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CONNECTIVITY & COMMUNICATION: A STUDY OF HOW SMALL WINE BUSINESSES USE THE INTERNET

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ABSTRACT

This paper addresses the development and effects of Internet use by small wine businesses. It includes useful insights that can be applied to other small businesses, and also provides helpful information for consultants and entrepreneurship educators. An exploratory framework is presented that includes a four-stage sequence through which small businesses typically progress in relation to the use of Internet-related tools. The stages include awareness, design, implementation, and practice. Propositions are also developed to guide analysis of the framework, and an empirical test of various parts of the framework is performed using a sample of 382 wineries. Results showed that, beyond the use of e-mail for communication and connectivity, awareness of the Internet's uses is moderate, while implementation is moderate to low. Thirty-nine percent of the respondents believe the Internet will make a strong contribution to sales and profitability in the future, though only 9% report they are currently achieving this with Internet utilization.

INTRODUCTION

Increasing Internet utilization and the further development of infrastructure for e-commerce have induced small businesses to seek expanded market development opportunities (Evans & Wurster, 1999) and cost savings benefits (Garciano & Kaplan, 2000). It has been suggested that, "the emergence of virtual markets opens new sources of innovation (e.g., business model innovation) that may require a parallel shift in strategic thinking towards more integrative, dynamic, adaptive, and entrepreneurial strategies," (Amit & Zott, 2001, p. 516).

Rates and types of utilization of the Internet by businesses have been varied due to many factors (Timmers, 1998). While the Internet offers broad access and richness of information, different industries have different informational needs (Evans & Wurster, 1999). For example, legal professionals may require extensive research capabilities whereas wholesale distributors may not. Insufficient human, technical, and financial resources may prevent a company from deploying desirable Internet applications. Lack of commitment to or

familiarity with rapidly changing technology on the part of management may also affect Internet adoption and utilization (Henderson, 1993). Further, security concerns may deter adoption of Internet transaction applications and the support systems needed to make them work (Venkatraman, 2000).

Small businesses represent the majority of American businesses & serve as important engines for economic growth, yet recent research on Internet adoption has focused almost exclusively on large businesses (Amit & Zott, 2001; Dutta & Segev, 1999; Smith, Bailey, & Byrnjofsson, 1999). The purposes of this exploratory investigation are to provide a frame of reference for small business owners and consultants as to how small manufacturers perceive and utilize the Internet for e-commerce implementation, to provide educators with a new framework for Internet utilization, and to serve as a foundation for future research.

An important issue for both small business research and practice is, "Why do some small firms choose to utilize the Internet whereas others do not?" Previous research has tried to explain this phenomenon by citing industry and organizational characteristics as possible causal factors (Lohrke & Franklin, 2002; Poon & Swatman, 1999; Premkumar & Ramamurthy, 1995). Due to the multiplicity of organizational issues surrounding Internet adoption and utilization, and the particular relevance of industry classification, it is important to focus the research on a single industry to minimize environmental noise. With this in mind, the wine industry was selected, because it is composed of many small businesses. According to the American Viticulture Association (AVA, 2002), there are approximately 2,000 wineries in the US, and more than 50% of them have fewer than 5 employees. There are approximately only 10 US wineries with more than 1,000 employees (Perdue, 1999), thus making the US wine industry an excellent resource for small business research. In addition, the researchers are located in a part of the country with access to many winery associations.

INTERNET UTILIZATION

Afuah & Tucci (2001) describe the five major business activities that occur via the Internet: communication, content, community, coordination, and commerce. The first and most obvious Internet business activity is *communication*. Companies primarily use e-mail as a means to give and receive information, coordinate activities and tasks, and build and maintain relationships. Communication, both internal and external (i.e., with customers and suppliers), is generally acknowledged as the most quickly adopted business activity on the Internet. A second business activity is *content*, or the information that is delivered over the Internet. For a small business this may include industry news, stock quotations, weather forecasts, and travel information. Content can be produced and delivered via e-mail, or accessed via websites.

Chat rooms, bulletin boards, and other online group conversation mechanisms comprise the third business activity, *community*. Community provides interactive formats for interest groups, industry networks, or internal design groups to meet and share information in real time. It can save time and money by reducing the need for travel and meetings, and by increasing the speed of design and marketing. Customers can even be invited to join online communities to provide feedback about products and services.

Similar to community, but with a different intent, *coordination* is generally focused on accomplishing work tasks online between groups within the business as well as with external suppliers. The mediating property of the Internet reduces the need for paper transactions and rapidly accelerates business processes that may have taken days to complete in the past.

The final Internet business activity, and the one that receives the most attention in the press, is *commerce*. According to Kalakota and Whinston (1996), commerce via the Internet involves activities that lead to an exchange of value. These activities can be divided into two major areas: (1) Business to Consumer (B2C), in which a business provides products and services to a customer, and (2) Business to Business (B2B), in which one business provides products and services to another business. A third category, Consumer to Consumer (C2C), as exemplified by Internet trading firms such as eBay and on-line auction houses, has emerged since 1996, but does not apply to the firms in this investigation. Depending on the industry, B2B activities may be more prevalent than B2C, but either one of these activities can lead to competitive advantage if adopted as part of an overall Internet strategy focused on the particular strength and needs of the small business.

