A Business-to-Consumer Web Site Design and Evaluation Framework for Australian Wineries

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Abstract

This paper presents an overview of research currently being conducted for a PhD by research. This research aims to develop an industry specific business-to-consumer (B2C) Web site design and evaluation framework for Australian wineries.

Keywords

B2C Internet Commerce Model, Internet Commerce, Business-to-Consumer, B2C, Web Site Frameworks, Web Site Design, Web Site Evaluation, Research Frameworks, Wine Industry

Introduction and Research Questions

The intention of this research is to develop a business-to-consumer (B2C) Web site design and evaluation framework for Australian Wineries. Research in the area of Internet commerce adoption models and Web site evaluation frameworks is relatively new, as they have only been developed since the mid 1990s. None of the current models and frameworks have been developed for a specific industry. Previously the focus has been on developing a model or framework that is robust enough to allow it to be used over a broad range of industries.

This industry specific framework will be specifically developed for, and tested and evaluated on, organisations in the wine industry in Australia. In addition to the development and testing of the framework, important data will be gathered that will be beneficial to the Australian wine industry. These data will provide a clear and accurate picture of where Australian wineries are, at this point in time, in terms of Web site development, and highlight differences between micro, small, medium, and large organisations. The research questions that this study will answer are:

1. What Web site design and evaluation frameworks exist to assist Australian wineries to develop and improve an Internet commerce presence and are they adequate for this purpose; if not, can a framework be developed specifically for Australian wineries?

2. What is the current state of development of Australian winery Web sites, and are there any differences between micro, small, medium and large wineries?

Justification for Research

The wine industry is important to the Australian economy and it is a rapidly growing industry. Last year the number of wineries in Australia increased by 11% from the previous year, and there is now four times the number of wineries than there were in the early 1980s (Winetitles, 2002a). With an increasing number of wineries, there is also an increase in production. The 2002 vintage was a record 1.65 million tonnes; up 19% from the previous year. Production has actually increased at a faster rate than the number of wineries. The majority of Australia's wineries are small; 85% crush less than 500 tonnes. By comparison, the four largest wineries crush 881,000 tonnes, or 60% of the national total. In fact, the top 20 wine companies (parent companies and their subsidiaries) account for 94% of the total wine production. This leaves the remaining 1,445 Australian wineries responsible for only 6% of production. Given that the large wineries have such a large market share, they also have a big advantage in terms of distribution and more pull with the major retail chains so the smaller players need to look at other, less traditional routes to markets (ACIL Consulting, 2002). This is of course where Internet commerce comes in. The Internet has long been seen as the new way to do business, and a popular media belief has been that if you don't get on the Web you will be left behind; you won't survive. These facts and beliefs have led to a dramatic increase in the number of wine producers adopting a Web presence over the past few years. The number of winery Web sites increased by approximately 50 percent over each of the previous two years (Winetitles, 2002a). With this rapid uptake, and given that the majorities of Australian wineries are small family run businesses, it is little wonder that organisations like the South Australian Centre for Innovation, Business and Manufacturing (a government initiative whose role it is to help businesses to achieve their goals) are often asked the question "how can I use the Web to help my business and what should I put on a Web site?" The framework being developed in this study and the associated research will assist wineries to answer these questions and hopefully make their entry into the World Wide Web easier.

From a scholarly viewpoint, this research involves the development of a Web site design and evaluation framework for the Australian wine industry, and the collection and analysis of data, neither of which has previously been published. It will make a contribution to existing knowledge in this field.

Overview of the Study and Progress to Date

This study can be broken down into five phases:

1. The literature search and documentation of existing Web site design and evaluation frameworks.

2. The development of a Web site design and evaluation framework specifically for business-to-consumer (B2C) Internet commerce in the Australian wine industry.

3. Testing and refinement of this framework.

4. An evaluation of a sample of Australian winery Web sites based on the developed framework.

5. Analysis and presentation of findings.

A thorough literature review has been conducted and the main Web site frameworks have been documented, commented on, and compared. A summary of these frameworks is provided in Table 1.

