Why do consumers like websites?

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Abstract Although it is tempting to consider everything related to the Internet as new (eg the new economy), understanding of this new phenomenon will gain more from systematic studies that explore the fundamental similarities and differences between the Internet and classical advertising media. In this study, the authors show that the hierarchy of effects model, a well-known advertising effectiveness model, is an appropriate means to describe the attitudinal changes of consumers after visiting a website. It is also found that all four levels of the hierarchy of effects (attention, cognition, affection and conation) are closely related to the level of flow that consumers experience during their visit. Although several aspects of the consumers' Web-learning process (particularly Web skills and intensity of use) are related to the hierarchy of effects, they are not the most important predictors of the hierarchy of effects. The involvement of consumers with the topic of the website and the flow they experience during their visit are the most important determinants of the hierarchy of effects. These findings underline the importance of targeted traffic generation. Instead of attracting 'large numbers' of consumers to a site, managers should focus on attracting the 'right' visitors.

INTRODUCTION

While the first papers on e-commerce were written in the 1960s,¹ it took a few decades before the first applications of e-commerce became successful. Classical examples include American Hospital Supply² and the Sabre system of American Airlines.³ The first generation of e-commerce applications, electronic data interchange (EDI) systems, tended to be expensive, proprietary and incompatible.⁴ Marketers are now in the

middle of the second wave of e-commerce applications, which are Internet-based systems. In contrast to EDI-systems, this second generation of e-commerce applications is based on a global network, which is open and has low entry barriers, connecting customers with suppliers and customers with customers. There are many differences between e-commerce applications based on EDI and on the Internet, but one of the most important is that EDI supports

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only transactional messages, while the Internet supports the exchange of any commercial message. Transactional messages, such as orders and order status messages, are a subset of commercial messages; commercial messages also include messages that are aimed at influencing the buyer — for example, to stimulate the recognition and the image of a brand or to strengthen the relationship between a supplier and customers. In this paper, the focus is on the effectiveness of websites in terms of these latter functions.

The aim of this paper is to add to the fast-emerging knowledge base of e-commerce that managers so deeply need. Many companies are quick in adopting the Internet in their marketing communication strategies, but there is ample evidence that the adoption is more often than not the result of a 'gold rush'-like approach.⁵ High volatility on stock markets reflects that this period of unlimited experimentation and 'the e-sky is the limit' is ending. Marketing managers need to understand how their Web initiatives affect consumers and which factors determine this effectiveness. The authors studied the effectiveness of websites by means of a model that has often been used in advertising effectiveness research, ie the hierarchy of effects model, and by means of a concept from the communication literature, ie flow. More specifically, this study investigates Web effectiveness by exploring:

- whether the concepts of the hierarchy of effects and flow can be modified to be used in a Web environment;
- whether consumers' Web experience and Web capabilities are important in the prediction of both flow and the Web hierarchy of effects;
- the relationships between flow and the hierarchy of effects;

— to what extent consumer characteristics and the Web capabilities and experience of consumers can serve as determinants of both flow and the hierarchy of effects.

This paper is structured as follows. In the next section relevant literature will be reviewed and the background of the four objectives of this paper sketched. After a brief description of the research design, the results of the data analyses will be presented. Finally, the main conclusions and a discussion of these findings will be presented.

LITERATURE REVIEW

Influencing buyers is a function of websites that is very similar to the objectives of advertising in the classical media (eg print and broadcasting media). In order to be able to compare commercial Web initiatives with classical advertising, it is necessary to understand how websites affect both the attitudes and behaviour of customers. A main contribution of the study reported in this paper and its first objective is to analyse the effectiveness of websites by means of a model that has proven to be effective in advertising research, ie the hierarchy of effects model (see Figure 1 for the research model). The hierarchy of effects model proposes that advertising influences consumers through four subsequent stages. These four stages are labelled attention (being aware of a stimulus), cognition (knowledge, perceptions, beliefs with regard to a stimulus), affection (feelings, emotions in relation to a stimulus) and conation (behaviour as a response to a stimulus).^{6,7}