SMALL BUSINESS INTERNET USE

The research stream on small business use of the Internet is sparse. One recent survey notes increasing small business Internet use (DiBernardo, 2000). Small businesses use the Internet to expand their geographic reach, increase efficiencies of executing transactions, and reduce printing costs (Alba et. al., 1997); to establish direct communication with customers (Shaw, Gardner & Thomas, 1997); to improve customer support (Strauss & Hill, 2001); and to create a permanent information resource for customers via websites (Griffith & Krampf, 1998). Most recently, researchers into small business practices have examined the awareness and usage of the Internet in terms of the perceived benefits of this communication medium for competitiveness. As shown in Table 1, various researchers have examined the impacts of firm size (Van Beveren & Thomson, 2002), perceived utility and ease of use (Levenburg, Schwarz, & Dandridge, 2002), degree of information specificity (Lohrke & Franklin, 2002), and the degree of business innovation and business criticality on the propensity of small businesses to employ Internet technology. The studies listed in Table 1 focus on various stages of Internet adoption and use by small businesses, ranging from awareness to design, implementation, and practice.

Table 1: Typology of Recent Research Pertaining to Small Business Internet Use

Adoption Stage	Study	Independent Variable(s)	Dependent Variable(s)
Awareness	Kickul, Sandercock, Finkl, & Selden (2002) [n = 24 small manufacturers]	* Degree of business innovation * Degree of business criticality	* Internet readiness * E-Commerce strategy
Design	Levenburg *et. al.* (2002) [n = 300 small businesses in 75 SIC codes]	* Perceived utility * Perceived ease of use	* Firm performance (i.e., sales, costs, profits)
Implementation	Lohrke & Franklin (2002) [n = 41 small manufacturers]	* Degree of information specificity (i.e., follow-up service, knowledge specialization, customization branding, product technology)	* E-mail and website use
Practice	Van Beveren & Thomson (2002) [n = 179 small manufacturers]	* Size of firm	* E-mail and website use

SMALL BUSINESS INTERNET UTILIZATION FRAMEWORK

To structure our analysis of small business Internet use, a Small Business Internet Utilization Framework is developed to categorize issues considered critical to small business Internet utilization into a four-step process. This exploratory framework consists of four stages that characterize the cyclical adoption and utilization process, beginning with an initial Awareness stage and progressing through the Design, Implementation, and Practice stages. A Feedback loop is also included. A business can be in multiple stages of the framework with respect to different Internet activities (e.g., e-mail might be in the Practice stage, while e-commerce is in the Design stage). The stages are described below. Following the discussion of each stage of the framework measures are proposed.

Stage 1: Awareness: In the awareness stage, a business learns about the Internet and has some initial experience with the technology. As a result of exposure to Internet technology and related information (via the media, word of mouth, or direct experience), the business comes to realize an internal need for Internet technology adoption. Factors influencing awareness include management's realization of the rapid Internet adoption rate and the corresponding use of technology by customers and business partners. At the time of this writing, the external pressures imposed by an increasingly sophisticated marketplace (e.g., high customer expectations including accelerated transaction rates, volumes, scope and accuracy) are driving the use of Internet technology. Also, having professional Internet services (i.e., domain name, web page, e-mail addresses, etc.) contributes to stakeholders' perception of the legitimacy of a small business as a going concern (Aldrich & Fiol, 1994). Another facet of the awareness stage is the business's realization of the possible benefits of Internet technology. These benefits can include operating efficiencies resulting from the connectivity of business stakeholders, internal productivity gains, cost savings from streamlined business processes, and increased customer service levels. Also in this stage, a business realizes that one or more benefits are possible at a cost that makes the effort worthwhile.

To measure awareness, researchers can ask how small businesses perceive the importance of the Internet for communication, content, community, coordination, and commerce.

Stage 2: Design: The design stage is characterized by efforts to create value in an Internet technology-based business application (Amit & Zott, 2001). In this planning stage, the business decides what services it will offer online and how those services will be implemented and managed over time.. Before developing the Internet application questions of who will design, develop, and maintain the Internet applications must be answered. Many small businesses do not possess the IT skills or the manpower necessary to completely develop the application and turn to outside Internet consultants, ISP's, and other business consultants. Other issues pertinent to the design stage include where the applications will reside (in-house vs. ISP); the choice of where the application is hosted plays a role in access speed, initial and ongoing maintenance costs, security, and ease of administration. Management issues include determining who will manage the applications, where on the technology curve the business will target applications, how distribution channel issues will be addressed, and what feedback mechanisms will be used to monitor the applications. Infrastructure issues must also be considered with special attention to emerging new technologies, the standards that are (or will be) in common use, and the fit with the business itself. These issues merit consideration early in the design process and throughout its subsequent iterations over the Internet application's life cycle.

To analyze this stage, researchers can ask small businesses how they designed an infrastructure for use, as well as to what extent the design function was outsourced.

Stage 3: Implementation: The implementation stage occurs when the business begins to implement a designed Internet application. The end result of this stage is the achievement of the design specifications and a functioning Internet application (developed internally or with help from outside practitioners). Considerations in this stage generally fall into two categories: technical issues and management issues. Technical issues relating to implementation include the selection of required hardware, software, development tools, and providers of services. Management issues include managing consulting professionals in their efforts to meet the goals specified in the design stage and both defining and monitoring the interface between staff and consultants. During the implementation stage management must also be prepared for a transition period of chaos or confusion as new business applications come online.

To measure implementation, researchers can measure the degree to which small businesses have or have not implemented Internet tools for communication, content, community, coordination, and commerce. Researchers could also analyze the perceived barriers to adoption.