Author	Method	Where Used	Comments
Digital Business Models			
Timmers (2000)	Internet Business Models	8 e-commerce ventures are documented with reference to what business models they use	• Describes 11 ways of conducting B2B and B2C Internet commerce. • Business models are mapped according to degree of innovation and functional integration. • *Not useful for this study as it does not provide a way of evaluating the level of innovation and functionality within a category of business models.*
Stages of Development Models			

Cockburn & Wilson (1996)	Business Use of WWW	A survey of 300 global Web sites from 18 industry sectors selected from the Yahoo! directory	• Classifies Web sites according to:
			  - Information provided and ordering functionality
			  - Use of multimedia
			  - Utilisation of e-mail
			• *Identifies important features that also appear in subsequent models.*

Ho (1997)	Value-Purpose Evaluation Matrix	Global study of 1,800 Web sites from 40 industries	• Categorises Web sites into 12 categories on a 3x4 matrix divided by 'purpose' (promotion, provision, processing) and 'value' (timely, custom, logistic, sensational). • Enables a broad comparison of individual sites and across industries. • *Gives good examples of what features to expect in each value/purpose combination.*

Burgess & Cooper (1999)
 	
Boon, Hewett, & Parker (2000)
 	
Burgess & Cooper (2000); Burgess et al. (2001); Doolin et al. (2001a; 2001b)
	Model of Internet Commerce Adoption (MICA)
	
	Modified MICA
	
	Extended MICA (eMICA)
		186 Web sites in the Metal Fabrications industry
		
		222 Australian Local Government Authority Web sites
		
		3 studies of Regional Tourism Organisation Web sites in Aust., NZ, and the Asian Pacific region.
			• The original MICA model has been refined twice and is now presented as eMICA.
			• eMICA presents 3 broad levels of functionality with a further division of 2 and 3 levels in stages 1 and 2.
			• Stage 1 – Promotion: Level 1 – basic information
			                             Level 2 – rich information
			  Stage 2 – Provision: Level 1 – low level interactivity
			                             Level 2 – medium level interactivity
			                             Level 3 – high interactivity
			  Stage 3 - Processing
			• *Useful examples of functionality given.*

Scoring Systems			
Elliot (2002)	CEC Web Site Evaluation Framework	A study of 100 Danish Web sites in 10 industry sectors. A global study of 30 Web sites from 6 countries	• Uses a binary scoring approach. • 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). • Used 2 analysts who had to agree on the same score. Guidelines on how points are awarded are subjective – how much of something is needed for a point to be awarded? • Stricter guidelines would compromise the flexibility of the framework for use across industry sectors. • *Categories of functionality and scoring ideas useful.*
Gartner (2002)	Gartner's Web Site Evaluation Application	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 (site design, site functionality, customer value). • Categories and sub-categories are given weightings. • Separate list of functions for specific industry sectors. • The scores from 3 analysts are averaged. • Implemented in an Excel spreadsheet.

			• *Comprehensive list of functions.*

Table 1. Summary of Web Site Design and Evaluation Frameworks

Each of these frameworks was examined to determine the criteria upon which Web sites are classified. The stages of development models and scoring systems provide many examples of functionality that characterise good Web sites. Web usability guides and style manuals were also consulted. The work of notable author Jakob Nielsen (2000) was found to be very comprehensive in that it describes in detail considerations for page, site, and content design. In addition, Web developers, personnel in the wine industry, and electronic commerce researchers were consulted, and ideas were also gained from viewing many Australian and foreign winery Web sites. Ideas from all of these sources formed the basis for the Web site design and evaluation framework that has been developed specifically for Australian wineries. Figure 1 presents a high level view of this framework.

