

## One-size e-business adoption model does not fit all

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### Abstract

This empirical study of organisational e-business adoption, utilising both qualitative and quantitative data collection methods, examines four major factors influencing adoption in multiple e-business process domains. Support is found for the proposition that factors influencing e-business adoption behaviour have different levels of impact across different e-business process domains. Different combinations of factors influence different e-business processes and for the most part this occurs independently of organisation size/resource capacity. For example, governments and powerful supply chain organisations have strong influence over some organisational e-business strategy. In particular, e-government influence is strong with regard to use of e-mail and external web sites due to government's legislative and regulatory compliance power. However, government influence is weak with regard to operation of an organisation's own web sites. A conceptual model of antecedents and performance outcomes of e-business adoption is modified to take account of findings from this study.

**Key words:** e-business, adoption factors, e-government, supply chain, customer power, mixed-method study

# 1 Introduction

## 1.1 Background for the research context

The major purpose of this paper is to report on quantitative research into selected factors which influence e-business adoption, and investigate the proposition that factors influencing e-business adoption behaviour have different levels of impact across different e-business process domains. Findings from this research have significance in the development of explanatory e-business models and frameworks. The empirical study was conducted within the Australian wine industry in 2003. The level of influence of four factors over different e-business types is compared. The four factors were identified and selected after a review of literature investigating organisational e-business adoption and diffusion and after a qualitative pilot study [1] involving interviews with winery staff which, among other things, helped to identify two major factors from external environment sources.

In practice e-business is made up of multiple software processes that are designed for different reasons and deliver different degrees of benefit. E-business has multiple forms, can occur at different levels ranging from shallow to deep [2], [3], is used for multiple purposes, and supports a wide range of processes related to internal business processes as well as for B2B, B2C and B2G reasons [4]. For the purpose of this research e-business is divided into separate process domains based upon a combination of technology type, ownership and users. This provides an easily identifiable technology framework for grouping business activities in terms of their purpose. Specifically the major process domains identified for this research into e-business use by wineries are: use of e-mail, use of web sites operated by groups external to the wineries (external web sites), and three possible types of web sites operated by each winery – 1) their own web site designed for access by the general public (public web sites); 2) their own web site designed for access by relevant business groups (extranets); and 3) their own web site designed for access by the winery's own staff (intranets).

## 1.2 Background literature review

Diffusion of Innovation theory [5] identifies a large range of factors influencing adoption of innovations from two major sources: 1) characteristics of the innovation itself; and 2) characteristics of the adopting organisation. The major limitation of DOI theory with respect to e-business adoption is the lack of acknowledgement that the external environment is a rich source of factors influencing adoption and diffusion patterns. Culture, government and legal regulations, and government policy initiatives all appear to have strong explanatory power in improving understanding of e-business adoption and diffusion behaviours [6-9]. Some factors identified as critical enablers include: pressure from multinational corporations; liberalisation of trade and telecommunications policies; improvement of telecommunications infrastructure; adequate legislation to manage risk; and the emergence of both e-banking and e-government [7].

The role of government in providing adequate support and acceptable legal and regulatory frameworks is recognised as extremely important [7], [8]. Policy support and leadership from government are recognised as being necessary and important enabling factors in providing an environment conducive for e-business adoption, while the provision of e-government services and online transaction options positively drive e-business adoption [6].

E-business success is also largely dependent on the level of usage by others. The term 'network externality' applies to those information technologies which rely on corresponding usage by others to be effective, or when 'one person's utility for a good depends on the number of other people who consume this good' [10]. The effectiveness of most types of e-business increases as user numbers increase, and thus e-business has network externality characteristics. For example, the lack of readiness of customers and suppliers was identified as a key barrier to e-business adoption by researchers from the 'Center for Research into Electronic Commerce' at the University of Texas as a result of a survey of 4500 US business organisations [11]. As benefits rise with increasing numbers, so too do normative pressures for other supply chain organisations to adopt, and hence normative pressure is also an influential factor [4]. Influence from the competitive marketplace environment is also acknowledged as important. In particular, customer power is singled out as having particular influence [4], [12]. Large significant customers have the power to pressure adoption of e-business practices by their suppliers in order to streamline processes, reduce transaction costs, and improve efficiency through online communication and order taking [4].

A useful conceptual framework of the antecedents and performance outcomes of e-business adoption, developed by Wu, et al [4], p.429 brings together many of the influential factors of greatest relevance identified in previous literature, and breaks e-business into separate process domains related to their business purpose: communications, internal administration, order taking, and procurement. The model, shown in Figure 1, recognises the importance of external environment factors which are missing from the general DOI framework developed for innovations in general. Organisation characteristics include customer orientation, referring to the organisation's ability to understand customer needs and focus efforts to satisfy those needs in order to provide superior service. The model treats organisation size, measured by employee numbers, as a control variable for the greater scalability larger businesses derive from e-

business adoption, with scalability defined as 'the ability to increase output without corresponding increases in the variable costs of achieving that output' ([4], p. 434).