Stage 4: Practice: The practice stage of the framework encompasses the actual usage of the developed Internet services. During this stage, businesses examine the benefits, costs, and disadvantages actually realized from the use of new services. The potential benefits realized during the practice stage of the framework might be: cost savings, productivity gains from improved business processes, expansion of business to new customers or markets, improved customer service, and/or efficiencies gained from the benefits of collaborative computing. Additionally, benefits may result from aggregation of users, products, quality, and resources. Costs examined in the practice stage include both dollar costs of implementation, maintenance and access, and opportunity costs that may relate to losses incurred at the expense of pursuing Internet services. Disadvantages might include any area where the traditional business functions demonstrate an advantage over the Internet implementation (e.g., having personal contact with customers).

For researchers, potential measurements for this stage can include the level of perceived value small businesses place on the Internet regarding its *current* impact on revenues and profits, as well as its *future* impact on revenues and profits.

Stage 5: Feedback Loop: A feedback loop enables small businesses to measure the effectiveness of Internet business models by analyzing their strengths or shortcomings. Businesses have specific goals for each Internet application developed. The feedback loop allows small businesses to examine the mechanisms used to gather information about service utilization, costs, and benefits. Further, the gathered information must be analyzed in some way to determine if the business is meeting its specified goals. The results of this analysis lead to another iteration of the process beginning with a new awareness stage followed by a re-design stage. Small businesses can incorporate any new "lessons learned" from the previous iteration.

RESEARCH PROPOSITIONS

Based on the proposed Small Business Internet Utilization Framework, several research propositions were identified as the bases for an exploratory study on how small manufacturers utilize the Internet. Since design issues were considered by respondents in a pilot sample to be proprietary and dampened response rates in the test of the original survey instrument, the design stage of the framework was not measured in the final survey. Thus, the awareness, implementation, and practice stages of Internet adoption became the focus of inquiry.

This study focused on differences in business size as the key determinant of Internet use. Consistent with the size of small businesses in the focal wine industry, sample respondents firms ranged in size from one to 50 employees. Our expectation was that *awareness* of the Internet's uses would be lower for the smallest companies in our sample than for the larger ones. As demonstrated in earlier studies of Internet adoption and use, small businesses might not perceive the Internet to be important to their current small-scale operations (Ruth, 2000; Van Beveren & Thomson, 2002; Weiss, 2000). As company size increases, though, Internet technology could become increasingly necessary due to heightened internal and external pressures to gather and disseminate information to important stakeholders such as suppliers and customers (Lohrke & Franklin, 2002). Thus, the following is proposed:

Proposition 1: Smaller businesses will have a lower awareness of the Internet for communication, content, coordination, community, and commerce purposes than will larger businesses.

A natural corollary issue focuses on the *implementation* stage. Small businesses could be expected to use Internet tools to a lesser degree than larger companies. Here again, it was anticipated that larger companies would devote the necessary resources and capabilities to use the Internet and, therefore, would assign a higher level of importance to various Internet uses (Davis, 1989; Vassos, 1996). This gives rise to the following proposition:

Proposition 2: Smaller businesses will have a lesser degree of Internet use for communication, content, coordination, community, and commerce purposes than will larger businesses.

Related to Proposition #2 is the expectation that smaller businesses would perceive greater *barriers* to using Internet technologies than would larger businesses. Smaller businesses would tend to experience more constraints resulting from such factors as reduced ease of use, fewer employees on hand to create and implement new information technologies, smaller budgets, and weaker market pressures to use to Internet (Levenburg et al., 2002).

Proposition 3: Smaller businesses will perceive more barriers to Internet use than will larger businesses.

A need to raise transaction volume and lower attendant transaction costs via the Internet suggests that larger companies would perceive *greater value* currently and in the future than would smaller companies (Lohrke & Franklin, 2002). The final proposition tests the assumption that larger businesses are further along the Internet development and deployment curves than smaller businesses and, therefore, would have higher expectations for the Internet's sales and profit-generating potential in the short- and long-term (Hartman, Sifonis, & Kador, 2000).

Proposition 4: Larger businesses will perceive greater current and future value related to Internet use than will smaller businesses.

METHOD

Sample

By the beginning of 2001, over 900 small California wineries produced 149 million cases of wine, accounting for 85% of the total U.S. wine market (Wine Business Monthly, 2001). Offsetting declining per capita consumption in the U.S. and flat export sales, Northern California premium wine sales and production were growing over 20% per year, leading to

the entry of new wineries into the market and to the expansion of existing wineries. Predominantly family-owned, wine businesses provide job creation and growth in Northern California's agricultural economy, yet relatively little rigorous research has been done on this important industry. Prior empirical research into the behavior of firms in this industry has focused on documenting the frequency of organizational entry and exit (Delacroix & Swaminathan, 1991; Stoeberl, Parker, & Joo, 1998), the creation of inter-organizational networks (Brown & Butler, 1995), the evolution of specialist organizations (Swaminathan, 1995), and competitive strategies (Gilinsky, Stanny, McCline & Eyler, 2001). Studies specifically addressing wine industry Internet usage are needed to expand our understanding of these small businesses. Focusing on the wine industry also provides a means of minimizing environmental "noise" because of the concentration of firms in one industry and one geographic location.

