

Evaluating the Sophistication of E-Commerce Websites in Barbados

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Abstract: - An earlier study [1] examined the sophistication of e-tourism websites in Barbados and determined that although these websites were easy to use and provided some product/service information, they generally lacked company information, innovation in services, transaction processing and customer services. The earlier study assumed that since tourism was the largest foreign exchange earner these websites would generally be better than the websites for the other service industries. This paper expands on the earlier study by evaluating websites for the real-estate, online shops, banking and insurance service industries. This new study concludes that although e-tourism websites were generally more sophisticated than insurance and real-estate websites, they were less sophisticated than banking and online shops. The factors contributing to these results included the need for banking websites to have high security and privacy, as well as a high level of customization. Using the results of these two studies a clear picture of the level of sophistication of Barbadian websites is presented. In addition, a set of guidelines are detailed, which could promote the growth of e-commerce in Barbados.

Key-Words: - e-commerce, website evaluation, Barbados websites sophistication, developing countries

1 Introduction

In an earlier study [1], the sophistication of e-tourism (accommodation, car rentals, restaurants and tour operators) websites in Barbados was conducted. This study concluded that although e-tourism websites were easy to use and provided some product / service information, that they generally lacked company information, innovation in services, transaction processing and customer service.

In the earlier study it was assumed that since tourism was the largest foreign exchange earner in Barbados that the e-tourism websites would be more sophisticated than other service industries in Barbados [1]. To determine whether this was actually the case, a new study was conducted, which is reported in this paper, that evaluated the sophistication of the websites in the remaining service industries in Barbados who had an online presence at the time of the evaluation; the industries evaluated were real estate, online shops, banking and insurance.

The cumulative results of both studies were then used to create a profile of the sophistication of websites in Barbados. Armed with this knowledge, a set of recommendations are provided to promote the growth of e-commerce in Barbados.

The remainder of this paper is organized as follows. In sections 2 and 3, respectively, website evaluation frameworks are reviewed and an

overview of e-commerce in Barbados is presented. In section 4, the evaluation methodology used in this study is described and the evaluation results are discussed in section 5. Following the results is the discussion, recommendations and conclusion, in sections 6, 7 and 8, respectively.

2 Website Evaluation Frameworks

Several website evaluation frameworks have been presented in the literature, however only a select few will be presented in this section.

Elliot et al. [2] described an evaluation framework called the Centre for Electronic Commerce (CEC) Website Evaluation Framework which comprised of six categories; these categories were: company information and function, product/service information and promotion, buy / sell – transactions, customer services, ease of use and innovation in services and technology. In each of these categories, five elements were defined. These elements are presented in Figure 1. A total of thirty (30) elements were used to evaluate a given website (six categories of five elements each). Each element was awarded a score of 1 or 0 depending on whether the given feature (or features) was present or not. This framework was used to evaluate 100 Danish companies websites and it was reported that

approximately 80% of these websites had a rating of 50% (and overall score of 15 out of 30) or less.

Fig. 1. The five Elements of each of the six Categories comprising the CEC Web site Evaluation Framework.

<p>Company information and function</p> <ul style="list-style-type: none"> (1) Ownership, company mission statement, financial performance (2) Operations and product/service areas (3) Image building (4) Contact details or list of distributors (5) Richer set of company relevant functions <p>Product/service information and promotion</p> <ul style="list-style-type: none"> (1) General product/service groups (2) More detailed product/service specifications (3) Pricing (4) Promotions on special products/services (5) Details on new or future products/services <p>Buy / sell – transactions</p> <ul style="list-style-type: none"> (1) Supports on-line purchasing (2) Security (3) Simplified processes (4) Online payment (5) Details of full transaction cost + order confirmation + delivery time /mode + trust assurance <p>Customer services</p> <ul style="list-style-type: none"> (1) Sales assistance (2) Customer policies (3) After sales procedures (4) Customized services (5) Broader approach to customized services <p>Ease of use</p> <ul style="list-style-type: none"> (1) Layout and design (2) Site map (3) Website found easily by a search engine (4) Site information easily assessable (5) Caters for a range of users <p>Innovation in services and technology</p> <ul style="list-style-type: none"> (1) Enhanced customer service – orders (2) Enhanced customer service – feedback (3) Enhanced customer service – communities (4) Enhanced customer service – website customisation (5) Novel and effective use of multimedia

