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THE EFFECTIVENESS OF SME WEBSITES IN A BUSINESS TO BUSINESS CONTEXT

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ABSTRACT

This research analyses the effectiveness of SME business to business websites from a user perspective. An established evaluation instrument (eQual) is used to assess 80 websites in terms of usability, information quality, and interaction and service. The analysis shows that although a significant number of sites reflect little understanding of the attributes of good design or potential benefits to be gained from websites, there are examples of competent and effective website use.

KEYWORDS

SMEs, websites, eQual, evaluation

1. INTRODUCTION

Smaller and medium sized businesses (SMEs) play a crucial role in national economies and are estimated to account for 80% of global economic growth (Jutla, Bodorik, & Dhaliqal, 2002). The health of such companies and their ability to compete in an increasingly connected global market are therefore of concern to governments and industry bodies. One aspect of SME e-commerce activity that is acknowledged but rarely examined is their use of websites. Websites are 'a critical component of the rapidly growing phenomenon of e-commerce' (Loiacono, Watson, & Goodhue, 2002) and their successful design and use can alter the effectiveness of an SME's venture into e-commerce. Understanding the factors used by customers to determine website quality can serve as a basis for creating and improving websites (Webb & Webb, 2004).

This paper supports calls for more extensive work into the analysis and evaluation of B2B websites (Chakraborty, Lala, & Warren, 2002; Ellinger, Lynch, Andzulis, & Smith, 2003; Loiacono et al., 2002). The research analyses the effectiveness of current SME websites from a user perspective. It uses an established evaluation instrument (eQual) to gain an understanding of how SME websites are meeting the needs of potential customers. The paper contributes to a better understanding of how SMEs are addressing the constructs of website development identified in the literature. These constructs have been incorporated into eQual and tested in other environments (Barnes & Vigden 2001, 2002, 2003). A deeper understanding of SME websites and where areas for improvement lie will enable development of support frameworks to improve SMEs' recognition and realisation of benefits from their websites; a prerequisite for encouraging e-commerce adoption (Poon & Swatman, 1999).

2. WEBSITES FOR SMES

Several initiatives have been launched to improve electronic adoption rates and e-competencies (Jones Donald Strategic Partners, 2000; NOIE, 2002), but many SMEs are failing to achieve the levels of e-commerce abilities required to benefit from Internet based business (Walker, Bode, Burn, & Webster, 2003). Smaller businesses are often caught between the need to understand the dynamic and frequently intimidating electronic environment and the need to respond to the many calls to conduct more business online (Goode, 2002; Walker et al., 2003). Their subsequent attempts to trade online results in e-commerce activity that is unproductive such as launching ineffective websites, ignoring customer e-mails and failing to efficiently fulfil online orders. Where smaller businesses turn to consultants to overcome their own lack of expertise, results often fall short of expectations as SMEs do not have sufficient knowledge to judge the effectiveness of a consultant's work prior to implementation (Bode & Burn, 2001).

One highly visible aspect of e-commerce activity that is often seen as the first step towards online trading is the launch of a website. Statistics show that 36% of small and 82% of medium-sized businesses in Australia have established a website (ABS, 2003). Two thirds of SMEs believe that their website enhances their business effectiveness, by increasing visibility and accessibility, improving communications and increasing sales (ABS, 2003). This accords with Loiacono et al's (2002) view that websites 'play a significant role in the overall marketing communication mix'. The implementation of B2B websites is seen as an important stage in e-commerce development (Ellinger et al., 2003) and a crucial part of a firm's use of the Internet for communicating, entertaining and interaction with stakeholders (Chakraborty et al., 2002).

Despite the statistics and the frequent mention of the use of websites in the many papers on SME e-commerce adoption (Bode & Burn, 2001; Daniel, Wilson, & Myers, 2002; Korchak & Rodman, 2001), the quality of such websites and the need to determine their function is rarely addressed (Manuel, 2004). Auger (2005) discusses the impact of design sophistication and level of interactivity in increasing the number of visitors and the impact on overall performance. While design sophistication was not found to necessarily positively affect performance, interactivity is an important asset. Fry et al., (2004) examine the elements of accessibility and visibility amongst the increasing number of sites on the Web. They note however, that government targeting of small businesses in this field tends to overly emphasize the technical rather than business aspects of website use. There are numerous online sources offering, often conflicting, advice and help on setting up a website while business organisations and government sources continue to encourage smaller businesses to launch websites. The proliferation of sites has increased the imperative for businesses to have some knowledge of what they intend their site to achieve.