Access to a sample of small manufacturers in the U.S. wine industry was provided by a wine industry trade service via the service's regular client mailing list. Questionnaires were mailed and/or emailed in both paper and online format to the chief executives of the 1500 small wine businesses as part of a joint survey between the industry trade service and the researchers in January 2001. After the set of returned questionnaires was cleaned to eliminate duplicate responses from companies and responses from firms that identified themselves only as grape growers or service providers (e.g., accountants and financial firms that supported the wine industry), a total of 382 usable questionnaires were compiled (response rate = 25.5%).

Questionnaire Development

The first section of the questionnaire asked participants to identify basic demographic information about their businesses, including size of business. The latter sections focused on Internet strategy and usage issues highlighted in the four propositions above (see Appendix 1).

To measure awareness, five questions were asked on the survey. First, respondents were asked if they had a business email address (yes vs. no). This capability provides evidence of the company's awareness of Internet uses and shows the company is using the Internet for communication purposes. Second, respondents were asked about the extent to which they would prefer to use company websites when researching wine supplies and equipment (on a scale of 1 to 5, with 5 being most preferred and 1 being least preferred). The question was designed to tap into the respondents' degree of experience with the Internet and their awareness of its utility. The implication is that the more that respondents prefer to use other companies' websites for research purposes, the more they see it as an important tool for delivering content. The third awareness-related question asked if the company's current strategy included the use of the Internet and e-commerce (yes vs. no). Affirmative answers to this question indicate that the company has an awareness of the Internet's capacity for building community both within the organization and between the organization and its external constituents (e.g., customers and suppliers). The fourth question asked respondents how interested they would be in using the Internet for order processing purposes, in order to measure awareness of the Internet's usefulness for coordination of a critical work task. The fifth question asked respondents about their level of interest in utilizing website marketing, as a way of measuring the degree of awareness that companies have related to commerce-based Internet capabilities. Respondents were also asked to indicate their interest level in using a variety of other Internet services.

To measure implementation-related aspects, respondents rated various Internet uses as they pertained to their jobs. For these measures, respondents needed to indicate the level of importance (on a scale of most important [1] to least important [5]) that they attached to a communication-related use (using email), a content-related use (doing research), a

coordination-related use (transferring files to associates), and a commerce-related use (purchasing). In addition, respondents were asked to check any of ten categories of Internet uses that were currently being employed at their company (see Appendix A). The "providing customer service" category was employed as the community-related variable for the implementation stage. Finally, respondents were asked to place checkmarks next to any of ten types of difficulties that they had experienced in doing global e-commerce.

To measure practice, three questions were developed. The first and second questions asked about the extent to which the Internet and e-commerce were making a contribution *currently* to company sales and profitability and expectations for their contributions to sales and profitability *in the future*. Respondents were then asked to indicate when they believed that the Internet and e-commerce would play an important role in their companies (0 = already important; 1 = 1 year or less; 2 = 1-3 years; 3 = 4-6 years; 4 = 7 or more years).

The survey instrument was pilot tested with a convenience sample of 20 participants. Their feedback included suggestions to drop questions pertaining to the design stage as noted above, and to simplify technical terminology to match the Internet experience level of the target population. As a result, no questions were added, but certain terms were simplified.

RESULTS

Univariate statistics were used to identify means, frequencies, and percentages regarding sample characteristics and propositions. Business size is usually measured by the number of employees (Miesenbock, 1988). Following the methodology of Gaskill, Van Auken and Manning (1993) and Van Beveren and Thomson (2002), the sample was divided into four groups by size of business (1 = 1 to 5 employees; 2 = 6 to 10; 3 = 11 to 25; and 4 = 26 to 50). The percentage breakdown by size of business for the 382 small manufacturers was as follows: 52% represented businesses with 1 to 5 employees; 15% represented businesses with 6 to 10 employees; 19% represented businesses with 11 to 25 employees; and 14% represented businesses with 25 to 50 employees. Table 2 displays the means, standard deviations, and correlations for the study's key variables. The table shows that over two-thirds of the correlations achieved significance (at $p < .05$ or lower). The strongest correlations were related to the measures of content, while business size had the weakest correlations.

Small Business Internet Awareness

Regarding proposition #1, Table 3 illustrates the level of awareness of the Internet 5-C's for the small manufacturers by business size. The table shows average awareness levels of various activities conducted using the Internet (on a scale of least preferred [1] to most preferred [5]) in addition to percentage responses to yes vs. no questions.

Regarding awareness of communication, respondents were asked whether they had an e-mail address that they used for business purposes. Percentage responses were high for all 4 groups, ranging from 88% at the 11 to 25 employee businesses to 94% at the 1-to-5-employee businesses. Awareness of content scored somewhat lower, with a high mean of 3.41 (on a 5-point scale) for the smallest businesses and a low mean of 2.60 for the larger businesses. While respondents indicated a moderate preference for using the web to research supplies and equipment, most preferred to access more traditional content found in product literature and newspapers or journals. Awareness levels for community revealed moderate scores for the question on the degree to which the businesses' overall business strategies included Internet usage. Responses ranged from 62% awareness for the 1-to-5-employee businesses to 74% for the 6-to-10-employee businesses.