For many companies, computer-mediated communication with consumers is new, and many websites have started as rather experimental efforts. In e-commerce literature, it is

Figure 1 The effectiveness of websites in terms of the hierarchy of effects and flow

often stressed that it is important constantly to update and revise the site, because the e-commerce implementation process is a learning process⁸ in which, as Parsons *et al.* put it, 'getting started is more important than making it perfect'.⁹ Over time, it is not only necessary to update sites, but analyses of Web visit statistics allow companies to restructure sites, to improve the user interface and to experiment with new functions.¹⁰ At a more abstract level, several authors have proposed stage models of e-commerce that identify different levels of sophistication.^{11–14} All of these models suggest that the contents, capabilities and objectives of websites change over time, as marketers become better able to integrate the unique characteristics of the Internet in their strategies. The learning process of marketers is mirrored by the learning process of consumers. Their learning process consists of the same two elements that make up the marketers' learning process. First, consumers have to learn how to master the medium in a more technical sense (eg 'How do I find an e-shop that delivers flowers in Paris, Texas?'). Secondly, consumers have to learn how to integrate the new medium in their purchase processes (eg 'Which products and under which circumstances do I purchase on the Internet?', or 'For what phases in my purchase process will I use the Internet?'). As a second objective, the paper will explore the relationships between the consumers'

learning process and their perception of websites, whereby the perception of websites is measured by means of the hierarchy of effects model. Compared to the marketer's learning process, much less is known about consumers. Do consumers also follow a stages model, where the less experienced Internet users tend to use the Internet for information search (high scores for cognition) and the more experienced users apply a more functional approach and have higher scores for conation? Several surveys have shown that more experienced Web users are more likely to buy on the Internet. Usually, these findings are explained by referring to consumer concerns related to Web security and privacy,¹⁵ which seem to be more prevalent for novice users. As far as the authors know, however, there are no studies that compare the hierarchy of effects model with the Web experience and capabilities of consumers.

One of the most important differences between websites and the classical media is the role of the customer. The classical media portray customers in a passive role, while website visitors are active explorers who determine what messages they receive, in what order and for how long. The customer has moved from the back seat into the front seat of the advertising vehicle. It is the customer who determines how extensive the message will be (or better, the stream of messages) and for how long the supplier is able to communicate with the

customer. Therefore, companies should take the customer as their starting point for building websites.¹⁶⁻¹⁸ It also implies that the stream of messages offered on the Web should be packaged in such a way that it forms an experience that the consumer considers interesting and informative. Not only should the product or service provide value to the consumer, but in order to seduce consumers to start the dialogue, and once started, to prolong the dialogue, the dialogue itself should provide value to the consumer. Consumers can derive value from the dialogue in two different ways. First, consumers can gain economic value by collecting information that enables them to improve the process of acquiring, using or maintaining a product. Secondly, consumers can derive value from a dialogue when it is entertaining. The dialogue is entertaining when consumers consider it to be 'fun' or 'a nice experience'. A concept that measures the extent to which consumers are really engaged in the dialogue is 'flow'. According to Csikszentmihalyi,¹⁹ flow is a state of deep concentration or concentrated activity; flow experiences are those activities which seem to make time stand still. He paraphrases the Taoist scholar Chuang Tzu by describing flow as a situation in which 'perception and understanding have come to a stop and spirit moves where it wants'. Hoffman and Novak studied the concept of flow in an Internet environment. They define flow as 'a seamless sequence of responses which is intrinsically enjoyable and is accompanied by a loss of self-consciousness'.²⁰ This paper will explore the relationship between flow and the hierarchy of effects.