Figure 1. High-Level View of Australian Winery Web Site Design and Evaluation Framework

The Web site framework attempts to list all content and design issues that a winery should consider when implementing B2C Internet commerce. A detailed view of this framework lists several elements for each of the sub-headings (Table 2). These elements are the basis of an extensive list of criteria that is currently being used to evaluate a large sample of Australian winery Web sites. This survey of Web sites will have two benefits:

1. It will further test the framework to determine if the content and design issues are relevant and will hopefully highlight any omissions; and

2. It will provide an accurate picture of the level of development of Australian winery Web sites.

Company Information

♦*1 Company Details*
- •*1* *Name*
- •*2* *Address*
- •*3* *Phone*
- •*4* *Fax*
- •*5* *E-mail*
- •*6* *Contact name*

♦*2 Geographical Location**
- •*7* *Geographical Zone**

♦*3 Investor Information*
- •*8* *Annual financial reports*
- •*9* *Quarterly financials*
- •*10 Aust. Security & Investment Commission filings*
- •*11 Analyst reports*
- •*12 Stock quotes*

Product Information

♦*4 Wines**
- •*13 Description**
- •*14 Tasting notes**
- •*15 Price*
- •*16 Technical notes**
- •*17 Tasting chart**
- •*18 Best seller list*
- •*19 Reviews**

Sales and Ordering

♦*5 On-Site Tasting and Sales**
- •*20 On-site tasting and sales promoted**
- •*21 Opening hours**
- •*22 Cellar address**
- •*23 Location map*

♦*6 External Distributors*
- •*24 Name*
- •*25 Location*
- •*26 Address*
- •*27 Phone*
- •*28 Fax*
- •*29 E-mail*
- •*30 Contact name*
- •*31 Web site link*

♦*7 On-Line Orders*
- •*32 Availability*
- •*33 Clear procedure*
- •*34 Easy to edit/view order*
- •*35 Order retained while within site*
- •*36 Order retained between sessions*
- •*37 Price & freight calculated*
- •*38 Export freight prices*
- •*39 Currency converter*
- •*40 Order confirmation*
- •*41 Payment options*
- •*42 Secure transaction*
- •*43 Form Validation*

♦*8 Previous Orders*
- •*44 Previous orders remembered*
- •*45 Customer details remembered*

♦*9 Cross Selling / Up Selling*
- •*46 Similar products*
- •*47 Complementary products*

♦*10 Customer Service*
- •*48 Accessories*
- •*49 Gift boxes*
- •*50 Personalised labels**
- •*51 Food and wine packs**
- •*52 Corporate gift service*
- •*53 Trade section*
- •*54 Flexible purchasing**
- •*55 On-line customer service*
- •*56 Delivery/order status on-line*
- •*57 Customer wish list*
- •*58 Surprise bonus/discounts on ordering*
- •*59 Loyalty discounts*
- •*60 Choice of delivery*

♦*11 Off-Line Orders*
- •*61 Method of ordering*
- •*62 Fill in form before printing*
- •*63 Prices and freight calculated before printing*

Content, Organisation, and Timeliness

♦*12 Content*
- •*64 Home page*
- •*65 Company name in title*
- •*66 Page description in title*
- •*67 Contact on each page*
- •*68 URL on each page*
- •*69 Clarity*
- •*70 Page length*

♦*13 Organisation*
- •*71 Use of screen space*
- •*72 Supports different browsers*
- •*73 Supports different monitor sizes*
- •*74 Printer friendly*
- •*75 Readily located by search engines*

♦*14 Timeliness*
- •*76 Last updated date on each page*
- •*77 Download time (< 10 seconds)*

♦*15 Security and Privacy*
- •*78 Security statement*
- •*79 Privacy statement*

Value-Added Features

♦*16 News / Information*
- •*80 Press releases*
- •*81 Employment opportunities*
- •*82 Special offers*
- •*83 New product announcements*
- •*84 Best buys*

