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A Review of Existing Web site Models for E-Commerce

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Abstract

On reviewing the literature it became evident that previous researchers adopted a high-level approach to the development of Web site design models. The models were designed to be adapted to multiple industries resulting in broad categories. The literature has uncovered three main ways of classifying Web sites. The digital business model, e.g. Wen, Chen and Hwang (2001) and Schneider and Perry (2001) describe ways in which business can be conducted over the Web. The stages of development model, e.g. Ho (1997), Burgess and Cooper (1999), Boon, Hewett and Parker (2000), Lowe (2001), Becker (2002) and Davidson (2002) describes different stages of development with functionality mapped to each stage. In scoring systems, e.g. Elliot (2002), Cast Bobby (1999) and Gartner (2002), specific features of a Web site are identified and given a score.

Keywords: **Web site; Model; E-Commerce**

Introduction

Web site is a collection of interlinked Web pages with related topics, usually under a single domain name, which includes an intended starting file called a homepage. From the home page, we can get to all other pages on the Web site, or also called Web presence (WebHosts4Free, 2004).

The number of Web sites grew 1758% in 1994 and doubled in size every 53 days by 1995 (The Economist, 1995). It has increased more than six times in just one year from January 1994 to January 1995 (Levy, 1996). New Web sites on the Internet have been appearing at the rate of one per minute (Schwartz, 1997). In the subsequent six years, the Web grew from 130 separate Web servers to more than 7 million servers (Zakon, 1999). The publicly indexable Web contains an estimated 800 million pages as of February 1999, encompassing about 15 terabytes of information or about 6 terabytes of text data on about 3 million servers (Lawrence and Giles, 1999). The number of Web pages on the Internet is 2.1 billion and pages added per day are 7.3 million (Murray and Moore, 2000). By early 1999, the number of registered domain names was 5.3 million and by February 2000, there were about 11 million sites (Tschong, 2000). The total number of Generic Top Level Domains (gTLD) domains registered worldwide in November 14, 2004 is 44,158,128 from four main primary domains, com, net, org, and edu (Zooknic, 2004). Another survey found that the total domain in July 2004 increased to 285,139,107 compared to January 2003 which was just 171,638,297 (Internet Systems Consortium, 2004).

The literature has uncovered three main ways of classifying Web sites. The first classification schemes are called Web typology, or more commonly electronic or digital business models. A Web site can be analysed based on these model descriptions and classified as being of a certain type. The stages of development models are another classification method. To classify a Web site, its functionality is compared to those on the list and the site is slotted into the stage of best fit, the stage with the most features from the Web site. The third classification method uses a scoring system. In scoring systems specific features of a Web site are identified and given a score. An overall score can then be calculated and used to rank the Web site compared to other sites. Generally the higher the score, the more features the site has, and presumably, the better the site is (Davidson, 2002).

Objective

There is no prescribed standard particularly in creating a Web site. "Literature on Web theory is scant, for two reasons. First, it is an emerging area and many people are simply finding their way for the first time. Second, those who are at the forefront of the Web, the design technologists are not typically inclined to sit back, reflect on their practice, source relevant theory and write about it" (Day, 1997). Marketers embrace the fact that well-designed Web sites are a critical success factor as an E-Commerce strategy (Kim, Shaw, and Schneider, 2003). Thus, Web site development model was designed to achieve the need for E-Commerce purposes. The main objective of this study is to review the relevant Web site development models for E-Commerce.

Digital Business Models

1. E-Commerce Web site Design Models (Wen, Chen and Hwang, 2001)

Web design has evolved from static hypertext publishing in the early days to dynamic multimedia, Web database application servers. New business models that bring savings, revenues, and customer relationships are being incorporated into commercial Web site design. Two generic Web site design strategies; informational/communicational strategy and Online/transactional strategy that summarised in Table 1.