The fourth and final objective of the paper is to explore the possible determinants of both flow and the four levels of the hierarchy of effects. As antecedents of flow characteristics of the

consumers' Web learning process (eg Web skills, Web experience and intensity of use), and several consumer characteristics that were found to be relevant in advertising and/or information search research will be considered. This latter group of characteristics includes involvement with the topic of the website,²¹ the knowledge the consumer already has about that topic,²² and the need for cognition, which is defined as 'the tendency of an individual to engage in and enjoy thinking'.²³ The authors also study the effect of either private or business use of the Internet. These same variables will also be considered as antecedents of the four levels of the hierarchy of effects, but in these analyses flow will also be added as an antecedent.

RESEARCH DESIGN

For measuring the concepts of need for cognition, subjective product knowledge, involvement, Web skills, Web experience, flow, attention, cognition, affection and conation, scales were derived from literature on research in the fields of advertising effectiveness, information search behaviour and consumer navigation behaviour in online environments. Table 1 gives an overview. Where necessary, the scales have been adjusted to the specific topic of this research (eg 'commercial' was substituted by 'website'). The answers were measured on five-point scales, ranging from totally disagree to totally agree.

Data have been collected in a controlled situation. Respondents were invited to come to the University of Groningen. First, they had to answer a questionnaire with regard to the background variables such as Web skills and Web experience. Next, they performed three search activities on the Web, according to three well-specified

assignments. The first assignment concerned finding information about the respondent's favourite holiday destination, the second assignment involved buying presents for three close friends and in the last assignment respondents searched for information about their favourite hobby. The respondents were free in their choice of websites. Each assignment lasted 30 minutes. After 20 minutes each search activity was interrupted in order to have the respondents fill in a questionnaire with regard to the variables involvement, flow, attention, affection, cognition, conation and product knowledge. All questions were asked with regard to the website they were visiting at that specific moment.

A total of 80 respondents participated in the study. Two thirds of them were men, the average Web experience was 19.3 months, the average intensity of use was 3.95 hours per week. As the main focus of this study concerns relationships between aspects of Web effectiveness, and between characteristics of Web users and Web effects, the distributions of person and background characteristics do not have to be representative for the Internet population.

The measurement scales, consisting of two to five items, were validated using confirmatory factor analysis and reliability analysis. The Cronbach's Alpha coefficients²⁴ ranged from 0.60 to 0.89 (see Table 1). Since scales with a value above 0.6 are considered reliable, it was concluded that the measurement scales were sufficiently reliable. The data were analysed by using correlation analysis, regression analysis and analysis of variance.

RESULTS

In this section the results of the analyses with regard to the four objectives of the study are described.

Advertising effectiveness

Table 2 shows the measures of flow and the four levels of the hierarchy of effects for each of the three tasks. The first line in Table 2 shows the overall results (all elements of the hierarchy of effects varied between one and five). The highest overall average is found for cognition, closely followed by attention, then affection, while conation has the lowest average. Although the differences in the four averages are not very high, almost all differences are significant. For each level of the hierarchy of effects its average was compared with the averages of the other levels by means of a series of paired *t*-tests. Except for the almost identical averages of cognition and attention, all of these tests showed highly significant results (all two-tailed *p*'s < 0.000). This rank order of cognition, attention, affection and conation is not surprising given the nature of the Web and the way consumers use websites. Compared to classical media, the Web can convey much more information to consumers, in a richer (multimedia) format and it requires consumers to take an active role in the communication process. For all these reasons, high scores for both cognition and attention can be expected. On the other hand, consumers are still often reluctant or hesitate to use the Web for making purchases. Therefore, it is not surprising that the lowest average is for conation.