♦*17 General Information & Features*
- •*85 Wine making information**
- •*86 Wine storage information**
- •*87 Wine ageing information**
- •*88 Complementary food**
- •*89 Wine show awards**
- •*90 Virtual tour of winery**
- •*91 Tourism promoted**
- •*92 Foreign languages*
- •*93 Contact facility*
- •*94 FAQs*
- •*95 Members club / newsletter*
- •*96 Chat room / bulletin board*
- •*97 Contests/give-aways*

Navigation

♦*18 Navigation*
- •*98 Breath-emphasising design*
- •*99 Depth-emphasising design*
- •*100 Breath and depth-emphasising navigation*
- •*101 Primary and secondary menus*
- •*102 Site structure*
- •*103 Site map*
- •*104 Search feature*
- •*105 Broken links*
- •*106 Error statements*
- •*107 Links to home page on every page*
- •*108 Links to external Web sites*
- •*109 Link descriptions meaningful*
- •*110 Standard link colours*
- •*111 Link titles*
- •*112 Use of frames*

Aesthetics

♦*19 Aesthetics*
- •*113 Interesting*
- •*114 Aesthetically pleasing*
- •*115 Contrasting colours*
- •*116 Same branding/logos used across site*
- •*117 Font sizes not fixed*
- •*118 Goals/objectives of Web site met*
- •*119 Text only option*
- •*120 Sensational effects/Multi media*

* denotes an element that is specific to the wine industry

Table 2. Detailed View of Australian Winery Web Site Design and Evaluation Framework

The population for this phase of the study consists of Australian winery Web sites. Data obtained from Winetitles (2002b) on the 13th December 2002 consisted of an Excel spreadsheet containing *(inter alia)* the names of all wineries in Australia and the URLs for those with Web sites. This spreadsheet is an electronic form of the Australian and New Zealand Wine Industry Directory (Winetitles, 2002a), which is considered to be the "bible" regarding data on the wine industry. While the directory is published yearly, it is updated continually as data comes to hand; therefore the spreadsheet file obtained on the 13th December 2002 contains the most up-to-date data available at that time. At this time there were 1,577 registered wineries in Australia with 849 of them listing URLs. From these 849 wineries 39 were eliminated due to the fact that key information was missing; this being either the size of the winery or its geographical region. In addition, a further 14 wineries listed more than one geographical region. In some cases these regions covered two States. As each winery needed to be classified into one region only, these wineries were also eliminated. This left a sampling frame with 796 members.

To determine an acceptable sample size Krejcie and Morgan's (1970, cited in Cavana, Delahaye & Sekaran, 2001, p.278) "sample size for a given population size table" was used to determine that a sample size of 260 is appropriate for this population. The stratified sampling technique was used as that increases a sample's statistical efficiency; provides adequate data for analyzing the various subpopulations; and enable different research methods and procedures to be used in different strata (Emory & Cooper, 1991, p. 266). The sampling frame was divided into strata based on size and geographical location of the winery. This decision is based on the fact that the subpopulation groups should reflect those groups from which you wish to draw separate conclusions (Emory & Cooper, 1991). In this case the size of the winery owning the Web site. Geographical location is used to ensure that wineries from across Australia are fairly represented.

At the time of writing, evaluations of the 260 Web sites is nearing completion. To ensure the validity and reliability of the data collected 80 research assistants (third year and Masters students) have each evaluated one winery Web site. The data collected from the evaluation each student did will be compared to the data collected by the researcher to check for inconsistencies. The percentage of agreement between coders will be identified to determine a simple coefficient of reliability. Wimmer and Dominick (1991) suggest 0.75 or above is acceptable. Data that is not above this range will be revisited to check for accuracy.

These data will be analysed using SPSS to present an accurate picture of the development of Australian winery Web sites and to determine if there are any differences or correlations between the level of development of the Web site and winery size. It is expected that this information will be presented as frequency tables and cross-tabulated tables and charts.