Table 2: Means, Standard Deviations, and Correlations Among all Variables

	Means	SD	1	2	3	4	5	6	7	8	9	10	11	12
1 Business Size	1.96	1.13												
Awareness Variables														
2 Communication	0.93	0.26	-.06											
3 Content	3.11	1.36	-.24****	.12*										
4 Community	0.65	0.48	.04	.09	.02									
5 Coordination	2.60	1.65	.08	-.06	.14*	.02								
6 Commerce	3.21	1.63	.02	-.05	.11*	.12*	.33****							
Implementation Variables														
7 Communication	4.25	1.20	-.01	.27****	.25****	.14**	.05	.12*						
8 Content	3.21	1.42	-.07	.10	.45****	.05	.16**	.30****	.22****					
9 Community	0.28	0.45	-.03	.09	.11*	.23****	.04	.10	.12*	.16***				
# Coordination	2.27	1.73	.16***	.21****	.16***	.09	.17***	.10	.33****	.29****	.11*			
# Commerce	2.06	1.43	-.14**	.19****	.45****	.08	.12*	.13*	.18***	.50****	.31****	.23****		
Practice Variables														
# Current Contribution	0.81	0.58	.07	.03	.07	.40****	.02	.16***	.11*	.08	.17***	.17***	.13*	
# Future Contribution	1.37	0.53	-.01	.08	.31****	.21****	.20****	.32****	.12*	.28****	.19****	.19***	.24****	.38****

* $p < .05$ ** $p < .01$ *** $p < .005$ **** $p < .001$

Table 3: Small Business Internet Awareness Level

Business Size	Communication	Content	Community	Coordination	Commerce
	% having email for business purposes	Average preference for using websites to do research (1 to 5 scale)	% having an Internet-related business strategy	Average interest in using Internet for order processing (1 to 5 scale)	Average interest in using website marketing in current business (1 to 5 scale)
1 to 5	94	3.41	62	2.54	3.22
6 to 10	93	2.93	74	2.42	3.11
11 to 25	88	2.79	68	2.58	3.12
26 to 50	93	2.60	65	3.00	3.42
OVERALL	93	3.11	65	2.60	3.21

Level of awareness regarding coordination of order processing activities was the lowest scoring area for respondents, with the highest mean being 3.00 for the largest businesses in the sample and the lowest mean being 2.42 for 6-to-10-employee businesses. Awareness of commerce, for which respondents were asked about their interest in using website marketing,

showed a mean of 3.21, with the low being 3.11 for the 6-to-10-employee businesses, and the high being 3.42 for the largest businesses in the sample.

Proposition #1 was tested using the analysis of variance (ANOVA) statistical technique. This technique was used to provide information on whether or not there were differences in awareness among the four business sizes. Because of the formatting of questions, this test could only be used to test the content, coordination, and commerce variables for the awareness stage. Results of the ANOVA tests are presented in Table 4.

Table 4: One-Way Analysis of Variance Summary Table for Awareness, Implementation, and Practice Variables

Dependent Variables	Source of Variation	Degrees of Freedom	Mean Square	F-Ratio	p values
Awareness Content	Business Size	3	13.404	7.59	.000
	Within Groups	*366*	*1.767*		
Coordination	Business Size	3	3.230	1.192	n.s.
	Within Groups	*326*	*2.711*		
Commerce	Business Size	3	1.117	.418	n.s.
	Within Groups	*349*	*2.674*		
Implementation Communication	Business Size	3	.209	.144	n.s.
	Within Groups	*370*	*1.456*		
Content	Business Size	3	6.227	3.149	.025
	Within Groups	*359*	*1.978*		
Coordination	Business Size	3	13.941	4.820	.003
	Within Groups	*354*	*2.893*		
Commerce	Business Size	3	5.001	2.477	.061
	Within Groups	*358*	*2.019*		
Practice Current contribution	Business Size	3	.494	1.467	n.s.
	Within Groups	*357*	*.337*		
Future contribution	Business Size	3	.159	.559	n.s.
	Within Groups	*364*	*.284*		

n.s. = not significant.

The results showed no differences among business sizes on the coordination and commerce awareness variables. However, significant differences were found for the content variable, showing differences among business sizes in their preference to use company websites when researching supplies and equipment ($F = 7.586$, $p < .001$). Deeper analysis (via contrasts) revealed that the smallest businesses (i.e., those having 1-5 employees) preferred using websites for research significantly more than did the other business sizes ($t = 4.83$, $p < .001$).

While there was some evidence of differences on the content variable, the results were in the opposite direction to what was expected. These findings, then, provide no support for proposition #1.

Small Business Internet Implementation

The findings for Internet implementation are shown in Table 5. In the communication area, e-mail was rated as highly important by all of the businesses, with means ranging from 4.17 for the 11-to-25-employee businesses to 4.30 for the largest businesses. With respect to content, the average importance of using the Internet for doing research was 3.21; the smallest businesses had the highest mean at 3.39 while the 6-to-10-employee businesses had the lowest mean at 2.85. For the community variable, the Internet was used for customer service functions by only 28% of the businesses, ranging from 23% (for 11-to-25-employee businesses) to 38% (for 6-to-10-employee businesses).

Table 5: Small Business Internet Implementation Level

Business Size	Communication	Content	Community	Coordination	Commerce
	Average importance of using Internet for email (on a scale of 1 to 5)	Average importance of using Internet for research (on a scale of 1 to 5)	% using Internet for customer service	Average importance of using Internet for transferring files to associates (on a scale of 1 to 5)	Average importance of using Internet for purchasing (on a scale of 1 to 5)
1 to 5	4.26	3.39	28	2.08	2.22
6 to 10	4.26	2.85	38	2.22	2.14
11 to 25	4.17	2.94	23	2.20	1.83
26 to 50	4.30	3.32	26	3.10	1.71
OVERALL	4.25	3.21	28	2.27	2.06

For coordination, the average importance of using the Internet to transfer files to associates was lowest for the smallest businesses (mean = 2.08) and highest for the largest businesses (mean = 3.10). The overall average for all of the businesses was 2.27. With respect to commerce, the average importance of using the Internet for purchasing was lowest for the largest businesses (mean = 1.71) and highest for the smallest businesses (mean = 2.22), and the overall average for all of the companies was 2.06.