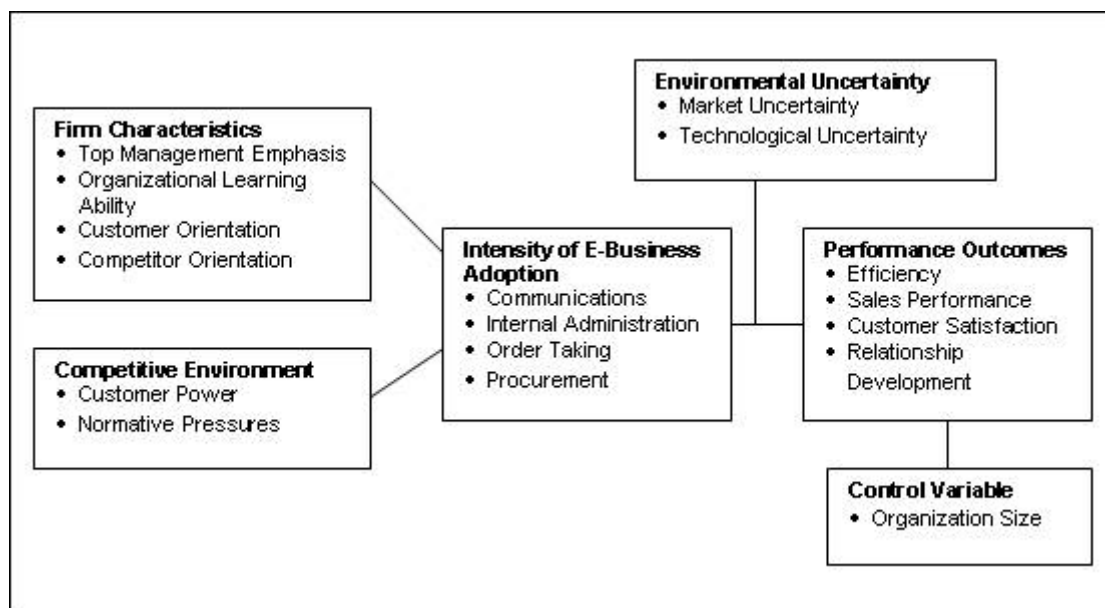


Figure 1: Antecedents and performance outcomes of e-business adoption: a conceptual model ([4], p. 429)

This research continues the investigation into e-business antecedent factors and examines four factors to compare their levels of influence in different e-business process domains.

### 1.3 Selection of e-business adoption factors

Taking the literature review and the findings from the pilot study interviews with nine winery representatives into account, the four factors selected for further detailed study are: 1) perception of relative advantage; 2) organisational size/resource capacity; 3) supply chain influence; and 4) government influence. The first two factors are well recognised as important influences on adoption of innovations, and are identified in Diffusion of Innovation (DOI) theory [5] as well as various TAM variants [13], [14] under equivalent labels. A cross-case thematic analysis of the interview data showed that both organisation size/resource capacity and the perceptions of e-business benefit appeared as important determinants of some e-business adoption, as predicted by the literature review. Winery size affects market position and customer types. In general, as winery size increases, the size and power of the business customer increases too. Two dominant business customers in the Australian beverage industry are the supermarket giants Coles and Woolworths which dominate the food and beverage industries. Influence from powerful customers such as Coles and Woolworths emerged as an important factor determining e-business behaviour for the larger wineries in particular [1], indicating that the role of powerful supply chain organisations would benefit from further research. E-government activity also emerged as a major influence – a large portion of e-business behaviour appeared to occur as a response to the provision of government sites connected with legislation and governance, and online governance processes (e.g. tax, environmental reporting, customs).

The pilot study winery interviews also provided empirical evidence to show that some winery e-business adoption occurs despite there being no perception of direct relative advantage or obvious spare resource capacity. For example, the adoption of EANnet by wineries to provide online product data to large retail customers occurs as a result of pressure and direction from these more powerful organisations [15]. Also, all interview participants reported that e-business interaction with government sites was an increasingly important aspect of their e-business behaviour, with some online process adoption being virtually dictated – for example, online export clearances from the Australian Customs Service [16]. Thus external environmental factors such as the influence from supply chain organisations and government were selected for further investigation in order to improve understanding of their role in the uptake of e-business activity.