Doolin et al. [3] utilized the extended model of Internet commerce adoption (eMICA) to evaluate 26 New Zealand Regional Tourism Organizations. In this model three stages were defined; each stage contains one or more layers. In the first stage, which was called web-based promotion, there were two layers. The first of these layers comprised of basic information about the company while the second layer considered a richer set of information, for example email contacts. In the second stage, which was called web-based promotion, three layers were defined. Each of these layers was defined by their level of interactivity. The first layer was characterised by low interactivity, such as the interactivity provided by a basic product catalogue. The second layer was characterised by medium interactivity, for example customer support and the third layer or the high interactivity layer by a chat room. In the final stage, which was called provision of information and services and transaction processing, only one layer, characterised by secure online transactions and order status, was defined. It was reported that 97% (25) of these web sites were at the first and second stages.

Finally, Limayem et al. [4] evaluated 80 tourism operator websites in Hong Kong to determine their e-business readiness. The evaluation framework used utilised 22 criteria to determine the ease of use of the interface, the variety and content of the information on the website, the types and levels of e-business services and the organizational trust factors. The scoring mechanism used was similar to Elliot et al. (2000) in that each of the 22 criteria were awarded a 0 or 1 depending on the presence or absence of the given feature. The results of the evaluation showed that 46% of these websites had a rating of 50% (a score of 11 out of 22).

Other web site evaluation frameworks include the weighted average approach used by Sellitto et al. [9] and the five dimensional model, by Signore [10], which examines the correctness, presentation, content, navigation and interaction of the websites.

3 E-Commerce in Barbados

Barbados is a small developing country in the Caribbean, with a population of 266,731 (in 2006) over a land area of 430 Sq. Km. Although Barbados is in the early stages of e-commerce diffusion [5] it has already enacted some important pieces of e-commerce legislation; has implemented some e-commerce awareness and education programs; has liberalized the telecommunication industry; and has begun offering online banking services.

The e-commerce legislation that has been enacted are the Electronic Transactions Act of 2000, which recognizes digital transactions as being equivalent to paper-based transactions; and the Computer Misuse Act of 2005, which enforces penalties for illegal computer access and child pornography. In draft form is the Data Protection Bill [6].

E-commerce public awareness and education is being promoted by the Government of Barbados and the University of the West Indies. The Government has offered a number of seminars and public speeches on e-commerce. On the other hand, the university has offered seminars and workshops; an e-commerce course in the Diploma of Information Technology program; e-commerce courses in the Computer Science and Information Technology undergraduate degrees program; and at the postgraduate level an M.Sc. e-commerce degree program [1].

In 2001, the monopoly of the telecommunication industry which was held by Cable and Wireless (Barbados) ended and other providers entered the market. This has slowly been driving down the cost of telecommunication services.

Although more local banks are issuing credit cards, foreign exchange controls limit the amount a consumer can spend abroad. More banks are also now offering online banking services.

4 Evaluation Methodology

The methodology used in this research was similar to that used in the earlier study [1]. This methodology is described in the following sections.

4.1 Website selection

To determine the service industries to evaluate and the number of websites from each service industry to select, the author conducted a search for all non-tourism websites in Barbados using online and offline directories, as well as search engines (e.g. Google).

The author then identified the service industries these websites belonged to and eliminated all service industries with less than five websites. This included books, music, supermarkets and beauty. From the remaining categories, which were real estate (24 websites), online shops (13 websites), banking (13 websites) and insurance (10 websites), approximately one half of these websites were randomly selected for evaluation. This resulted in a total of 28 websites, 13 real estate, 6 online shops, 4 banking and 5 insurance.