When comparing the three tasks, Table 2 shows that task 3, the hobby task, outperforms the other two on all four levels of the hierarchy of effect, and flow is highest for this task. Note that this task was the only one that the participants were free to choose. This may be an important part of the explanation for all perceptions (flow, attention, cognition, affection and conation) being higher for this task compared to the other two tasks. The

Table 1: The scales and their reliability

Scale	Items	GFI	AGFI	Alpha
Need for cognition ²⁵	1 I like to be responsible for a situation that requires a lot of thinking 2 Thinking is not exactly my idea of having fun 3 I'd rather do something that doesn't require too much thought than something that certainly puts my intellectual capacity to the test 4 I try to avoid situations which will likely make me think profoundly about something 5 I really enjoy a task in which I have to think up new solutions to problems	0.95	0.85	0.76
Subjective product knowledge ²⁶	1 As compared to most other users, I have more knowledge of the subject of this website 2 As compared to most of my friends, I have more knowledge of the subject of this website	0.99	0.92	0.84
Involvement ²⁷	1 The topic of this website doesn't have anything to do with me or my needs 2 The topic of this website is important to me	0.99	0.92	0.84
Web skills ²⁸	1 I am very competent in using the Web 2 I am very knowledgeable about good search techniques on the Web 3 I know somewhat less about using the Web than most users 4 I know how to find what I am looking for on the Web	0.99	0.97	0.89
Web challenge ²⁹	1 Using the Web challenges me 2 Using the Web challenges me to perform to the best of my ability 3 Using the Web is a good test of my skills 4 Using the Web stretches my capabilities to my limits	0.99	0.96	0.80
Flow ³⁰	1 I felt like I was totally absorbed by this website 2 While visiting this website, time seemed to go by very quickly 3 While visiting this website, I forget about my immediate surroundings 4 While visiting this website, I was not aware of how long I had been there already	0.98	0.90	0.73
Attention ^{31,32}	1 This website caught my interest 2 The website is boring 3 I paid close attention to the website	1.00	0.98	0.81
Cognition ^{33,34}	Measured on a 5-point semantic scale: 1 Informative — uninformative 2 Clear — imprecise 3 Complete — incomplete 4 Well structured — badly structured	0.98	0.92	0.83
Affection ³⁵⁻³⁸	1 This is a good website, I wouldn't hesitate in recommending it to others 2 I know that the organisation of this website is a reliable one 3 This website contains dishonest information 4 This website describes aspects that are undesirable for me 5 This website makes exaggerated and untrue claims	0.98	0.94	0.67
Conation ³⁹	1 I intend to pay another visit to this website 2 I intend to request additional information 3 I intend to buy something from this organisation	1.00	0.98	0.60

Table 2: The scores for flow and the four levels of the hierarchy of effects models for each of the three tasks

	Flow		Attention		Cognition		Affection		Conation	
	Means	Stn dev.	Means	Stn dev.	Means	Stn dev.	Means	Stn dev.	Means	Stn dev.
Overall	3.03	0.81	3.65	0.81	3.67	0.81	3.48	0.60	2.97	0.81
Task:										
1 Preparing holiday	2.91	0.75	3.42	0.74	3.62	0.79	3.41	0.59	2.83	0.85
2 Buying a present	2.88	0.84	3.40	0.84	3.62	0.85	3.34	0.54	2.90	0.82
3. Your own hobby	3.32	0.77	4.15	0.61	3.79	0.78	3.69	0.63	2.97	0.81
Analysis of variance	$F = 7$	$p = 0.00$	$F = 27$	$p = 0.00$	$F = 1$	$p = 0.32$	$F = 8$	$p = 0.00$	$F = 4$	$p = 0.01$
	81	1	39	0	14	2	11	0	61	1

Table 3: The correlation between Web usage characteristics and flow and the four levels of the hierarchy of effects (displayed are the Pearson correlation coefficient and the two-sided significance level)

	Flow		Attention		Cognition		Affection		Conation	
	r	p-value	r	p-value	r	p-value	r	p-value	r	p-value
Experience	-0.38	0.569	0.043	0.518	-0.050	0.453	0.013	0.849	-0.033	0.619
Skills	0.156	0.017**	0.097	0.142	0.142	0.031**	0.139	0.034**	0.075	0.258
Intensity of use	0.191	0.004	0.080	0.230	0.135	0.042**	0.065	0.326	0.128	0.053*
Use for private purposes	0.146	0.033**	-0.053	0.436	0.074	0.282	0.057	0.405	0.077	0.260

* $p \leq 0.10$. ** $p \leq 0.05$. *** $p \leq 0.01$.

implication of this explanation is that *a priori* interest in a task is important for both flow and the hierarchy of effects. This implication will be explored in more detail later.

