Online store image: conceptual foundations and empirical measurement

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Abstract

Perceptions regarding an online store, developed after a brief study of the website, can significantly influence somebody's attitude towards purchasing at that store. These perceptions are collectively characterised as an ''online store image.'' Our research developed reliable and valid measures for the components of an online store image, and examined the relationships of these components to attitudes and intentions to purchase online. Conceptually, the paper relied on the relatively established literature on ''traditional'' store image and technology acceptance research. Empirically, we focused on the store images of two online bookstores.

Following standard processes for instrument development, we conducted two rounds of data collection (pilot sample, $n = 61$; main sample, $n = 312$) to assess reliability and validity. The paper presents multiple-item measurements for components of a store image: online store usefulness, enjoyment, ease of use, store style, familiarity, trustworthiness, and settlement performance. The components were regressed on attitudes and intentions towards purchasing at the online store, revealing significant, direct influences from usefulness, enjoyment, trustworthiness and settlement performance.
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1. Introduction

Generating revenue through an online store is one of the key issues facing electronic commerce practitioners. For this reason, the factors influencing the intention to purchase online are being explored by MIS researchers. These factors include specific antecedents such as website usefulness and ease of use [4], but so far, relatively little attention has been paid to the overall *image* of the online store. Despite this,

we propose that online store image may well be an important predictor for online purchase intentions. In empirical marketing studies, several researchers have been able to link store image to intentions to purchase. It is plausible to assume that these relationships would carry over to online environments. Another important reason to study the impact of online store image is that image is, at least to a certain extent, under the direct control of the shop owner and/or the website designer.

''Store image'' is a multi-faceted construct that has been rigorously researched for ''traditional'' stores. In an online environment however, the existing measures of this construct appear to be no longer adequate. For example, they contain inappropriate items such as

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"shop cleanliness" and "shop crowdedness." Also, items that are likely to be important in an online store are not included, such as privacy issues and the correct delivery of purchased items. Therefore, to obtain a meaningful measurement instrument for online store image, there is a need to adapt the existing measurement instruments of store images.

The objectives of the project described here were (1) to develop reliable and valid measures for the components (dimensions) of online store image, and (2) to examine the influence of these components on the intention to purchase online. Specifically, the research questions were: What are the conceptual components (dimensions) of online store image? What items can be used to measure each of these conceptual dimensions? Are the items reliable and valid measures? And finally, how strong are the relationships between the components of store image and online purchase intention?

The focus in this paper is on online stores in the business to consumer (B2C) market, selling tangible, low-risk consumer products (books, DVDs, etc.), using the Internet as their only distribution channel. This focus was motivated by the resemblance of these types of online stores to the traditional high street stores, for which the existing store image instruments were originally developed.

2. Theoretical foundations

To develop an appropriate measure for online store image, we relied on the relatively established literature on "traditional" store image, which is defined as the "personality" the store presents to the public or "a complex of meanings and relationships serving to characterise the store to the populace." [12]. Similar definitions of store image include: "the way in which the store is defined in the shopper's mind, partly by its functional qualities and partly by an aura of psychological attributes" [20] and "the complex of a consumer's perceptions of a store on functional attributes and emotional attributes" [13]. Consumers perceive stores on a number of *dimensions*, usually called *components* or *attributes*, which collectively make up store image.

Kelly and Stephenson [16] were among the first to explicitly develop an instrumentation for retail store image. They proposed the use of the *semantic differential*, a bipolar scale containing opposing adjectives at the scale extremes (e.g. *high quality* products—*low quality* products). Fifty-one items were developed with the following dimensions: general, physical, convenience, products, prices, personnel, advertising and opinion of friends. Based on this and other work, Lindquist identified nine factors in his seminal work on the meaning of image [18]. Dickson and Albaum [8] refined both instrumentations for retail store image and ultimately arrived at the following dimensions: prices, products, store layout and facilities, service and personnel, promotion and "others." An instrument containing 29 items (also semantic differentials) was developed and analysed on reliability and validity.