## 2 Methodology

A multi-method, two-stage approach was employed. First, qualitative interviews were used in a pilot study designed to explore issues and collect empirical data from industry sources. This was followed by a quantitative census survey designed to gather descriptive data and test propositions. Pilot study interviews were conducted in July 2003 in nine Australian wineries and explored major issues related to e-business strategy and practice. See Roberts et al [17] for

background details of the study, the winery participants, and findings. Given that surveys are suitable for descriptive research where the major objectives are to discover what is happening, and to learn the reasons for particular business activities [18], a printed questionnaire was mailed to the whole population of Australian wineries in the second stage of the research in order to collect sufficient data to describe how e-business is being used in practice, and to investigate the degree of influence of the four selected factors. The major objectives of the printed questionnaire were: 1) to collect data on the level of activity in the five e-business process domains (e-mail, external web sites, winery's public web site, intranet and extranet), and 2) to collect perceptions on the degree of influence of the identified factors on activity in each area by including statements to which respondents indicated their level of agreement. The questionnaire included separate sections for each process domain in order to gather data on the level and extent of the e-business activity within that domain, and included eight statements (two statements for each of the four factors) to which respondents showed their level of agreement by selecting from a 5-point scale ranging from strongly disagreeing to strongly agreeing. An extra "Do not know" option was also provided. Analysis of these factor statements enabled the proposition that factors influencing e-business adoption behaviour have different levels of impact across different e-business process domains to be tested.

The survey instrument was developed specifically for the Australian winery industry in order to increase its relevance. Content validity testing was carried out with academic colleagues to ensure that the survey's factor statements aligned well with their target factor. Finally, the survey was pre-tested using large New Zealand wineries, and some minor changes to questions were made as a result of this pre-testing stage. New Zealand wineries were selected for the pre-test stage because all Australian wineries were included in the final survey, and could not therefore be used for the testing stage. The length and structure of the survey into separate sections for the different e-business processes were found to be acceptable and interesting to the pre-test participants.

The 2003 ANZ Winery Directory database [19] provided contact details for all Australian wineries operating at the time the survey was conducted. Given that the finite population was known, a census survey was carried out rather than using a sample because it effectively eliminated potential problems associated with sampling error [20] and also the cost of mailing out the questionnaires to all Australian wineries was within the available budget. However, for the purpose of this research, the target population of Australian wineries was limited to the 1065 wineries that processed more than 20 tonnes annually. This eliminated the 485 micro-size wineries which have very low production levels, and limited market focus [21].

## 2.1 Survey responses by winery size

Of the 1065 questionnaires sent out, 198 responses were received, giving an overall response rate of 18.6% from the whole population. Given that winery size helps determine a winery's market focus and position [21], organisation size is likely to act as a moderating factor on a range of e-business behaviours. Therefore, for analysis purposes the wineries are grouped into four size categories. These categories build on a system of size categorisation used by other wine industry analysts using quantity of tonnage processed rather than employee numbers [21], [22]. An extra category for 'very large' wineries was introduced in order to differentiate this group from the other large wineries due to the sheer dominance of the top 20 wineries of the Australian wine industry. The final four-stage classification system developed for this research is as follows:

1. Small – processing between 20 and 249 tonnes annually
2. Medium - processing between 250 and 999 tonnes annually
3. Large – processing between 1 000 and 9 999 tonnes annually
4. Very Large – processing more than 10 000 tonnes annually

Note that the tonnage range covered by the very large size category is extremely large and open-ended, with only the lower bound of 10 000 tonnes prescribed. In 2002 for example, BRL Hardy processed over 270 000 tonnes while Orlando Wyndham processed over 160 000 tonnes [19], p. 21. Thus the very large category covers a much wider range of size by tonnage processed than the other size categories.

Table 1 summarises the population and response numbers using these size categories. The original variable holding the responses on tonnage range was recoded into a different variable to generate the new variable of winery size category.

The increase in proportion of responses as the winery size increases from 15% of the total population of small wineries to 46% of the total population of very large wineries can be seen in Table 1, and the difference is significant ( $\chi^2(3) = 32.28, p < .001$ ). Further comparison of the respondent and non-respondent wineries showed that not only were wineries more likely to respond the larger they were, but regardless of their size, also more likely to respond if they had a web-site. Thus, there is a pro-response bias from wineries actively participating in e-business activity. This result is not surprising, as these organisations have a greater degree of vested interest in the research topic and are therefore more likely to self-select as participants in the research.

Table 1: Winery size categories, population and response numbers

Winery Size Category	Annual Tonnage Range	Number in Population	Population %	Number of Responses	Responses as % of Population in Range	Responses as % of Total Responses
Small	20-249	801	75.2%	120	15.0%	60.6%
Medium	250-999	150	14.1%	35	23.3%	17.7%
Large	1 000-9 999	88	8.3%	31	35.2%	15.7%
Very Large	10 000 and over	26	2.4%	12	46.2%	6.1%
<b>Total</b>		<b>1065</b>		<b>198</b>		
<b>Survey Response %</b>				<b>18.6%</b>		

### 3 Data Analysis

Responses were analysed using SPSS version 11.5. The "Do not know" factor statement responses were treated as missing values. This allowed an accurate mean value of agreement level to be calculated. Response differences by winery size are investigated using the Kruskal-Wallis K Independent Samples test, which is appropriate for an ordinal scale and makes no assumptions about the underlying distributions of the data, which in this case is not normally distributed.