Proposition #2 was also tested to determine if there were differences in implementation among the four business sizes (using ANOVA). Again, due to question formatting, this test

could only be used to test the communication, content, coordination, and commerce variables for the implementation stage. No differences among business sizes on the communication (using email) and commerce (purchasing) variables were found. However, significant differences were uncovered for the content and coordination variables (see Table 4). For content, businesses significantly differed in their use of the Internet for research purposes ($F = 3.15$, $p < .05$). More focused analyses (using contrasts) revealed that the smallest businesses (i.e., those having 1-5 employees) placed a greater importance on Internet research than did the other 3 business sizes ($t = 2.35$, $p < .05$). For coordination, results showed significant differences among business sizes in the importance of using the Internet to transfer files to associates ($F = 4.82$, $p < .005$). Contrasts revealed that the largest businesses (i.e., those having 26-50 employees) rated the importance of this use significantly higher than did the other business sizes ($t = 3.53$, $p < .001$). Thus, the findings on the coordination variable provide some support for proposition #2. Similar to the awareness analyses, the results for the content variable were not in the anticipated direction as the smallest businesses gave higher ratings than did the larger businesses. Business size was not a significant predictor for the other implementation variables.

Regarding Internet implementation, email was used by a majority (92%) of the businesses. About half the respondents had a company website, but only 40% used the Internet for receiving orders. The findings also revealed the Internet was sometimes used for improving communication (35%), generating sales leads (33%), customer service (28%), retail sales (27%), market support (25%), purchasing (22%), and researching competition (7%).

Respondents also provided information on the major difficulties related to implementing global e-commerce. The top three obstacles reported were regulatory issues, lack of know-how, and having a complicated product to deliver. Table 6 shows the results related to difficulties.

Table 6: Percentages of Businesses Reporting Major Difficulties in Using the Internet

Business Size	Personal preference not to use e-commerce	Company preference not to use e-commerce	Inadequate service provider	Inadequate hardware	Lack of know-how
1 to 5	6	4	3	3	18
6 to 10	5	3	5	2	22
11 to 25	7	6	6	6	18
26 to 50	7	2	2	2	7
OVERALL	6	4	3	3	17

Proposition #3 could not be tested statistically due to extremely low response rates on the "difficulties of doing e-commerce" question. It is possible that our ten proposed barriers did not accurately reflect the actual barriers that businesses perceived. Alternatively, respondents

may not have considered their Internet use from this perspective before and did not have a reason readily available to explain their current approach.

Table 6 (Continued)

Business Size	Complicated product to deliver	Regulatory issues	Cost	Cultural differences	Market pressure
1 to 5	15	24	10	3	2
6 to 10	17	21	7	7	0
11 to 25	11	16	10	7	1
26 to 50	17	20	4	4	2
OVERALL	15	22	9	4	1

Small Business Internet Practice

The current contribution of the Internet to sales and profitability was reported as strong by 9% of respondents, 60% indicated some contribution, and 27% saw no contribution. When asked about the Internet's future contribution to sales and profitability, 39% of respondents expected a strong contribution, 56% expected some contribution, and only 2% saw no contribution. Overall, fewer than 12% of respondents reported that they expected a strong contribution of the Internet to sales and profitability in the short-term, yet 32-41% expected a strong future contribution. For all business sizes, respondents indicated that they thought the Internet would play an important role in their businesses in the *next one to three years*.

As with the previous propositions, proposition #4 was tested using the ANOVA technique to determine if there were differences in practice among the four business sizes. As indicated in Table 4, no differences among business sizes were found with regard to perceptions about the Internet's current and future contributions to company sales and profitability. Also, no significant differences were revealed as to when the Internet was expected to play an important role in their businesses. These results provide no support for proposition #4.

DISCUSSION

Small Business Internet Awareness

It appeared that small businesses in all the size groupings were well aware of the importance of email as a key communication tool – nearly all respondents had e-mail addresses. Respondents reported a moderate degree of Internet usage for research and content-gathering purposes, indicating they had some degree of experience with and awareness of the Internet. With respect to level of awareness of community-related Internet uses, approximately two-thirds of respondents indicated their current business strategy incorporated the use of the Internet. This suggested a growing awareness of the need to include Internet-related functions in one's long-term business plan as a way to promote internal and external relationships.

In terms of coordination, the results showed a moderate degree of interest in using the Internet for order processing. Thus, companies may just be beginning to recognize the utility of the Internet for coordinating work tasks between employees, customers, and suppliers. Finally, the companies reported a moderate level of interest in using website marketing, indicating that they were moderately aware of Internet options related to commerce.

When the sample was segmented by size of company, there were no differences reported in awareness levels for communication, community, coordination, and commerce; however, there were significant differences in respondents' ratings for content. The smallest businesses had a stronger preference for using supplier websites as a way to research wine industry supplies and equipment than did their larger counterparts. This finding may indicate that the smallest businesses, being low on manpower, have more difficulty gathering adequate information. Or, it may indicate that the smaller businesses did not have enough buying volume to encourage supplier salespeople to call upon them. Therefore, they rely more heavily on the information that they can access via the Internet. On balance, it appeared that most companies were aware of the importance of the Internet for communication purposes, but the content, community, coordination, and commerce areas were relatively weak blips on the small business radar screen.