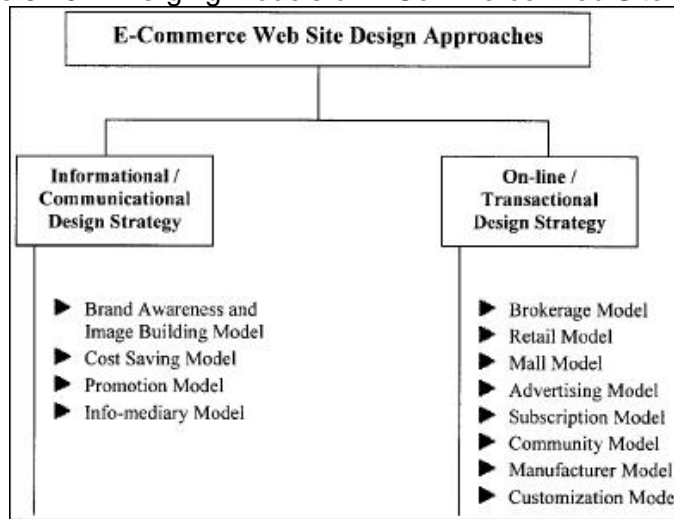
Table 1: Web Site Design Strategy

Web site design	Definition/ characteristic	Promotion measures/ways	Merits
Informational/ communicational design	This approach is for companies to use the Web as a supplement to traditional marketing, delivering additional benefits to customers and building relationships with them	<ol style="list-style-type: none"> 1. Putting companies' catalogue on-line. 2. Building broad awareness and image. 3. Using the Web as a cost-effective way to augment their core products with related information and service function. 4. Obtaining cost savings from automating routine customer services. 	<ol style="list-style-type: none"> 1. Providing large quantities of information to customers. 2. Giving a company an instant global presence and attracting people to one's ad, some of them are not the company's target market, but potentially will be. 3. Opening a new communication channel allowing a company to develop further relationships with customers. 4. All at a reasonable cost.
On-line/ transactional design	This approach is for companies to use the Web to construct "virtual Business" - independent, profitable ventures that exist only on the Internet	<ol style="list-style-type: none"> 1. Creating a retail presence larger than any physical store could. 2. Creating a virtual business providing extra information in form competitors cannot imitate. 3. Creating a virtual business that takes a specialty product or collectible and sells it worldwide 4. Creating a virtual business that uses the Internet to produce superior economic benefits to customers that competitors can not 	<ol style="list-style-type: none"> 1. Providing a larger or more specialised selection of products than competitors can offer. 2. Providing higher quality and higher quantity information, more economic benefits, and more convenience than competitors can offer 3. Providing a sense of community for customers

		imitate 5. Creating a virtual business providing convenience to customers that competitors cannot match	
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After visiting many Web sites, a total of 12 Web site design models for E-Commerce were found that shown in Figure 1. The first four models that related to the informational/communicational design are Brand awareness and image building model; Cost saving model; Promotion model; and Info-mediary model.

Figure 3.19: Emerging Models of E-Commerce Web Site Design



- Brand awareness and image building model

Web sites that apply this model provide detailed, rational information about the firm and its offerings. It may also serve as a signal to current and prospective customers and competitors that the firm is on the cutting edge. The model reaches motivated customers with an information/image-rich communications message. However, because the entry barriers are so low, smaller firms can set up this kind of site as well or in some cases even better than larger firms.

- Cost saving model

Saving from commercial activity on the Web includes cost-effective savings and productivity savings. By directly meeting information needs, a Web site can be highly cost-effective. Many companies now use their Web site to support the ownership phase of the customer service life cycle. Productivity savings arise from reduction in order and processing costs and more efficient inventory management. Cost savings result through reduced brochure printing and distribution costs and reductions in order-taking as customers use fill-out forms to prepare their own orders. As control is effectively transferred to the customer, customer satisfaction might actually be increased.

- Promotion model

The promotion model represents a unique form of advertising that attracts a potential customer to a site. The objective is to attract the user to the commercial site behind it. In many cases, Web sites provide free gifts to get users' attention. The gifts typically include digitised material such as software, photographs, music and consumer reports.