Since then, retail image has grown in popularity as a predictor for numerous variables, including attractiveness of a shopping area and purchase intention. Not surprisingly, store image also functions as an important dependent variable. Antecedents such as store atmospherics [1] and store name [11], among others, have been subject to study.

The relationships between store image components and purchase intentions have been extensively considered in the consumer behaviour literature. Many studies have empirically linked specific store image attributes such as price perception, store name perception, and value for money to purchase intention (examples include [9,25]).

Nevin and Houston investigated the impact of store image on the intention to shop at a particular area. They did not find strong relationships; distance between consumer and shop was found to be a more important predictor [22]. One could argue that in an online setting, distance plays a less important role, so these findings may not translate well to an electronic commerce environment.

Grewal et al. also studied the impact of store image on intentions. Their particular empirical setting involved bicycles and bicycle stores. Their results indicated significant positive relationships between store image and purchase intention. Although the strength of the relationship between store image and purchase intention was low, the strength between perceived value and purchase intention was higher. Some would argue that perceived value is another characteristic of store image, as this attribute is included

in much of the store image literature. Together, the variables accounted for 41% of the variance in purchase intentions.

Bell empirically studied the impact of retail area image on the intention to purchase at a particular retail area [2]. An exploratory factor analysis revealed five factors: visual amenity, quality and range of products and services, price fairness, and convenience. Together, these explained 29% of the variance in attitude towards purchasing (no significant relationships for price fairness and convenience). The attitude construct in turn, explained 30% of the variance of the willingness to buy.

The intention to purchase online is a construct which is conceptually similar to the intention to use a website. Some authors have examined the antecedents of this construct by borrowing independent variables from the well known technology acceptance model (TAM) construct [7] in a World Wide Web context (e.g. [10,21]). For example, Lederer et al. distinguished the factors information for support, primary activities, management, R&D, and information quality as antecedents of usefulness [17]. van der Heijden examined the construct perceived attractiveness as an antecedent of enjoyment [26]. A separate "attitude" construct is often modelled as a mediator of the system evaluations (e.g. perceived usefulness and perceived enjoyment) and intentions to use.

A substantial body of research has focused on the antecedents and consequences of website usability, or, in TAM terminology, perceived ease of use. This is important in the context of this paper because the nature of the human–computer interface is likely to contribute to the image of the online store. Huizingh for example, examined the differences in website design and website content of 150 publicly accessible websites [14]. Liu and Arnett studied the antecedents of design quality of websites [19]. What seems apparent from this and other research (e.g. [5]) is that perceived ease of use has a significant impact on the attitudes and intentions towards visiting a website. Some authors suggested that this influence is not direct, but indirect through usefulness and enjoyment [10]. Whether these findings carry over to explain "the intention to visit a website *to purchase online*" is an intriguing question that creates opportunities to link TAM research with research in online consumer marketing.

3. Method

Following calls from [3,24] to increase efforts on the reliability and validation of the instruments used in IS research, we adopted the well-known process of instrument development put forward by Churchill [6]. Table 1 illustrates the steps used in this process.

As a starting point, we took the "retail image" construct from Dickson and Albaum (step 1). We then undertook a series of focus group sessions with a sample of 10 people. Three of the participants were electronic commerce practitioners. The remaining seven included IS faculty (two) and marketing faculty (five) from an academic institution. In the focus groups, the participants were asked to comment on the applicability of the Dickson/Albaum items in an electronic commerce context, and to suggest new items that would apply to the image of an online store (step 2). This resulted in a draft questionnaire containing 38 items.

A convenience sample of 61 respondents was asked to participate in a pilot test of the instrument (step 3 in Churchill's process). They studied the website of a Dutch online bookstore. According to several e-commerce trade magazines, this store was the market leader in online book selling in The Netherlands, with a share of 50% in October 2000. After the subjects had studied the website, they were asked to fill in the pilot test survey. This included measurement scales for attitude towards purchasing online and intention to purchase online. We took the scales for attitude and intention from [27], who in turn adapted the scales from [15] after replication and extension of their study on online purchase intention.