Contribution

It is anticipated that this framework, and the results of the survey, will assist personnel in the wine industry to make informed decisions when implementing a Web presence. In addition, the framework will add to the existing body of knowledge in this field and lay the groundwork for developing further frameworks for different industries.

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References

ACIL Consulting, 2002, 'Pathways to Profitability for Small and Medium Wineries', *Report commissioned by the Commonwealth Government*, Canberra.

Boon, O, Hewett, WG, & Parker, CM (2000), 'Evaluating the Adoption of the Internet: A Study of an Australian Experience in Local Government', *Proceedings of the 13th International Bled Electronic Commerce Conference*, Bled, Slovenia, June 19 – 21.

Burgess, L & Cooper, J (1999), 'MICA: A Model for Classification of Business Adoption of Internet Commerce', *Proceedings of the 12th International Bled Electronic Commerce Conference*, Bled, Slovenia, June 7 – 9.

Burgess, L & Cooper, J (2000), 'Extending the Viability of MICA as a Metric for Explaining the Process of Business Adoption of Internet Commerce', *Proceedings of ICTEC 2000*, Dallas, Texas, November.

Burgess, L, Cooper, J & Alcock, C (2001), 'The Adoption of The Web as a Marketing Tool by Regional Tourism Associations (RTA's) in Australia', *Proceedings of ACIS2001*, Coffs Harbour, Australia, December 5-7.

Cavana, RY, Delahaye, BL & Sekaran, U (2001), *Applied Business Research: Qualitative and Quantitative Methods*, John Wiley & Sons, Qld., Aust.

Cockburn, C & Wilson, TD (1996), 'Business Use of the World Wide Web', *International Journal of Information Management*, Vol. 16, No. 2, pp. 83 – 102.

Doolin, B, Burgess, L & Cooper, J (2001a), 'Use of the Web for Destination Marketing in Regional Tourism', *Proceedings of the 2nd We-B Conference*, Perth, Australia, November, 2001.

Doolin, B, Burgess, L, Cooper, J & Alcock, C (2001b), 'Internet Commerce Adoption by New Zealand and Australian Regional Tourism Organisations: A Comparative Study Using eMICA', *Proceedings of ECECR-4 2001*, Dallas, Texas, November 8 – 11.

Doolin, B, Dillon, S, Thompson, F & Corner, J (2002), 'Perceived risk and the internet

shopping experience in online purchasing behaviour', *Proceedings of CollECTeR'02*, Melb., Australia, December 1-2.

Elliot, S (2002), *Electronic Commerce B2C Strategies and Model*, John Wiley & Sons, UK.

Emory, CW & Cooper, DR (1991), *Business Research Methods*, 4th Ed., Irwin Inc., USA.

Gartner (2002), *Gartner Web Site Evaluation Application*, URL http://www.gartnerg2.com/, Accessed 21 August 2001.

Ho, J (1997), 'Evaluating the World Wide Web: A Global Study of Commercial Sites', *Journal of Computer Mediated Communication (JCMC),* Vol. 3, Iss. 1, June, URL http://www.ascusc.org/jcmc/vol3/issue1ho.html, Accessed 11 April 2002.

Krejcie, R & Morgan, D (1970), 'Determining Sample Size for Research Activities', *Educational and Psychological Measurement*, 30, pp.607-10.

Nielsen, J (2000), *Designing Web Usability: The Practice of Simplicity*, New Riders Publishing, USA.

Timmers, P (2000), *Electronic Commerce: Strategies and Models for Business-to-Business Trading,* Wiley, Qld.

Wimmer, RD, & Dominick, JR (1991), *Mass Media Research: An Introduction,* Wadsworth Publishing Company, California, USA.

Winetitles (2002a), *The Australian and New Zealand Wine Industry Directory*, 20th Ed., Hyde Park Press, Adel.

Winetitles (2002b), *The Australian and New Zealand Wine Industry Directory, electronic spreadsheet*, Hyde Park Press, Adel., current on 13/12/03.