- Info-mediary model

An info-mediary may offer users free Internet access or free hardware in exchange for detailed information about their surfing and purchasing habits. This is more likely to succeed than the pure promotion model. Data about consumers and their buying habits are extremely valuable. Especially when that information is carefully analysed and used to target marketing campaigns. Some firms are able to function as info-mediaries by collecting and selling information to other businesses. The model can also work in the other direction: providing consumers with useful information about the Web sites in a market segment that compete for their dollar.

The following eight models that are based on the on-line/transactional design strategy include Brokerage model; Retail model; Mall model; Advertising model; Subscription model; Community model; Manufacturer model; and Customisation model.

- Brokerage model

Brokers are match-makers. They bring buyers and sellers together and facilitate transactions. Those can be business-to-business (B2B), business-to-consumer (B2C), or consumer-to-consumer (C2C) markets. A broker makes its money by charging a fee for each transaction it enables.

- Retail model

E-tailers are an Internet version of classic wholesalers and retailers of goods and services. Sales may be made based on list prices or through auction. In some cases, the goods and services may be unique to the Web and not have a traditional "brick-and-mortar" storefront.

- Mall model

An e-mall hosts many on-line merchants. The mall typically charges setup, monthly listing, and/or per transaction fees. The virtual mall model may be most effectively realised when combined with a generalised portal. Also, more sophisticated malls will provide automated transaction services and relationship marketing opportunities.

- Advertising model

The Web-advertising model is an extension of the traditional media-broadcasting model. The broadcaster, in this case, a Web site, provides content (usually, but not necessarily, for free) and services (like email, chat, or forums) mixed with

advertising messages in the form of banner ads. The banner ads may be the major or sole source of revenue for the broadcaster. The broadcaster may be a content creator or a distributor of content created elsewhere. The advertising model only works when the volume of viewer traffic is large or highly specialised.

- Subscription model

Users pay for access to the site. High value-added content is essential. Generic news content, viable on the newsstand, has proven less successful as a subscription model on the Web. A 1999 survey by Jupiter Communications found that 46 per cent of Internet users would not pay to view content on the Web. Some businesses have combined free content (to drive volume and ad revenue) with premium content or services for subscribers only.

- Community model

The viability of the community model is based on user loyalty (as opposed to high traffic volume). Users have a high investment in both time and emotion in the site. In some cases, users are regular contributors of content and/or money. Having users who visit continually offers advertising, info-mediary or specialised portal opportunities. The community model may also run on a subscription fee for premium services.

- Manufacturer model

This model is predicated on the power of the Web to allow manufacturers to reach buyers directly and thereby compress the distribution channel (i.e. eliminate wholesalers and retailers). The manufacturer model can be based on efficiency (cost savings that may or may not be passed on to consumers), improved customer service, and a better understanding of customer preferences. The model has the potential for channel conflict with a manufacturer's established supply chain.

- Customisation model

This model provides customers with content that is customised to meet their preferences. By completely customising information needs, a Web site can be highly attractive to visitors. While this model represents a novel use of e-commerce technology, it is unclear how large a paying market exists for this kind of information.

2. Business Models for Selling on the Web (Schneider and Perry, 2001)

The business model of selling goods and services on the Web is based on the mail order catalogue business model that predates the Web. In this model, the seller establishes a brand image that conveys quality and uses the strength of that image to sell through catalogues mailed to prospective buyers. Buyers place orders by mail or by calling the seller's toll-free telephone number. This business model which is often called the Catalogues model has proven successful for a wide variety of consumer goods items,

including apparel, computers, electronics, housewares and gifts.

- Advertising–Supported Model

The advertising–supported business model is the one used by network television in the United States. Broadcasters provide free programming to an audience along with advertising messages. The advertising revenue is sufficient to support the operations of the network and the creation or purchase of the programs.

Many observers of the Web in its early growth period believed that the potential for Internet advertising was tremendous. However, after a few years of experience in trying to develop profitable advertising–supported business models, many of those observers are less optimistic. The success of Web advertising has been hampered by two major problems. First, as discussed earlier, no consensus has emerged on how to measure and charge for site visitor views. Since the Web allows multiple measurements, such as of number of visitors, number of unique visitors, number of click-throughs, and other attributes of visitors behaviour, it has been difficult for Web advertisers to develop a standard for advertising charges. In addition to the number of visitors or page views, stickiness is a critical element to creating a presence that will attract advertisers. The stickiness of a Web site is its ability to keep visitors at the site and to attract repeat visitors. People spend more time at a sticky Web site and are thus exposed to more advertising.