The results for the three tasks have been compared by means of a series of analyses of variance (see the bottom row in Table 2). Except for cognition, all differences are significant. *Post hoc* tests (multiple comparisons using the Scheffe test⁴⁰) reveal that all significant differences involve the hobby task. For none of the variables, the other two tasks had significantly different means. This implies again, that the main differences were between, on the one hand, the task that the participants were free to choose and in which they were highly interested, and on the other hand the two tasks in which both the topic and the objective of the task were defined by the researchers.

Consumer Web learning process

The second research objective focused on the relationships between the Web

learning process of consumers and the hierarchy of effects. Table 3 contains the correlation coefficients between, on the one hand, Web experience, Web skills, intensity of Web use (number of hours per week) and use objective (the extent of personal use), and, on the other hand, flow and the four levels of the hierarchy of effects. The first remarkable finding is that Web experience, that is the number of months someone has already used the Internet, is not related to any of the five perception measurements. So, for example, no evidence was found that would support the hypothesis that the more experienced Web users are more likely to buy from online vendors. Also tested was a variant of this hypothesis in which a minimum threshold level of Web experience is important. Although the level of flow differed (the more experienced users exhibited a higher level of flow, two-tailed $p < 0.1$), the four levels of the hierarchy of effects were not different for both groups.

Not surprisingly, the intensity of use is positively and significantly related to flow. The more hours a week someone

Table 4: The correlation between flow and the four levels of the hierarchy of effects (displayed are the Pearson correlation coefficient and the two-sided significance level)

Correlation of flow with:	Correlation coefficient	2-sided <i>p</i> -value
Attention	0.607	0.000
Cognition	0.353	0.000
Affection	0.411	0.000
Conation	0.426	0.000

uses the Internet, the more these consumers tend to experience flow in each of the three tasks. These consumers also reported to have learnt more from visiting the site (positive correlation between intensity of use and cognition). The more consumers tend to use the Web for private goals, the more they experience flow. Since flow is strongly related to liking what one is doing, this may not be surprising.

Flow and advertising effectiveness

As Table 4 shows, flow is positively related to all four elements of the hierarchy of effects. All four correlation coefficients are highly significant. By far the strongest correlation was found with attention, the first level in the hierarchy. From one perspective, flow and the hierarchy of effects refer to highly different concepts. Flow has often been measured in studies focusing on tasks that consist of a stream of subsequent actions that take place within a particular time period. In contrast, the hierarchy of effects has often been applied in studies that focus on the effect of a single advertisement. On the Web, however, this distinction between a chain of multiple actions and a single action disappears as Web visits can be considered as the presentation of a sequence of advertising messages to a consumer. This interpretation of a Web visit makes it easy to understand why the two concepts (flow and the hierarchy of effects) are closely related on the Internet.

Determinants of flow and advertising effectiveness

Ordinary least squares (OLS) regression analysis was applied to investigate the determinants of both flow and the four levels of the hierarchy of effects. The possible determinants used were both consumer characteristics (need for cognition, involvement with the topic of the website and knowledge of that topic) and characteristics of consumers' Web-learning process (Web experience, Web skills, intensity of Web use and use objective). For the analyses of the hierarchy of effects, flow was also considered as a possible determinant. Table 5 shows the results of the five regression analyses. For each dependent variable, the first column contains the standardised regression coefficients (the betas), while the second column contains the corresponding *p*-values. The absolute value of beta reflects the relative importance of a variable, thus the characteristic with the highest absolute beta is the most important variable in explaining the variance of the dependent variable.