That many of these sites are subsequently deemed ineffective by their owners is often due to an uncertainty over the role of the site and a lack of understanding of how to integrate Internet strategies into an existing business. Indecision and lack of knowledge leads to ineffective sites and consequent disappointment in recognisable benefits (Ellinger et al., 2003; Stockdale & Standing, 2004). Therefore, it is critical for these SMEs to understand customer requirements and to enhance their web accordingly. A SME with a web site that is difficult to use and understand can weaken the firm's presence on the Internet (Barnes and Vidgen, 2002). According to Turban and Gehrke (2000), there are significant discrepancies between factors identified in various academic publications and those rated in consumer surveys. Therefore, there is a need to identify critical success factors for effective website usage by SMEs both from the customers' viewpoint and from the designer and owner perspective. Such factors can contribute to the ability of SMEs to improve their websites over time, then benchmark against competitors and best practice in any industry (Barnes and Vidgen, 2002).

3. RESEARCH DESIGN

To assess the quality of websites within the small business sector of one regional area within Australia, an established quality evaluation instrument, eQual (version 4), is used (Barnes & Vigden, 2002). The instrument was designed and tested over several years (Barnes & Vigden, 2001, 2002, 2003) as a method for assessing the quality of a firm's e-commerce offerings through its website. It enables website quality to be judged through three dimensions: usability, information quality and service interaction quality. In developing the instrument, Barnes and Vigden (2002) identified five factors of importance that are encompassed within the three dimensions: usability, design, information, trust and empathy.

This research examines the websites of 80 SMEs based in Western Australia (WA). The region appears particularly suited to the development of e-commerce. WA has a high percentage of SMEs in the private sector that employ over 47% of non-agricultural workers (ABS,2003). It is a technologically well developed region with a strong exporting economy. The use of e-commerce applications is well suited to its geographical isolation both within the State and from its export destinations. B2B e-commerce is the most profitable sector of online trading (Ellinger et al., 2003), although it has been insufficiently addressed in website evaluation research (Loiacono et al., 2002). This research targets B2B SMEs, but includes firms that also trade B2C. Purely B2C firms are not addressed in this research.

3.1 Data Collection and Analysis

Eighty SMEs trading in Western Australia have been identified through web searches, use of online directories, Yellow Pages and local knowledge. SMEs are defined according to the Australian Bureau of Statistics as firms employing less than 200 full time equivalent workers and that are not subsidiaries, public companies or incorporated bodies (ABS, 2003).

An initial analysis of ten websites was made by the authors to familiarise themselves with the use of eQual 4.0, the research instrument. This enabled them to become familiar with the research instrument and to make a preliminary assessment of the range of SME websites in WA. The evaluation of the remaining seventy websites was then carried out by a research assistant and six members of a postgraduate (Masters) class studying web usability. The research instrument consists of 23 questions with a Likert scale of 1 to 7. After the initial analysis, the authors added a comment area for each question to collect further data on the evaluators' responses to each website. The qualitative nature of the additional responses enables the context of each website to be considered and supports greater understanding of the 'why' behind identified patterns in the survey data (Barnes & Vigden, 2003).

Analysis of the data involved the assessment of each website within the three instrument dimensions of usability, information quality, and interaction and service quality. The researchers evaluated each of the websites using a Likert scale where the anchors are 1="strongly disagree" and 7="strong agree" in each of the three instrument dimensions. The results were analysed using a statistical software package, SPSS. The evaluators' comments were analysed by coding the texts using the research instrument to construct the units of analysis. These were based around the three dimensions of the instrument and with particular reference to the five factors of usability, design, information, trust and empathy as identified by Barnes & Vigden (2002).

4. FINDINGS

Of the 80 SME websites evaluated, 46.9% were assessed as above average for overall quality, while a third (37.0%) were rated as below average for quality. The mean scores for the 23 eQual 4.0 questions are listed in Table 1. The findings are presented within the three dimensions of the research instrument.

4.1 Usability

In terms of website usability, most SME websites were easy to learn to operate (56.8%) and to use (65.5%). These websites had also conveyed a sense of competency (59.2%). However, only 49.4% of the websites examined reportedly created a positive experience for the users. Moreover, it appears that a positive experience was the most important usability factor for determining the overall view of the websites (correlation=0.858). Of those websites that had scored an overall positive rating, 76.3% of them had also scored positive ratings for conveying a sense of competency. Overall, the average score for the usability dimension was 4.39 out of a possible 7 points.