The second problem is that very few Web sites have sufficient numbers of visitors to interest large advertisers. Most successful advertising on the Web is targeted to very specific groups. However, it can be difficult to determine whether a given Web site is attracting a specific market segment unless that site collects demographic information from its visitors, information that visitors are increasingly reluctant to provide because of privacy concerns.

- Advertising–Subscription Mixed Model

In this mixed model, which has been used for many years by newspapers and magazines, subscribers pay a fee and accept some level of advertising. In most cases, the subscribers are subjected to much less advertising than they are on advertising–supported sites.

For example, The Reuters wire service uses a mixed model in its Web offerings. A wire service collects news reports from around the globe, consolidates them, and sells them to newspapers, radio and television stations, governments, and large companies. The value added by a wire service is consolidation and filtering. A company might want a wire service to provide every story it collects on the company and its competitors. Reuters provides some news headlines on its site, but it refers Web visitors to its subscribers, including Yahoo!, Lycos, Infoseek, and C-Net through links on its headlines pages.

- Fee–for–Transaction Models

Travel agents earn commissions on each airplane ticket, hotel reservation, auto rental, or vacation that they book. These commissions are paid to the travel

agent by transportation or lodging provider. The travel agency business model involves receiving a fee for facilitating a transaction. The value added by a travel agent is that of information consolidation and filtering. A good travel agent knows many things about the traveller's destination and knows enough about the traveller to select the information elements that will be useful and valuable to the traveller.

In addition to earning commissions from the transportation and lodging providers, these sites generate advertising revenue from ads placed on travel information pages. These ads are similar to those on search engine results pages because advertisers can target them without obtaining demographic detail about the site visitor.

Stages of Development Models

1. Value-purpose Evaluation (Ho, 1997)

Ho (1997) proposes a general framework to evaluate Web sites from a customer's perspective of value added. A global study of commercial sites, conducted in May through September, provides a snapshot of the development of this new medium for business in 1996. First, representative samples in North America (US and Canada) from 40 industries, totalling 1000 sites, are evaluated. The results are presented and discussed by industry. Next, 8 other localities worldwide are considered: Australia, France, Germany, Hong Kong, Italy, Singapore, Taiwan, and United Kingdom. A sample of 100 sites from 20 industries is studied for each locality. Ho (1997) study of business use of the Web utilised a 3 X 4 dimensional matrix model (Table 2). The business purposes of a commercial Web site are classified into three categories (promotion of product and services, provision of data and information, and processing of business transactions) and four types of value creation (timely, custom, logistic and sensational).

Features were simply classified by their primary function into one of the twelve purpose-value categories. For compatible sites, it was possible to compare how well they do in the same category. In the hotel/resorts industry, web pages were found to be little more than modest travel brochures. Apart from travel tips and destination guides, provisional value was rather scanty. On-line reservation and availability checking seemed to be emerging and may be the key to future development (Zafiroopoulos, Vrana and Paschaloudis, 2005).

Table 2: Framework for Evaluation

Value/Purpose	Promotion	Provision	Processing
Timely	?	?	?
Custom	?	?	?
Logistic	?	?	?
Sensational	?	?	?

2. Model of Internet Commerce Adoption (MICA) (Burgess and Cooper, 1999)

Model of Internet Commerce Adoption (MICA) proposes that in developing commercial Web sites, organisations typically start simply by establishing a 'presence' on the Web and build on functionality over time as the level of technical skill/expertise in the use of Internet technologies increases. In addition, as Web sites build on complexity, so will the number of the modules incorporated into the site increase. MICA was developed to explain how business's Web sites develop to incorporate aspects of Internet Commerce. MICA consists of three layered stages and incorporates the three levels of business process of Ho (1997) Model that covers promotion, provision and processing. This model is similar to the classification applied by Chang, Arnett, Capella and Beatty (1997). The stages of development also incorporate some of the attributes of the APT Model (1997). The APT Strategies (1997) research found that the organisations they studied were using their Web Site for multiple business applications. Evidence of at six business models was found and further, that an average of 2.7 of these models were selected by each organisation.