Flow

Involvement is the most important predictor of flow. Consumers who are more involved with the topic of a website are also more engaged in their Web visit. Also, consumers who are using the Web more intensely (for a larger number of hours per week), score higher on flow. It seems that people who are using the Internet in a more intense way are more likely to engage in a state

Table 5: The determinants of flow and the four levels of the hierarchy of effects (multivariate analysis: Using Ordinary Least Squares Regression, the standardised regression coefficients (beta) and the significance level) are displayed

	Flow		Attention		Cognition		Affection		Conation	
	Beta	p-value	Beta	p-value	Beta	p-value	Beta	p-value	Beta	p-value
Consumer characteristic:										
– Need for cognition	–0.046	0.495	0.070	0.202	–0.037	0.616	0.113	0.090*	–0.004	0.945
– Involvement	0.448	0.000***	0.352	0.000***	0.228	0.006***	0.351	0.000***	0.467	0.000***
– Product knowledge	0.089	0.199	0.127	0.026**	–0.008	0.915	0.100	0.148	0.030	0.652
Web usage characteristic:										
– Experience	–0.200	0.005***	0.016	0.785	–0.114	0.151	–0.098	0.172	–0.065	0.349
– Skills	0.093	0.267	–0.018	0.798	0.135	0.144	0.098	0.242	–0.037	0.652
– Intensity of use	0.206	0.006***	–0.042	0.503	0.067	0.418	0.020	0.793	0.126	0.085*
– Use for private purposes	0.040	0.529	–0.094	0.072*	–0.011	0.874	0.043	0.495	0.036	0.558
Flow			0.423	0.000***	0.221	0.005***	0.211	0.003***	0.192	0.005***
Adjusted R^2	0.294		0.528		0.154		0.302		0.348	
(F and p-value)	(F=13.47, p=.000**)		(F=30.31, p=.000**)		(F=5.79, p=.000***)		(F=12.38, p=.000***)		(F=15.00, p=.000***)	

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

of flow on the Internet.

It might be surprising that flow is negatively correlated with Web experience. This is, however, consistent with Czikszentmihalyi's finding⁴¹ that a situation that requires the learning of skills is more apt to result in flow. The finding also supports observations made in the business press that the more experienced Web users tend to be the more functional users, while the more novice users may more easily be overwhelmed by the impressive amount of information and links that are available on the Web.

Attention

The two most important predictors of attention are flow and involvement. The more engaged consumers are in their Web visits and the more involved they are with the topic of the site, the higher their attention for the site. Product knowledge and the extent to which consumers are using the Web for personal purposes are less important but also significant contributors to attention.

Cognition

Flow and involvement are also the two most important predictors of cognition.

Again, the relationships are positive, higher scores for both flow and involvement lead to higher scores for cognition. Note that both product knowledge and need for cognition are not related to cognition. This implies that consumers who know more about a product, and consumers who tend to be more deliberate decision makers and need more information for their decisions, do not report having learned more (or less) from visiting a website.

Affection

Not surprisingly, involvement is the most important predictor of affection, while again, flow is also an important predictor. Need for cognition is the third significant variable. This implies that, although consumers who need more information for their decisions do not report having learned more from visiting the website, they do report a more positive affection. These consumers seem to have a higher appreciation for the large amount of information available and the opportunity to delve through it as much as they want, compared with consumers who experience less deliberate decision-making processes.

Conation

Similar to the other three levels of the hierarchy of effects, involvement and flow are the most important predictors of conation. Not surprisingly, involvement is the more important of the two. The third significant variable is intensity of use. The more hours per week consumers use the Web, the more likely they are to buy products or to visit the site again.