Usability in the context of this evaluation addresses how a user interfaces and reacts to a website: the emphasis is on the user and not on the designer or the software of the site (Barnes & Vigden, 2002). Ease of use of a website is seen as a prerequisite for visitor use (Barnes and Vigden, 2002) and has a positive influence on customer responsiveness (Dadzie, Cheriariu & Winston, 2005). A website that is easy to use also enhances the ability of visitors to learn to navigate around the site and to find the facilities that they seek.

Table 1. Mean score for eQual 4.0 questions

		eQual 4.0 questions	Mean	Sum	Standard Deviation
Usability	}	I find the site easy to learn to operate	4.52	366	0.823
		My interaction with the site is clear and understandable	4.41	357	0.997
		I find the site easy to navigate	4.51	365	0.976
		I find the site easy to use	4.54	368	0.923
		The site has an attractive appearance	4.48	363	1.256
		The design is appropriate to the type of site	4.26	345	1.302
		The site conveys a sense of competency	4.54	368	1.582
		The site creates a positive experience for me	3.93	318	1.439
Information	}	The site provides accurate information	4.20	340	1.487
		The site provides believable information	4.49	364	1.518
		The site provides timely information	4.14	335	1.498
		The site provides relevant information	4.26	345	1.481
		The site provides easy to understand information	4.20	340	1.249
		The site provides information at the right level of detail	3.85	312	1.606
		The site presents the information in an appropriate format	3.91	317	1.535
Service Interaction	}	The site has a good reputation	4.22	342	1.533
		It feels safe to complete transactions	3.93	318	1.464
		My personal information feels secure	3.79	307	1.498
		The site creates a sense of personalization	4.04	327	1.495
		The site conveys a sense of community	4.12	334	1.426
		The site makes it easy to communicate with the organization	4.93	399	1.170
		I feel confident that goods/services will be delivered as promised	4.32	350	1.540
		My overall view of this web-site	4.17	338	1.539

In a B2B situation it is to be expected that visitors will have at least some level of competency in electronic business, although this assumption should not be taken for granted. Therefore websites should have high usability in order to attract visitors of all types. Design is an integral part of usability and influences both the evaluators' perceptions of ease of use, and of the sense of competence. Appropriate design was one of the lowest rated factors in the usability section.

Evaluation of a website must be necessarily subjective, but there was some consensus displayed by the evaluators on the ease with which visitors could learn how to use the sites and how easy they were to use. However, it is worth noting that nearly a third of the websites did not rate as easy to use; a significant number in terms of potential visitors visiting and remaining to use the site. Website users have low levels of tolerance and will move websites if they cannot find the information they need quickly (Shuster, 2000).

4.2 Information Quality

In terms of information quality, most B2B websites provided believable information (54.3%) but failed to provide information at the right level of detail (only 39.5%) as well as in an appropriate format (only 42.0%). Providing believable information to users was the most important information quality factor for determining the overall view of the websites (correlation=0.841). Of those websites that had scored an overall positive rating, almost all (97.4%) had scored highly for providing believable information. The average score for the information quality dimension was also 4.16 out of 7 points.

An acceptable level of detail was visible in less than half the sites evaluated and some vital elements of information were missing from these sites. For example information on products and services was found to be scant in many areas with the apparent assumption that the site visitor had sufficient knowledge to understand the variations of the product range. In contrast one of the highly recommended sites had detailed

information on the practical applications of each item in its product range linked to the catalogue entry, thereby providing levels of information to suit all customers.

A second important area where information was found to be lacking was in the provision of company details. This is considered a crucial element of a business website (Shuster, 2000) and is a necessary source of information for visitors searching for new suppliers. Again the highly rated sites had detailed company information that gave the history, business aims, location and sometimes testimonials from satisfied suppliers. In one case the names, photograph, contact details and area of expertise of each of the company's sales force were presented. This level of contact detail was rare and sites provided only an email address or a telephone number. In one case the only content information was a map from which the customer could infer the address and in another the website consisted only of contact details rather like a telephone book entry.

The refreshment of content is seen to be an important element of websites to keep up interest levels and show that the company is maintaining the site (Shuster, 2000), but few of the websites showed evidence of current input. In at least half of the sites the last update or date of creation was unknown. In 12% of cases, the website had not been altered since before 2004 and only three sites actually gave a date of less than a month since the last upgrade. In the more highly rated sites, information was seen to be well organised, timely and relevant. This led to the perception of accurate and believable information being presented. Some sites provided extensive information that was not found to be useful. For example, one company using natural products displayed encyclopaedia extracts explaining the nature of the product, but had no prices or catalogue showing the product range on offer. The site had the appearance of an educational site rather than a commercial venture. The lack of prices on some transactional sites was somewhat of a puzzle and was recorded as insufficient information in the evaluation. In at least one case, prices may be visible through a passworded extranet although it was not possible to verify this.