Thus, the strengths of all these models were combined to define MICA (Figure 2). It can be used to reflect more accurately the level of maturity of Internet E-Commerce both from an industry sector and a single business perspective. MICA provides a roadmap (Figure 3) that indicates where a business or industry sector is in its development of Internet Commerce application.

Figure 2: Model of Internet Commerce Adoption (MICA)

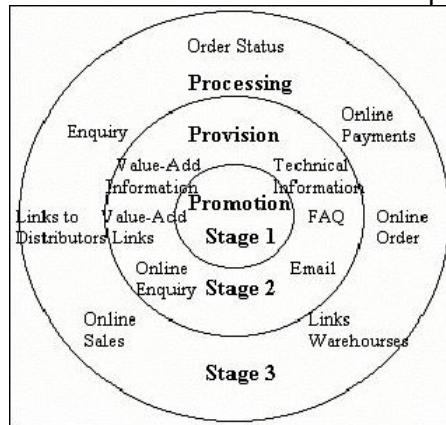
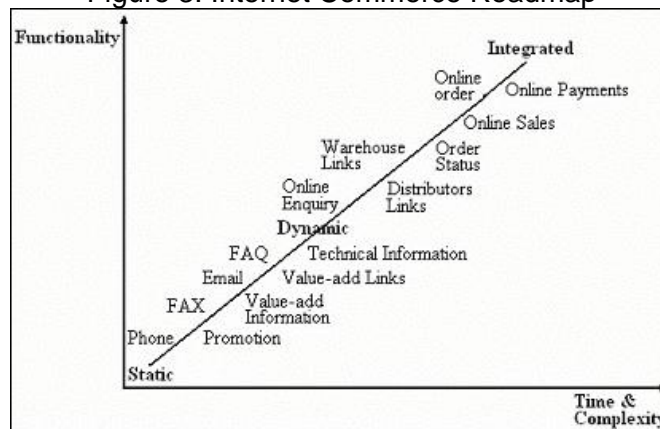


Figure 3: Internet Commerce Roadmap



Based on the MICA roadmap, Web site move through the stages of development from inception (promotion) through consolidation (provision) to maturity (processing) layers of complexity and functionality are added to the site. This addition of layers is synonymous with the businesses moving from having an Internet presence (static), basic information provision, to embracing Internet Commerce fully (dynamic) with a site incorporating value chain integration and innovative applications to add value through information management and rich functionality. At this stage, the organisation has a fully integrated site that includes online ordering, order status tracking, online sales and online payments.

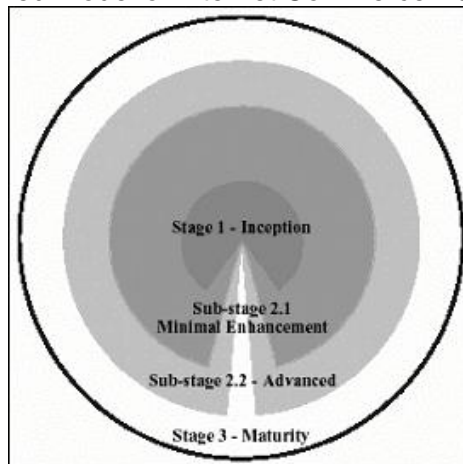
3. Modified Model of Internet Commerce Adoption (eMICA) (Boon, Hewett and Parker, 2000)

To examine the use of the Internet, a survey of 222 local government Web sites located on the Australian Local Government Associations (ALGA) Web page was undertaken. The full scale local government Web site evaluation revealed that the MICA was too simplistic, especially in stage 2 (Consolidation). Stage 2 of MICA incorporating additional functionality such as technical information, FAQs, Email, on-line inquiry, value-added links and value added information.