4.2 The evaluation criteria

The CEC Website Evaluation Framework was used again to evaluate the websites. This allowed a comparison between all the services industries in Barbados that had an online presence at the time of the evaluation. Again, no weighting of elements or categories were deemed necessary since an overall score was not desired.

It was recognized however that due to the nature of these websites that some information might not be available unless the user was logged in. This was found to be the case in the Buy / sell transaction category. This category was therefore not included in the results presented in Table 1, rather the result of this category were presented in a descriptive manner, which emphasized security and data privacy.

4.3 The research strategy

A single researcher trained in e-commerce was used to evaluate the websites and record the results. This evaluation was conducted in September 2007.

5 Results

The results of the evaluations of the real estate, online shops, banking and insurance websites are presented in Table 1. This table contains the average scores (which range from 0 to 5, corresponding to the five elements in each category) and standard deviations (in brackets) for each category, comprising each service type; in addition, the overall average and standard deviation of each category across all service types is presented.

Just as with the e-tourism websites [1], the ease of use category was the highest rated category (average score 3.3 and standard deviation 0.9) on average, for all the service industries, that is real estate, online stores, banking and insurance websites.

The Product/service information and promotion category ranked second highest, on average, with a score of 2.9 (standard deviation 0.8). Again this was also the case with the e-tourism websites.

The lowest rated category, on average, was Innovation in services and technology with a score of 1.3 (standard deviation 0.8). Interestingly enough this was also the case with the e-tourism websites. The level of innovation however was higher in the non-tourism websites with an average score of 1.3 versus a score of 0.7 (for the e-tourism websites).

Table 1. The Result of Evaluating Real Estate, Online Shops, Banking and Insurance websites. (Scores range from 0 to 5 and standard deviations are enclosed in brackets)

Category	Real Estate	Online Shops	Banking	Insurance	Average Score
Company info. function	2.2 (0.6)	3.0 (0.6)	3.8 (0.5)	2.0 (1.0)	2.7 (0.8)
Product / service info.	3.4 (0.9)	3.7 (1.2)	2.8 (0.5)	1.8 (0.8)	2.9 (0.8)
Customer services	0.5 (1.0)	2.3 (1.9)	3.5 (1.0)	1.0 (1.7)	1.8 (1.3)
Ease of use	3.5 (0.7)	3.8 (0.4)	3.8 (0.5)	2.0 (0.7)	3.3 (0.9)
Innovation	1.0 (0.6)	1.2 (1.5)	2.5 (0.6)	0.6 (0.5)	1.3 (0.8)

Banking was rated highest in four categories, company information and function (with a score of 3.8 and standard deviation 0.5), customer services (with a score of 3.5 and standard deviation 1.0), ease of use (with a score of 3.8 and standard deviation 0.5) and innovation in services and technology (with a score of 2.5 and standard deviation 0.6).

Conversely, insurance websites rated poorest in four categories, company information and function (with a score of 2.0 and standard deviation 1.0), product /service information and promotion (with a score of 1.8 and standard deviation 0.8), ease of use (with a score of 2.0 and standard deviation 0.7) and innovation in services and technology (with a score of 0.6 and standard deviation 0.5).

Approximately 46% of the websites evaluated were able to process transactions online, however only 25% of the total number of websites evaluated secured personal data; this is compared with 6% and 13%, respectively for the e-tourism websites. None of the real estate websites provided any form of transaction processing facilities.

6 Discussion

The findings of this study were generally expected, especially for banking and online shops. Clearly, it is essential for banks to provide a secure and private service if they expect their customers to use these

services; also the purpose of online shops is to sell products/services therefore it is expected that this category would be highly ranked. In addition, the earlier study justified the ease of use results by explaining that most of the websites were built by website design companies. This is also the case here.