4.3 Interaction and Service Quality

In terms of interaction and service quality, most SMEs' websites made it easy for users to communicate with them (72.9%). However, only 39.5% of the websites evaluated made users' personal information feel secure and 42.0% made users feel it was safe to complete transactions. In fact, only three of the SME websites evaluated actually transacted online through secure sites. Moreover, the users' confidence in the delivery of goods/services as promised was the important interaction quality factor for determining the quality of the websites (correlation=0.889). Of those websites that had scored an overall positive rating, all had scored positively for making users feel confident that goods/services will be delivered as promised. In addition, the average score for interaction and service quality dimension was also 4.21 out of 7 points.

Channels for communication were offered by all sites in at least one form although the use of email did not predominate. There was also little evidence of multi-channel communication on offer, with many sites offering either telephone or email, or in some cases only a postal address. The three websites with fully functional secure transactional sites rated highly in all areas. In two other firms offering online purchase, the websites offered a form into which visitors were invited to enter their credit card details, although no security precautions were evident. Other companies used intermediaries such as PayPal to host their transactions. Only one site offered a range of payment options within a secure site. Surprisingly, none of the sites discussed electronic invoicing or payment terms more in keeping with B2B transactions. The majority ran brochure sites only and invited potential customers to contact the firm to discuss things further. While this is an acceptable measure, the sites did not make it easy for potential customers to properly ascertain if they wished to progress with their enquiries; for example by offering complete product lists, prices, delivery details, invoicing details etc. Confidence in the delivery of goods received a 100% rating from firms considered to have very good sites, but was not relevant in the majority of cases where only brochure or catalogue sites were used.

5. DISCUSSION

The majority of websites examined were brochure and catalogue sites, with only 15 of the 80 sites selling online. This accords with Albert et al's findings that while many visitors are comfortable conducting transactional activities online, the primary activity remains information and communication based (2004).

The purpose of the majority of sites was held to be informational, either for existing customers or to attract visitors seeking to broaden their supplier base. In the transactional sites, online selling was primarily an addition to an informational site and only three sites had developed the secure transaction mechanisms necessary for online trading. These three sites displayed the attributes of full transactional sites including delivery options, online tracking and secure payment methods.

Users should have a positive experience when visiting a website (Barnes & Vigden, 2002; Turban & Gehrke, 2000). In a highly competitive commercial environment, a negative view of the overall experience might easily lead to a user searching for new suppliers. Where an established partner is concerned, it may be that they prefer not to use the site thereby losing opportunities for realising the benefits of e-commerce. A positive experience for the user was found in only half of the websites evaluated. Despite higher ratings in the usability section of the analysis, half of the SMEs were rated as below standard overall. This reflects the evaluators' comments that although the websites were easy to use and good to look at, they did not enable the visitor to find what they wanted. This aspect of usability is strongly influenced by the website design. Good website design must fulfil customers' needs for information or transaction capabilities (Heldal, Sjøvold, & Heldal, 2004). The evaluators rated the more complex websites, incorporating graphics, animation and sound, as low on usability. The same sites also had lower ratings on information and interaction. The websites appeared designed to please the owner (or designer) rather than provide appropriate information to the visitor; a finding that supports the view that a designer's desire for artistry often supersedes the users' needs (Heldal et al., 2004). Since the designer viewpoint is rarely the same as the users' the dimension of service interaction quality can be affected by failure to address the customers and their needs.

The research instrument devotes a number of questions to ascertaining the quality of information, which is regarded as a major contributor to the success of a website. Consideration of the quality of the content presented is considered of primary importance when using a website (Turban & Gehrke, 2000). Specifically, comprehensive product information is vital if prospective customers are to develop an interest in the site and returning customers are to maintain loyalty (Dadzie et al., 2005). Product information was found to be incomplete or not included in a quarter of the websites evaluated. This has significant implications for attracting and retaining customers who may find it preferable to search for information elsewhere rather than consider contacting the company for more details. Where product information was given, there were some innovative ideas with well structured pages to enable the visitor to choose the depth of information required.

A further concern in this area is the lack of company information, including contact details. Nielsen argues that the home page of a site is the online equivalent of the reception area. The impression created will often influence whether a visitor remains on the site or leaves immediately (in Shuster, 2000). The homepage should contain basic information about the company, together with address, an email and telephone number to support multiple communication options. The lack of such fundamental information creates an unprofessional appearance to visitors and does not provide the necessary introduction to those searching for new suppliers.