The review of the 222 sites revealed that a significant number of local government Web sites sat at two distinct ends of this definition of stage 2. Some sites had a higher number of interactive and unique features than other sites. Many sites were found to have one off unique features, such as 'send a post card' and on-line 'service request', where as others had a combination of unique features and expanded information, such as: tourism, library, integrated maps, bulletin boards and downloadable documents. This could be misleading as the incorporation of additional functionality such as technical information, FAQ's, Email, online inquiry, value-added links and value added information implies higher sophistication.

To enable a greater distinction based on the level of complexity, the number of value-added features and interactivity, of the Web sites meeting the criteria for Stage 2 classification was used to further differentiate the sites. Stage 2 was broken into two sub-stages. Sub-Stage 2.1 (Minimal Enhancement) included those local government Web sites that meet the criteria of Stage 2 by providing up to three interactive features or enhanced information services. Sub-Stage 2.2 (Advanced) includes those Web sites that extensive interactive feature and enhanced information services. Modified of the stage 2 of MICA (Figure 4) allows for a clear distinction to be made between the more progressive and sophisticated sites and those sites that in essence are relatively simplistic.

Figure 4: Modified Model of Internet Commerce Adoption (eMICA)



4. Framework for Specifying Acceptance Criteria for Web Sites (Lowe, 2001)

Framework for specifying acceptance criteria for Web sites shown in Table 3 identifies the key dimensions that should be covered in defining a “target” against which development can be carried out.

Table 3: Framework for Specifying Acceptance Criteria for Web site

Dimension	Possible Representations	Example Elements
Client/User		
Client problem statement	(Natural language)	
Product vision	(Natural language)	Client needs and business objectives
Users	(Natural language)	User descriptions and models
Application		
Content modelling	Structured language, hypermedia/information-modelling languages (OOHDM, HDM, entity modelling, etc.)	Existing content structure, Information views, Navigational structures, Required content
User interaction	Modified TAM	Usability and usefulness metrics
	Structured language, hypermedia modelling, HCI models, etc	Access mechanisms, user control behaviour, user orientation, search requirements, security control
Development Constraints	Natural language, standards	Adherence to corporate policies, Resource availability
Non-functional requirements	Natural language, quality metrics, adherence to standards	Reliability of content, Copyright constraints
Application Evolution		
Evolution directions	(Natural language)	Expected content changes
Client adoption/integration of Web	Business Process Reengineering	Information dissemination paths, Workflow changes
Maintenance processes	Natural language, process	Content maintenance

	models	responsibility, Web management cycles
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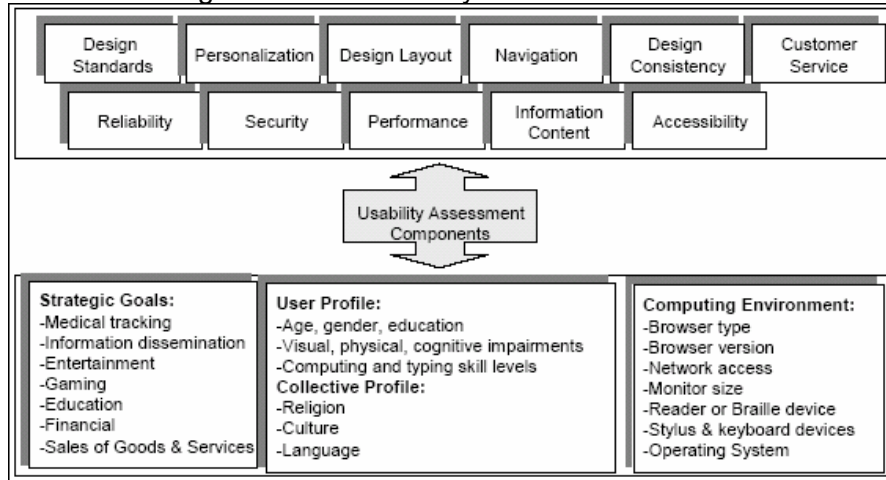
Several important observations need to be made. First, unlike more traditional application development, these dimensions not only define a specific product, but also expectations about how that product should be able to evolve over time. Second, the three top-level categories (client/user, application framework, and application evolution) are tightly interrelated and cannot be treated or specified in isolation. Finally, the dimensions should not be mistaken for specifying possible designs, or an information architecture, or implementation constructs. They are solely intended to identify those aspects that need to be specified in order to define expectations of the outcomes of a Web development project.