Using the data from the convenience sample, we studied the reliability and validity of the measurement

Table 1
Measurement development process [6]

Step	Description
1	Specify domain of construct
2	Generate sample of items
3	Collect data
4	Purify measure
5	Collect data
6	Assess reliability
7	Assess validity
8	Develop norms

scales to ''purify the measures'' (step 4). Exploratory factor analysis was employed to reveal if every component was measuring one and only one construct. We split the scales into the number of identified factors if this was not the case. We then computed Cronbach alphas for each of the measures.

The resulting components were named: online store usefulness (six items), online store enjoyment (three items), online store ease of use (three items), online store style (five items), enterprise image (five items), logistical settlement performance (five items) and financial settlement performance (three items). All measures were unidimensional and contained acceptable alphas (>0.60, cf. [23]). Seven items were dropped.

For the second round of data collection (step 5), we conducted a lab experiment with a student sample. This consisted of 312 undergraduate students taking a mandatory core information systems course in the economics curriculum. Each student had to study two websites in the lab. One was from the same bookstore as used in the pilot study. The other was from a Belgian bookstore that provided essentially the same services as the first, but was different in terms of company size (smaller) and familiarity (less well known). After the student had studied a website and performed a number of predefined tasks, he or she filled in the questionnaire and moved on to the next. To address the risk of practice effects in repeated measurements, 50% of the students started out with the Dutch store and then moved on to the Belgian, and the rest had the reverse order. The starting website was determined by the students' seat in the lab. A supervisor monitored all respondents and ensured that they used the same browser versions and the same screen resolutions.

4. Results

Table 2 displays key descriptors of the sample.

Factor analysis was employed on the data for the Dutch bookshop to determine whether every component was measuring one and only one construct. For most of them, we dropped a number of items to improve reliability, e.g. we had to drop ''high price/ low price'' from store usefulness to keep its reliability acceptable and the scale unidimensional.

Table 2
Descriptives of the second sample ($n = 312$)

	Count	Percent
Gender		
Male	202	64.7
Female	110	35.3
Internet experience (self reported)		
Very inexperienced	3	1.0
Inexperienced	8	2.6
Neutral	81	26.0
Experienced	179	57.4
Very experienced	41	13.1
History of buying a product on the web		
Never	182	58.3
Once	47	15.1
Twice	24	7.7
Three times	15	4.8
Four times or more	44	14.1

An analysis on enterprise image revealed that this construct was best split into two scales. We named them store familiarity, defined as the extent to which the online store is perceived to be well-known, and store trustworthiness, defined as the extent to which the online store is perceived to be a reliable business partner. Financial settlement performance was our worst performing construct (original alpha was 0.56). We obtained acceptable measures by deleting the poorly performing items and grouping the remaining items with logistical performance again (as we had originally intended).

The resulting set of items produced an exploratory factor structure of seven constructs. The factor loadings for the Dutch online bookstore are shown in Table 3. The sample met the required thresholds for sampling adequacy (KMO = 0.83, Bartlett's test of sphericity = 3210, $P < 0.001$). The data suggested convergent and discriminant validity of the seven factors because all items loaded higher on their own factor then on the others. The exception was the fourth settlement performance item (''reliable delivery''), which loaded higher on trustworthiness and settlement performance in this dataset. We decided not to delete this item, because this would compromise reliability for settlement performance.

