the understanding of technological innovations by applying the consumer-oriented perceived value construct rather than purely technology-adoption oriented models, as numerous used in past research. Thereby, the demand of current literature for adopting a multi-dimensional approach could be taken into account.

Acknowledging the limitations of this study in terms of the small sample size, the consequent limited generalisability as well as the inclusion of LBS users only; further research in the field of touristic LBS is needed to validate the preliminary results of this exploratory study. Moreover, the replication of the newly developed eight-dimensional construct in further studies, particularly in the context of mobile services, is highly encouraged. Although single items of the newly extracted dimensions need further improvement, there is great potential that this model could serve as a valid framework for further research in an information technology context.

Given the increasing proliferation of LBS, the results of the present study have crucial implications for various industry sectors. Given the high consumer expectations towards mobile services on the one end and the relatively low willingness to adopt these on the other end, the industry has to respond by both integrating and actively communicating the distinct values of these services to end-users. From a managerial standpoint, the findings provide critical knowledge in terms of the real values of using location based services. Industry players such as marketers, developers or service providers can profit from the gathered findings by implementing the identified values in the programming process or by communicating specific values more effectively. Moreover, the knowledge about which values particularly affect the user's attitude, respectively the intention to use LBS entails essential implications for practice. Finally, given the assumption that non-users do not know what to expect from LBS, the revealed values can be emphasised in the encouragement of non-users to adopt location based services in the future.

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