5. Web Usability Assessment Model (Becker, 2002)

A Web usability assessment model, shown in Figure 5, was developed when it was found that none of the existing heuristics or guidelines would satisfy the usability requirements for assessing localised Web sites. The heuristics that were available were too general, as the strategic goals, the target market, and computing technology were not fully taken into account when assessing a Web site’s perceived usability. The usability assessment factors were defined as such as a means of comparing the Web site functionality of one localised version with another. Seven hundred and eighty localised Web sites were used during the assessment process to explore sensitivities to cultural and religious differences in the international marketplace. The study examines the current state of US-based e-businesses in localizing their Web sites. The findings are based on Web site assessments from e-businesses in the automobile, travel, portal, computer products and services, financial, and retailing industries. Though the results of this initial work remain confidential, it was clear that Web site usability varied greatly from one localised version to another.

The Web usability assessment model is made up of several key components: strategic goals of the organisation in using the Web, localised target markets described collectively as a user profile, the computing environment typical for the localised market, and generic usability factors. The eleven usability factors in the model, navigation, design standards, personalisation, design layout, performance, customer satisfaction, design consistency, reliability, security, information content, and accessibility were extracted from a compilation of usability guidelines written by practitioners in the field, the National Institute of Standards and Technology (2001), and the IEEE Standard 2001-1999. Each of the usability factors is briefly described below from an internationalisation perspective.

Figure 5: Web Usability Assessment Model



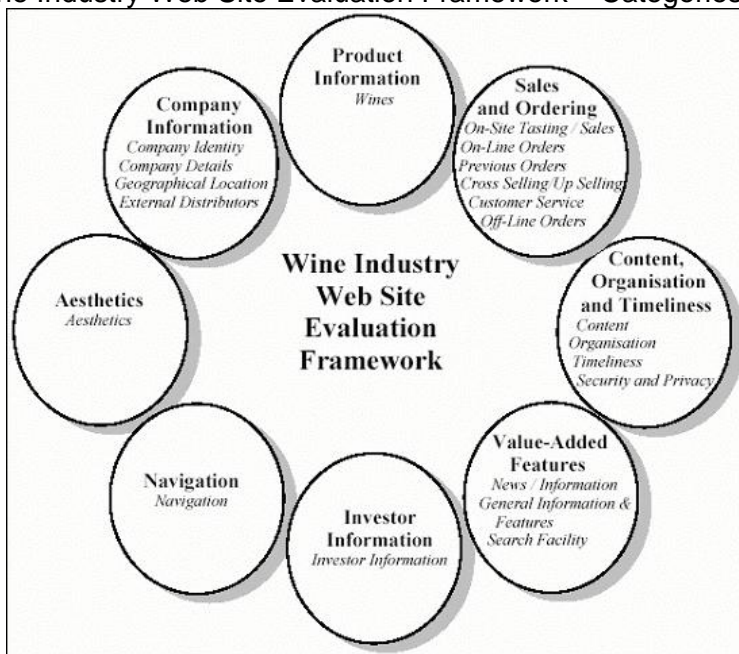
6. An Industry Specific Web Site Evaluation Framework (Davidson, 2002)

The development of this framework is part of a larger project that aims to survey a large sample of Australian wine industry Web sites. A search of the literature has uncovered three main ways of classifying Web sites. The first classification schemes are called Web typology, or more commonly electronic or digital business models. These models describe a particular type of Web site. A Web site can be analysed based on these model descriptions and classified as being of a certain type. The stages of development models are another classification method. In this case, there are different stages of development with functionality mapped to each stage. To classify a Web site its functionality is compared to those on the list and the site is slotted into the stage of best fit, therefore the stage with the most features from the Web site. The third classification method uses a scoring system. In scoring systems specific features of a Web site are identified and given a score. An overall score can then be calculated and used to rank the Web site compared to other sites. Generally the higher the score, the more features the site has, and presumably, the better the site is. These frameworks are similar to the stages of development model in that specific features are listed. The difference was the features are identified and given a score.