We validated the factor structure with the data from the Belgian bookstore using exploratory factor analysis. The second usefulness item and the second ease

Table 3

Summary of items and factor loadings for varimax orthogonal seven factor solution for online store image ($n = 307$)

		Factor loading						
		1	2	3	4	5	6	7
1	Useful 1	0.69						
2	Useful 2	0.56						
3	Useful 3	0.60						
4	Useful 4	0.70						
5	Enjoyment 1		0.88					
6	Enjoyment 2		0.87					
7	Enjoyment 3		0.83					
8	Ease of use 1			0.75				
9	Ease of use 2			0.46				
10	Ease of use 3			0.77				
11	Ease of use 4			0.64				
12	Ease of use 5			0.81				
13	Trustworthiness 1				0.70			
14	Trustworthiness 2				0.76			
15	Trustworthiness 3				0.84			
16	Trustworthiness 4				0.68			
17	Style 1					0.76		
18	Style 2					0.75		
19	Style 3					0.52		
20	Style 4					0.59		
21	Familiarity 1						0.74	
22	Familiarity 2						0.86	
23	Familiarity 3						0.82	
24	Settlement 1							0.63
25	Settlement 2							0.67
26	Settlement 3							0.55
27	Settlement 4					0.53		0.49

Note: Factor loadings below 0.40 are not shown. See Appendix A for the exact wording of the items.

of use item produced low factor loadings. The "reliable delivery" item loaded higher on settlement performance than it did on trustworthiness.

Table 4

Cronbach alphas for each measure for two websites

Component name	Number of items	Value for Dutch online bookshop ($n = 307$)	Value for Belgian online bookshop ($n = 311$)
Store usefulness online	4	0.66	0.62
Store enjoyment online	3	0.91	0.90
Store ease of use online	5	0.79	0.83
Store style online	4	0.68	0.77
Store familiarity online	3	0.76	0.85
Store trustworthiness online	4	0.80	0.74
Store settlement performance	4	0.62	0.85
Attitude towards purchase at online store	3	0.91	0.93
Intention to purchase at online store	4	0.86	0.89

Table 5

Multiple regression results when regressing the image components on attitude, and attitude on intention ($n = 312$)

Regression models	R^2	Adjusted R^2	Beta
Online purchase intention	0.60[***]	0.60	
Attitude towards purchasing online			0.78[***]
Attitude towards purchasing online	0.31[***]	0.30	
Online store usefulness			0.19[***]
Online store enjoyment			0.14[**]
Online store ease of use			0.05
Online store style			−0.07
Online store familiarity			−0.07
Online store trustworthiness			0.27[***]
Settlement performance			0.21[***]

[***] $P < 0.005$.
[**] $P < 0.05$.

Table 4 displays the Cronbach alphas for both data sets; these were all above the 0.60 threshold for exploratory research. We conclude that the seven factor structure is a reliable and valid starting point to measure online store image. The translated instrument is provided in Appendix A.

To illustrate the prediction validity of the constructs, the composite scores for each online store component were regressed on attitude towards purchasing at the online store, and attitude was regressed on intention to purchase at the online store. The regression results are shown in Table 5.

Four out of seven components of store image contributed to attitude towards purchasing online. These were in order of relative importance: store trustworthiness, perceived settlement performance,

store usefulness, and store enjoyment. Three components did not have a sufficiently strong relationship with attitude towards purchasing online. These are, in order of appearance: ease of use, store style, and store familiarity. A new regression without these components revealed betas of trustworthiness, settlement performance, usefulness, and enjoyment of 0.26, 0.19, 0.19, and 0.14, respectively ($R^2 = 0.30$, $P < 0.001$).

To be sure, it is possible that the three insignificant components have indirect effects on attitude. For example, empirical research on TAM in the context of electronic commerce suggested that ease of use is an antecedent of usefulness and enjoyment, rather than a direct antecedent of attitude towards purchasing. This was supported by our data too. We did detect a significant influence of ease of use on usefulness ($R^2 = 0.18$, $P < 0.001$; beta ease of use = 0.43, $P < 0.001$), as well as an influence of ease of use on enjoyment ($R^2 = 0.17$, $P < 0.001$; beta ease of use = 0.42, $P < 0.001$). Intuitively it is plausible that a usable website *by itself* will not increase or decrease the attitude towards purchasing at that website, except perhaps for the extremes at the usability continuum. A highly unusable site may cause visitors to abandon the website prematurely even though their original purchase intentions were high.