Small Business Internet Implementation

The findings for Internet implementation for the small businesses showed a strong focus on communication, a moderate focus on content, and a weak focus on the community, coordination, and commerce areas. All of the respondents rated email as being highly important, a prime indicator of a communication-related use of the Internet. There were significant differences among the companies on the content variable; the smallest businesses assigned more importance to doing research on the Internet than did the larger businesses. Again, this may be a result of the labor-poor situation characteristic of very small businesses, because the Internet provides an easy and speedy way to access needed information that requires little manpower.

Results for the community factor showed that only about a fourth of respondents were employing the Internet for customer service purposes. In terms of coordination, respondents placed a relatively low importance on using the Internet for file transfers to associates. However, here there were significant disparities among respondents of different sizes. The smallest businesses rated this Internet use as far less important than did the largest businesses. This finding shows how business growth may drive Internet usage. Since the largest businesses have anywhere from five to fifty times more employees than the smallest businesses, it is reasonable that the coordination needs would be greater in the larger businesses. Finally, this study found that using the Internet for purchasing was of relatively low importance for respondents, indicating that the commerce area is still developing.

Thus, a pattern similar to the awareness findings emerged in that most businesses were using the Internet for communication purposes, but Internet use for content, community, coordination, and commerce was substantially less. The data related to how companies use the Internet supported this conclusion because they showed a dramatic reduction in the reported importance of various Internet uses aside from the all-important email. Although most of the implementation variables showed similar results across the business sizes, the significant differences in the content and coordination variables provide clear evidence of the effects of business size on Internet usage.

The major barriers to implementing e-commerce revolved around the perennial problem of complexity. Regulatory issues, lack of know-how, and having a complicated product to

deliver were all obstacles that tapped into the problems of coping with a multifaceted, complex, and uncertain realm. Since small businesses must function with greatly reduced manpower compared to larger businesses (of 50 employees or more), it makes sense that they would have particular difficulty in dealing with these complicated areas.

Small Business Internet Practice

According to respondents in every size category, the future effects of the Internet on sales and profitability were expected to be much greater than they are currently. Clearly, respondents saw the Internet as a critical factor in their business's future growth and success. In fact, the findings revealed that respondents believed the Internet would play an important role in their businesses over the next one-to-three years, a finding consistent across all size segments. The fact that there were no differences among respondents by size indicates that, even though there may be differences in Internet awareness and implementation, all had similar perceptions of the growing importance of the Internet and expect greater involvement in the practice stage in the near future. Respondents apparently perceive the urgency of enhancing their Internet-related practice to become more competitive and profitable.

IMPLICATIONS AND APPLICATIONS FOR SMALL BUSINESSES

If small manufacturers are to expand their capabilities to use the Internet for commercial purposes, they need to develop an appropriate set of goals and evaluation criteria with which to measure their progress towards those goals. Companies are currently struggling in this area, particularly in the tension between their awareness of the Internet's potential and the strategic concerns that they may need to make investments even if the financial benefits are hard to quantify or realize in the short term. In an effort to provide practical application of this research to small business owners, consultants, and entrepreneurship educators, the following five questions are provided as evaluative criteria for Internet utilization:

1. Does the Internet strategy fit with the business strategy? In general, Internet initiatives permit a broadening of the scope of a business strategy and greater emphasis on differentiated services. For this study's wine manufacturers, the most critical limitation is access to markets, as direct wine sales are subject to regulation and are currently limited to 14 U.S. states. Using the Internet to help customers learn more about products and make online purchases provides an additional service to complement other promotional activities. To some extent, online sales may cannibalize conventional distribution and retail channel sales, but for the smallest manufacturers producing low volumes of product, access to conventional channels is notoriously difficult.

2. Is the company's product or service conducive to electronic transaction? Will it make sense to the target customers? The "product" is not only the manufactured product itself, but also the information and education that the Internet provides about new products and savings incentives. Information products are easily transmitted electronically. Online wine shopping differs from retailing because a physical product needs to be delivered, and consumers need to adjust to a new method of selecting wine. These differences suggest that online wine sales are a much riskier e-commerce application than online education about wine.

3. Does the approach take advantage of the unique attributes of the Internet? One attribute of the Internet is 24-hour, 7-day-a-week accessibility. This is an improvement over purchasing wine at retail stores or at restaurants, where information about the product may be limited or non-existent. The Internet as content medium for information can thus benefit manufacturers, retailers, and consumers. For the wine manufacturers, however,

the benefits of this attribute are limited by the above-mentioned regulatory restrictions regarding physical delivery of the product. The Internet permits global expansion of markets, considered critical for small manufacturers, particularly in the wine industry, and it also facilitates mass customization through interactivity. With online sales tracking, interactivity enables much more targeted offerings, which are more convenient for consumers and more cost-effective for manufacturers. Moreover, if small manufacturers can handle delicate privacy concerns to consumers' satisfaction, they can gather and sell useful data regarding product satisfaction to their customers.