The results of the evaluation of real estate websites were generally predictable, since real estate is about selling a product (thus the high score in this category) and is best bought/sold using a combination of traditional and electronic commerce [8]. The buyer is able to search for properties and conduct virtual tours online before actually visiting the property. However, the actual sale must be completed offline, as per the Electronic Transaction Act 2000, Item 3.1.b [7]. This possibly explains why real estate websites had no transaction processing facilities. What the author can not explain is the poor (below average) customer service; this has been the case with seven out of the eight service industries evaluated.

Insurance companies are not using utilizing their websites to their fullest potential since only one out of the five websites evaluated were accepting payments online. Barbadian insurance companies must be prepared to sell their policies online!

One of the most disturbing findings of this study was that insurance companies, that request a considerable amount of personal information in order to provide insurance quotes, are not requesting this data in a secure way (that is, through secure socket layer). This implies that hackers have access to personal data every time a user makes a submission.

After evaluating the websites of eight service industries in Barbados, it has been discovered that:

1. All of the service industries suffer from a lack of innovation in services and technology, except banking which scored 2.7 out 5, a just above average score.
2. All of the websites, except the insurance websites, were generally easy to use.
3. Customer service is best in banking websites and worst in restaurants and real estate websites.
4. None of the Banking websites published pricing information online.
5. On average, the non-tourism websites had a higher score in five of the six evaluation categories (this comparison has intentionally not included the buy / sell transactions category).
6. Restaurants and insurance websites are the poorest rated websites

7. Banks have the most innovative websites (partly due to their high level of customization).

7 Recommendations

Based on the results of these studies the following five recommendations are proposed to further the growth of e-commerce in Barbados:

1. **Companies need to protect the personal data they accept from users.** This measure could improve website trust and satisfy legislative requirements (the Electronic Transactions Act and the upcoming Data Protection Bill (Act)).
2. **A low cost express mail service needs to be established urgently in Barbados.** Some of the online shops selling local products charge a higher shipping cost than the cost of the actual product, for some destinations. For example, on one website the cost of the item was US\$13.00, but the shipping was US\$20.17. More than likely, this pricing policy dissuades many consumers from making a purchase. In addition, the introduction of a minimum purchase amount of US\$50.00 to any destination might dissuade buyers from making a purchase. Product delivery time is unacceptably long, and in some circumstances, if restocking is required, a wait of 12 weeks is expected.
3. **There is a great need for e-commerce security experts in Barbados.** Some of the evaluated websites were not only unreliable, but also posed a security risk to the businesses. This was due to website program failures which expose system vulnerabilities — to potential hackers. In fact, at least one of these websites was accepting credit card payments, which implies that customer credit card information might be at risk.
4. **Innovation in services and technology needs to be a priority for Barbadian businesses.** The extremely poor scores in this category points to the need for e-commerce courses and workshops for businesses so that they can learn about new technologies and brainstorm innovative services. Buyers on the web have come to expect these types of innovations and might be reluctant to buy from websites that do not innovate.

5. **There is a need for the documentation of successful e-commerce initiatives in Barbados.** Case studies of Barbadian e-commerce initiatives help to expose best practices. This in turn, helps businesses to understand how they can work around the constraints that are hindering the growth of e-commerce in Barbados.

8 Conclusion

In this study, real estate, banking, online shops and insurance websites were evaluated using the CEC Website Evaluation Framework. The findings were that banking websites rated highest in four categories, company information and function, customer services, ease of use and innovation in services and technology. Conversely, insurance websites rated poorest in four categories, company information and function, product /service information and promotion, ease of use and innovation in services and technology.

About 46% of the websites evaluated processed transactions online, while 25% secured personal data.

When compared with an earlier study it was found that on average these websites rated higher than the e-tourism websites in the corresponding categories.

Finally, five recommendations have been provided that could promote the growth of e-commerce in Barbados.

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