Store familiarity, another online store component we investigated, had no significant relationship on attitude towards purchasing online. It is possible that store familiarity is an antecedent to trust. However, our data supports this only to a very modest extent ($R^2 = 0.05$, $P < 0.001$; beta familiarity = 0.23, $P < 0.001$). The explanatory power of the regression variate was not really convincing.

Finally, it is defensible to argue that store style may impact perceptions of store usefulness and store enjoyment. For example, a knowledgeable style can influence the belief that the website is informative (and by definition, that the store is useful). Similarly, a personal style may stimulate the belief that the website is a pleasure to browse through (and by definition, that the store is enjoyable). We conducted regressions with ease of use and store style as independent variables, and usefulness and enjoyment as dependent variables. Usefulness seemed to be influenced by both items ($R^2 = 0.21$, $P < 0.001$; beta ease of use = 0.32, $P < 0.001$; beta style = 0.21, $P < 0.001$), and so did enjoyment ($R^2 = 0.18$, $P < 0.001$; beta ease of use = 0.36, $P < 0.001$; beta style = 0.11, $P < 0.001$).

These regressions show that the components of online store image have predictive value for attitude towards purchasing at that particular store. Trustworthiness, settlement performance, usefulness and enjoyment are direct determinants of this attitude. Familiarity, ease of use and style are perhaps indirect determinants.

5. Discussion

We believe this research has made a number of contributions to the existing body of research on online purchasing. In the first place, we developed measures for seven relevant constructs related to online store image. The measures contain multiple items and have been subject to standard reliability and validity tests. Therefore, we encourage researchers to build upon these measurements.

Second, we have provided results that relate each of these components to the attitude towards purchasing online. These results strengthen and extend similar empirical research in this area. Specifically, they reconfirm the importance of trust in the store as an important driver of purchase intentions.

Third, we have demonstrated the importance of two new constructs, store enjoyment and perceived settlement performance in predicting online purchase behaviour. To our knowledge these constructs have not yet been empirically connected to the attitude towards purchasing online.

If we look at the empirical studies that have related store image to purchase intentions in "off-line" environments, we can observe some similarities. Certainly the portion of variance that can be explained by store image constructs is similar (30% compared to 41 and 29%). While some of the components found could not be translated to the "on-line" setting, other components did. For example, convenience could be conceptually related to ease of use, quality and variety could be related to usefulness, and visual amenity could be related to enjoyment.

The components of store image were able to explain 30% of the variance in "attitude towards purchasing online". Clearly, other factors need to be taken into account. We believe that researchers should recognise

that the purchasing decision occurs at various levels and in multiple stages. In this research we have focused on two decisions: *how* (i.e. online) and *where* to purchase (i.e. either at the Dutch or at the Belgian online bookshop). It is likely that factors that influence the decision *whether* to purchase and *when* to purchase also contribute to the attitude towards these purchasing decisions. The decision *whether* to purchase is influenced by an individual's need, purchase priorities, and financial position. The decision *when* to purchase is likely to be influenced by similar factors. None are directly related to online store image, and therefore none were included in the model. We suspect these account for the remaining 70% of the variance.

An important limitation to the generalisability of the results is the use of students rather than real consumers for the surveys. Consumers may have decidedly different attitudinal structures with respect to online stores. There is also a question about the applicability of the results to electronic commerce stores in general. It is likely that the product under study (a book) is moderating the relationships between online store components and attitude and intention to purchase. A book is a low-risk good. Higher involvement in goods such as pianos, mortgages and intercontinental flight tickets, is likely to have a stronger impact on the relationship between trustworthiness and attitude to purchase.

A last limitation of the research is the validity of the indirect relationships. The relationships should be interpreted with caution in the absence of sufficient theoretical rationale and empirical replication.