4. Is the organization prepared for the redefinition of the business that usually accompanies a shift to an Internet strategy? Small manufacturers' implementation of an Internet strategy must give high-level attention to new initiatives and moving quickly. The disadvantage is that it may be difficult to coordinate with other parts of the business. Many small manufacturers already have the challenge of managing multiple products that are sold to overlapping sets of customers. For example, numerous small wine manufacturers sell wine through traditional distribution and retail channels, as well as through tasting rooms. Managing electronic products separately and needing to coordinate with strategic partners increase the complexity of this task. Furthermore, the lesser intimacy of selling via the Internet is likely to be seen as a threat that will require major education and communication efforts to minimize organizational resistance. Choosing an internal person as the point person for information technology is recommended to help perform the needed coordination and championing of Internet activities.

5. Does the Internet initiative provide a profitable business model? The profitability of any Internet model for small business depends on a clear understanding of how customers purchase products as well as the effectiveness of competitively pricing products and services sold via the Internet. Since the online wine business is a new business model, strategic alliances can help provide access to experience and knowledge in operating online. Many small manufacturers do not have a consumer brand name themselves, but can rely on their partners to attract consumers to online web sites. However, if small manufacturers' implementation is indirect, providing tools to distributors, restaurateurs, and retailers to allow them to compete online, and if these channels value the tools, the Internet could be a profitable business for all.

LIMITATIONS OF THE STUDY

There are several limitations to this study. The first is that it is a cross-sectional study focused on the wine industry. This makes it more difficult to generalize findings to other small business industries. In addition, because of proprietary issues, it was not possible to measure the Design stage of the Small Business Internet Utilization Framework. Finally, as this is the first survey of its kind — developed specifically to measure the four stages of the framework — the validity of the survey questions may be of concern. However, with repeat studies in the future, this limitation could be alleviated.

FUTURE RESEARCH

Areas for future research regarding this study include a replication of the study in other small business industries. Through this type of application, researchers could determine the validity of the survey questions, ascertain the validity of the model, and analyze potential differences or similarities between industries, increasing the generalizability of these findings. Other research could include the addition of the *design stage* measures specifically for industries that do not harbor strong proprietary issues. Finally, this type of research lends itself well to

longitudinal studies that could assess any potential uses of feedback loops to improve the capabilities of small businesses to adopt and use the Internet, as well as to assess the extent to which adoption actually did impact their sales and profits.

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APPENDIX 1: SURVEY QUESTIONS

1. Do you personally have an Email address that you use for *business* purposes?
__Yes ___No

2. Which of the following would you prefer to use when researching wine industry supplies or equipment? (Please rate based on level of preference from 0–5 with 0 = Not Applicable; 1 = Least preferred and 5 = Most preferred)

Trade Shows	0	1	2	3	4	5
Product Literature	0	1	2	3	4	5
Company Website	0	1	2	3	4	5
Company Sales Rep	0	1	2	3	4	5
B2B Internet Site	0	1	2	3	4	5
Broker	0	1	2	3	4	5

3. Does your current business strategy include the use of the Internet and E-Commerce?__Yes__No

4. With respect to the Internet, which of the following services would you be interested in utilizing to enhance your current business? (Please rate based on interest from 0-5 with 0 = Not Applicable; 1 = Low Interest; 5 = Very Interested)

Website Development	0	1	2	3	4	5
Website Marketing	0	1	2	3	4	5
Sales Leads Generation	0	1	2	3	4	5
Targeted Broadcast Emails	0	1	2	3	4	5
Request for Quotes	0	1	2	3	4	5
Purchasing	0	1	2	3	4	5
Wine Tracking	0	1	2	3	4	5
Accounting Services	0	1	2	3	4	5
Order Processing	0	1	2	3	4	5
Data Storage	0	1	2	3	4	5
Compliance Services	0	1	2	3	4	5

5. Which of the following best describes your use of the Internet as it pertains to your job? (Please rate based on importance from 0-5 with 0 = Not Applicable; 1 = Least Important; 5 = Most Important)

Email	0	1	2	3	4	5
File transfers to associates	0	1	2	3	4	5
Research	0	1	2	3	4	5
Purchasing	0	1	2	3	4	5
Reading news	0	1	2	3	4	5
Using directories	0	1	2	3	4	5
Researching competition	0	1	2	3	4	5

6. Which of the following best describes *your company's* use of the Internet? (Check as many as you like)

____ Email
____ Receive Orders
____ Generate Sales Leads
____ Market Support
____ Other:_____
____ Website with General Information
____ Customer Service
____ Improve Communication
____ Research Competition
____ Purchasing
____ Retail Sales

7. With respect to your business, what is the major difficulty in doing global e-commerce? (Please check all that apply)

____ Personal preference not to use e-commerce
____ Company preference not to use e-commerce
____ Inadequate service provider
____ Lack of know-how
____ Regulatory issues
____ Cultural differences
____ Other:_____
____ Inadequate hardware
____ Complicated product to deliver
____ Cost
____ Market pressure

8. Do you believe that the Internet and E-Commerce *currently* make a contribution to sales and profitability in your company?

____ Makes No Contribution
____ Makes Some Contribution
____ Makes a Strong Contribution
____ Not Sure

9. Do you believe that the Internet and E-Commerce *will make* a contribution to sales and profitability in your company in the future?

____ Will Make No Contribution
____ Will Make Some Contribution
____ Will Make a Strong Contribution
____ Not Sure

10. If you agree that the Internet and E-Commerce will play an important role in your company, when do you believe that will happen?

____ Already Important
____ 1 year or less
____ 1 – 3 years
____ 4 – 6 years
____ 7 or more years