CONCLUSIONS

The main conclusion of this study is that the hierarchy of effects model can also be used to investigate the effectiveness of websites. This paper has shown remarkable differences between both different websites and different consumers. An important finding is that Internet experience and a consumer's ability to perform certain Internet tasks have a minor influence on the consumer's perception of websites. Involvement with the topic of the website is a far more important predictor of any of the four levels of the hierarchy of effects. Apart from the fact that this finding engenders even more confidence in the validity of applying the hierarchy of effects model in a Web environment, it has important management implications. Many observers have stressed the importance of traffic generation.^{42,43} This present study suggests that it is not the amount of traffic that matters but *a priori* involvement with the topic of the site. Better targeted efforts to generate Web traffic are likely to produce much better results in terms of both consumer attitudes and behaviour, than traffic generation efforts that focus mainly on 'large numbers' of visitors (focus on quality of visitors instead of quantity). This could be realised by including persuasive references to the website in

other, targeted, messages (such as direct mail or sms), and by including links in other websites with similar visitors.

A second important implication of the study is that websites seem to lead to a marriage of two concepts that until now have been used in highly different areas. Flow (ie the extent to which an individual is involved in a situation so that they forget everything around) and the four levels of the hierarchy of effects were found to be highly related.

Consumers who expressed a greater amount of flow during their visit to a website also reported a more positive perception of the site (in terms of each of the levels of the hierarchy of effects). This finding supports the notion that a Web visit is much more than just an exchange of information between a supplier and consumers. Websites should therefore be designed so as to create flow experiences. The practical implications of this conclusion can be drawn from the characteristics of situations in which flow occurs. Czikszenmihalyi⁴⁴ mentions six criteria. Thus, a flow experience:

- requires learning of skills;
- has concrete goals;
- provides feedback;
- lets the person feel in control;
- facilitates concentration;
- is distinct from the everyday world; ('paramount reality').

With regard to Web design, these criteria have a number of implications. Navigation should be logical, buttons and links should function in the way the visitor expects them to, and the design of Web pages should not distract the visitor from the main objective of the page(s). At the same time, navigating the website should challenge visitors' skills. Each successive click should increase the level of curiosity and should give satisfaction

for successful navigation. Experimental designs of websites, linked to research in the field of the effects of these websites, can give practical clues for developing successful websites.

DISCUSSION

This paper studies the effectiveness of websites in terms of the 'classical' hierarchy of effects model. The study shows that involvement with the topic of the website and the flow Web visitors experience during their Web visit are two important antecedents of Web advertising effectiveness. Different levels of effectiveness over different search activities were also found.

The study reported here is a first exploration of the appropriateness of the hierarchy of effects model for measuring website effectiveness, and it has some limitations. For the first part of the study a laboratory experiment was performed. The advantage of such an experiment is the certainty that each Web visitor fills in a questionnaire that gives insight into background characteristics and the variables under study. Collecting these data in a field experiment in which a questionnaire would unexpectedly appear on a website, would be dependent upon the willingness of visitors to fill in the questionnaire. A disadvantage of laboratory experiments, however, is the possibly unnatural behaviour of respondents. They know they are part of a research project, and they are requested to perform tasks they might otherwise not have done. The study results indicate that this decreases the effectiveness of websites. The highest levels of flow, attention, cognition, affection and conation were found in a search task in which the respondents could choose their own subject. A field experiment could overcome this disadvantage and thereby improve the results. Furthermore,

in a field experiment real behaviour can be measured instead of behavioural intentions. It also offers the opportunity to design a longitudinal study in which repeat behaviour (visiting the website, requesting information, buying products/services) can be measured.

In the study, characteristics of Web visitors were related to the effectiveness of websites. Of course, Web characteristics also play an important role in this respect. Future research should include characteristics such as the design of the Web pages, the use of incentives, the amount of data a visitor should supply for getting additional information, the structure of the site and the use of hyperlinks. Another interesting issue is the relationship between the hierarchy of effects and purchases. Since many websites are non-transaction sites it is an interesting issue to investigate how and to what extent the hierarchy of online effects can be related to offline purchases.

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