Clear concise text in an appropriate format gives a positive feel to a website (Turban & Gehrke, 2000) and this was one area in which performance was high with rare examples of inappropriate text or layout. However, the overall assessment of the websites were lower than indicated by this section as although the text was clear and well laid out, it did not provide the information that visitors were seeking. Also, the appearance of more timely text would benefit the majority of the websites, particularly where dates of homepage creation or last update were over a year old. While it was known that these firms are still operating, visitors from further afield may doubt their continuing existence and search elsewhere. It was possible to see some examples where the site had been created by web consultants and subsequently left untended, probably through lack of in-house skills; a scenario well recorded in the literature (Bode & Burn, 2001; van Akkeren & Cavaye, 1999) and a problem for many smaller businesses dependent on the advice and expertise of consultants.

Concerns of empathy and trust are key factors of the service interaction quality (Barnes & Vigden 2002). The evaluators' comments confirmed the correlation between users' confidence in the delivery of goods and an overall positive assessment of the site. This supports the concepts of trust and empathy as a key feature of website interaction. While high user confidence implies empathy and trust, the notion of trust did not appear to be associated with security. This may arise from the low number of the firms actually trading online. The issue of security is seen as a significant concern in the business press, although it is interesting to note that in Turban & Gehrke's (2000) determinants of e-commerce sites, experts did not rank security highly and concentrated on network security, copyright and confirmation of purchase. In contrast, consumers ranked

security as of first importance in an e-commerce situation. Only three sites rated highly for confidence in security from a transactional perspective. These sites also rated highly in regard to protection of customer information. Those firms that are transacting through the use of downloadable forms for credit card details did not rate highly from either perspective. It also appeared to the evaluators that these firms were not supporting significant levels of online trading.

What emerged from the examination of these sites is that few of the firms are prepared to trade online. This finding is well supported by the literature (Saban & Rau, 2005). Although some SMEs have the ability to develop websites that function at a high level of e-commerce, the majority retain an informational perspective. Several of the evaluated sites have been in existence for a number of years but have not progressed beyond the brochure or catalogue format. This would imply either that the site owners are gaining no benefits from the site and have no motivation to improve or update them, or that they are satisfied with the level of custom being generated. Alternatively, the website may have been created as a result of peer group convention or perceived business wisdom to give the appearance of legitimacy (Grewal, Comer, & Mehta, 2001). In such cases owner expectations are usually low and lack of strategy means that the realisation of benefits remains very low and interest in the website is abandoned (Stockdale & Standing, 2004). Resource constraints are another factor that influences more complex adoption, not least the industry sector and the IT skills within the firm (Poon & Swatman, 1999; van Akkeren & Cavaye, 1999). Higher than anticipated costs for developing and maintaining a highly functional website can also stall progressive development of an informational site (Saban & Rau, 2005).

The customer-centric sites discussed by Albert et al., (2004) are clearly beyond the scope of the SMEs discussed in this evaluation. Differentiating the design of non-transactional and transactional websites to reflect the goals and experiential requirements (Albert et al., 2004) implies a level of strategy development that is rare in smaller businesses. Nevertheless, the evaluated firms have dedicated resources to building websites, many have taken steps towards online trading and there were excellent examples of how even the smallest businesses could effectively use the Internet for business purposes.

6. CONCLUSIONS

User perceptions of the websites evaluated varied across the three dimensions used to assess them. The effectiveness of the websites was evident in specific areas; ease of use, attractiveness and navigation were highly rated, as was providing believable information and conveying a sense of competence. The results in these areas are encouraging. Significant numbers of smaller businesses are managing to project themselves online and present websites that attract and encourage visitors.

Where problems then occur is in meeting visitors' subsequent needs. Users perceived that their needs were not met in regard to levels of information detail, and trust in the secure handling of both personal and transactional information. The inability to provide the right level of information and security seriously hinders the progression of e-commerce for these sites and affects the positive experience of the visitor. SMEs too often have little recognition of the benefits of a website and the adverse effect that an incomplete or untended site can have as an advertisement for ineffectiveness.

It is perhaps natural to emphasise the failings found in the evaluation and to overlook the number of smaller firms that are presenting competent and well designed websites to potential customers. Although in global terms the sites are not highly visible, within the regional market there is encouraging evidence of firms gaining benefits from their e-commerce activities and presenting effective websites to potential and existing customers. To extend the number of SMEs in this category, firms must be encouraged to develop the information and service quality dimensions of their websites and to gain an understanding of visitors' needs.

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