6. Conclusions and recommendations

This research project has focused on online store image and the influence of online store image on the intention to purchase online. Conceptually, we examined the literature on retail store image. Through this, focus groups, and a pilot study, a preliminary measurement instrument was developed. This was then used in our major test. Using the data, we refined the instruments until seven components of online store image emerged. We linked each of these components to attitude towards purchasing online and online purchase intention. Four of them showed statistical significance, three of them did not. We suggested indirect effects, and examined these effects empirically.

At least two conclusions can be derived from this project. First, our results demonstrate that the image related factors can explain a major portion of the attitude towards purchasing online (approximately 30% of the variance). From the viewpoint of the online store these results are encouraging. This suggests that the store image can tilt the balance towards purchasing online, provided the person is already inclined to buy a product.

Second, our results demonstrate that store familiarity and store style have only a weak relationship with online purchasing. This has important implications both for research and practice. In practice, it suggests that money spent on increasing store familiarity and store style is not likely to have a substantial impact on online sales. Stores are better off making their websites more useful and enjoyable, while increasing their trustworthiness and their settlement performance. Indeed this research provides support for clear priorities in the marketing budget.

While online stores are important and sometimes highly visible representatives of the "new economy," to date they do not enjoy a great deal of sound empirical research. A lack of solid measurements that are applicable to online stores certainly impedes any effort into building a cumulative research tradition. We believe that the measurement instruments developed here will assist researchers in making these efforts.

Appendix A. Final measurement scales for online store image

Each measure uses semantic differentials. The response categories were: very, quite, some, neutral, some, quite, very.

Online store usefulness

1. Little information about the books—much information about the books.
2. Little value for money—a lot of value for money.
3. Uninteresting offers—interesting offers.
4. Bad alignment with my interests—good alignment with my interests.

Online store enjoyment

1. Boring site—fun site.

2. Little pleasure to browse through—great pleasure to browse through.
3. Unattractive site—attractive site.

Online store ease of use

1. Hard to use—easy to use.
2. Bad representation of the books—good representation of the books.
3. Hard to navigate the site—easy to navigate the site.
4. Inflexible site—flexible site.
5. Hard to learn how to use the site—easy to learn how to use the site.

Online store trustworthiness

1. Does not keep my personal data confidential—does keep my personal data confidential.
2. Bad reputation—good reputation.
3. Unreliable enterprise—reliable enterprise.
4. Unsafe financial settlement—safe financial settlement.

Online store style

1. Unhelpful—helpful.
2. Unfriendly—friendly.
3. Less knowledgeable—very knowledgeable.
4. Calm—pushy.

Online store familiarity

1. Infrequently seen advertisements on the Internet—frequently seen advertisements on the Internet.
2. Infrequently seen advertisements outside the Internet—frequently seen advertisements outside the Internet.
3. Unknown enterprise—well known enterprise.

Online store settlement

1. Slow delivery—fast delivery.
2. Limited choice of delivery options—wide choice of delivery options.
3. Unreliable delivery—reliable delivery.
4. Slow financial settlement—fast financial settlement.

Attitude towards purchasing online (*measured on a seven-point Likert scale from strongly disagree to strongly agree*)

1. I am positive towards buying a ⟨product⟩ on the ⟨name⟩ website.

2. The thought of buying a ⟨product⟩ at the website of ⟨name⟩ is appealing to me.
3. I think it is a good idea to buy a ⟨product⟩ at the website of ⟨name⟩.

Intention to purchasing online (*measured on a seven-point Likert scale from highly unlikely to highly likely*)

1. How likely is it that you would return to the ⟨name⟩ website?
2. How likely is it that you would consider the purchase of a ⟨product⟩ at the ⟨name⟩ website in the short term?
3. How likely is it that you would consider the purchase of a ⟨product⟩ at the ⟨name⟩ website in the long term?
4. How likely is it that you would consider the purchase of a ⟨product⟩ at the ⟨name⟩ website if you need the ⟨product⟩?

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