This framework has been developed for the specific purpose of evaluating wine industry Web sites by both the researcher and personnel in the wine industry. However, it could be easily adopted by any retail sector. Most of the elements in this framework are applicable to any Web site in any industry. Functions relevant to the Australian wine industry were selected from the existing frameworks and Nielsen (2000) usability studies. These factors fall under eight broad categories: company information; product information; sales and ordering; content, organisation and timeliness; value-added features; investor information; navigation; and aesthetics. These categories are further subdivided into sections as shown in Figure 6. Each section is further divided into elements. The eight categories are company information; product information; sales and ordering; content, organisation, and timeliness; value-added features; investor information; navigation; and aesthetics. This framework has been developed for the

specific purpose of evaluating wine industry Web sites. However, most of the elements in this framework are applicable to any Web site in any industry. Some elements are more relevant to the retail sector; especially those that sell goods conducive to selling over the Web.

Figure 6: Wine Industry Web Site Evaluation Framework – Categories and Sections



Scoring Systems

1. CEC Web site Evaluation Framework (Elliot, 2002)

Elliot (2002) discusses into the dynamics of 30 web business, five each in Australia, Denmark, Greece, China, the UK and the US. While these case studies have been contributed by business school academics in each of the locations, the approach is disciplined, drawing on a methodology that establishes a basis for cross-company comparison. A point is awarded for each of 5 levels of functionality across 6 categories (company information and functions, product/service information and promotion, buy/sell transactions, customer service, ease of use, and innovation in services and technology).

Elliot (2002) has devised an evaluation framework that allows the researchers to assess the web businesses on transaction handling capabilities, customer service, ease of use, innovation and the ability to present company and product information.

2. Cast Bobby Application

One way to discover whether all the Web sites are accessible is to run it through screening software, the Centre for Applied Special Technology's (CAST) BOBBY. BOBBY bases its accessibility analyses on the World Wide Web Consortium's (W3C)

Web Accessibility Initiative (WAI) "Web Content Accessibility Guidelines 1.0 (WCAG)" (W3C, 1999). WCAG document is organised around two general themes and 14 guidelines or general principles of accessible design. The themes are ensuring graceful transformation and making content understandable and navigable. Bobby is one step in the process of making a site accessible to as many people as possible. CAST recommends that web developers use Bobby as the first step to ensure accessible Web page design. The analysis of accessibility is based on W3C's Web Content Accessibility Guidelines (WCAG). All pages on the Web site must meet these requirements to achieve the Bobby approved.

Cast Bobby test need to be connected with Internet. To run Cast Bobby test, type in a URL and let the Bobby to analyse the Web site. When the test is complete, Bobby will automatically generate the report. The report will highlight whether the Web site has pass the Bobby test and identify number of errors of Priority 1, Priority 2 and Priority 3. When Bobby analyses a list of Web pages, it stores the dates that those pages were last modified. If these Web pages change in the future, it is possible for Bobby to redo its analysis on only those pages that have changed.

3. Web Site Evaluation Application (Gartner, 2002)

This application mainly used internally by the Gartner Group. Functionality is mainly rated on a Likert scale of 1 to 9, a binary score is used for some features. 76 features listed under 3 main categories, which are site design, site functionality and customer value. Categories and sub-categories are given weightings.

Conclusion

Several underlying forces coming together have caused a Web site explosion of utilisation as mentioned below (Kiani, 1998):

- The development of graphical and user-friendly browsers based on point-and-click like Mosaic and the Netscape.
- The development of software and hardware tools that can be used to create rich content; the emergence of open standards in development tools and at the network protocol level.
- The growth in support services such as Web business design, hosting and gateway services that help accelerate adoption.
- The development of critical processes such as ordering, billing and payment that are in place now or will be soon.

This situation will give the challenge to the Web developers to create a good Web site. Good quality of Web site design is not only based on the developer's perception, but also the customer acceptance and perception. Based on the customers' perception, "quality is whatever the customer says it is" (Day, 1997).

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