The survey's factor statements were analysed to investigate the proposition that factors influencing e-business adoption behaviour have different levels of impact across different e-business process domains. The process domains of intranets and extranets are excluded from this quantitative analysis due to the low response numbers, indicating a low adoption rate of intranets and extranets in Australian wineries compared with other e-business processes. This leaves e-mail, external web sites, and the winery's own public web sites as the three major process domains to be compared. However the responses to factor statements on e-business in general are included as an extra point of comparison. See the Appendix for the statements, grouped by domain within each factor group. Where statistically significant differences of at least  $p < 0.05$  exist between the responses by respondent's winery size, the results are reported by winery size and the significance is reported. Pearson Chi-square tests are used for nominal data while Kruskal-Wallis K Independent Samples tests are used for ordinal data. Where expected frequencies in contingency tables are less than the required expected count of five or more per cell, the significance levels of Fisher's Exact Test (using SPSS 11.5) were compared with Pearson Chi-square values: no cases of non-equivalence were found, and thus for consistency Pearson Chi-square test results are reported in all cases.

For proposition testing purposes, the responses to the factor statements in the different e-business process domains are treated as repeated observations from the same respondent and compared for differences. The non-parametric Friedman test for K-related samples is used, for which no assumptions about the distribution of the data are made. Small p-values for this test ( $p < 0.05$ ) provide evidence that there is significant difference between the repeated scores for each e-business domain. The responses to the factor statements for e-mail, use of external web sites, use of the winery's public web site and e-business in general provide four different observations of the same factor for each respondent.

The results of reliability tests conducted on the set of eight factor statements for each of the four factors and their corresponding coefficient alpha values are provided in Table 2. The measure of internal consistency of 0.805 for the relative advantage statements indicates that the scale for this factor is reliable. The alpha values of 0.657 for the resource and 0.654 for the government factors is very close to what is normally considered to be acceptable. The alpha value of 0.48 for the supply chain factor indicates that the statements do not display internal reliability [23]. The low alpha score for the supply chain factor represents a limitation to this research and therefore some caution must be used in interpreting the final results for the supply chain factor.

Table 2: Cronbach's Alpha scores for the factor items

Factor	Cronbach's Alpha N of items = 8
Relative advantage	0.805, N = 150
Resources	0.657, N = 137
Supply chain	0.481, N = 126
Government	0.654, N = 102

The statements included in the survey for each of the four factors are provided in the Appendix. The score for each factor/domain combination was computed by adding the responses from the two statements for that factor and dividing the result by two. For example, a new variable for the relative advantage/e-mail combination was computed

using the two e-mail questions; a new variable was computed for the relative advantage/external web sites combination, and so on. The Friedman test results are computed for each winery size separately, and also for all respondents regardless of winery size in order to investigate whether winery size alters the trend in differences between different e-business categories.

The test results provide strong evidence that the four factors impact in significantly different ways between different e-business categories and this difference occurs regardless of winery size – that is, winery size has no or very little effect. So while the research confirmed that the nature and extent of e-business adoption differs significantly between wineries in different size categories, the factors influencing adoptive behaviour in different e-business domains operate and combine in a very consistent fashion. Results for each factor are presented next.

## 4 Factor analysis and discussion

### 4.1 Relative advantage factor

While a high perception of relative advantage is commonly recognised as having significant influence on information technology innovation adoption [5], pp. 24-26, this perception of benefit is variable and is not a dominant explanatory factor in understanding some areas of adoptive behaviour. Table 3 reports the results for the relative advantage factor – the results display a striking consistency between all wineries regardless of their size, and in particular the results reveal that the influence of relative advantage varies significantly between the different process domains.

Table 3: Friedman test results for relative advantage statements

Friedman test for relative advantage factor, df = 3	E-mail	External Sites	Public Web sites	E-business in general	N	Chi-Square	Significance
All wineries	3.28	2.81	1.65	2.26	150	158.7	0.000
Small	3.35	2.68	1.74	2.24	85	83.2	0.000
Medium	3.24	2.95	1.66	2.15	31	39.5	0.000
Large	3.25	2.98	1.42	2.35	24	32.4	0.000
Very large	2.85	3.10	1.50	2.55	10	11.0	0.012

Figure 2 illustrates the marked difference in levels of influence that the perception of relative advantage plays in different areas of e-business: for example, relative advantage is associated with e-mail to a much higher degree than with public web sites. These differences are consistent across all winery sizes.

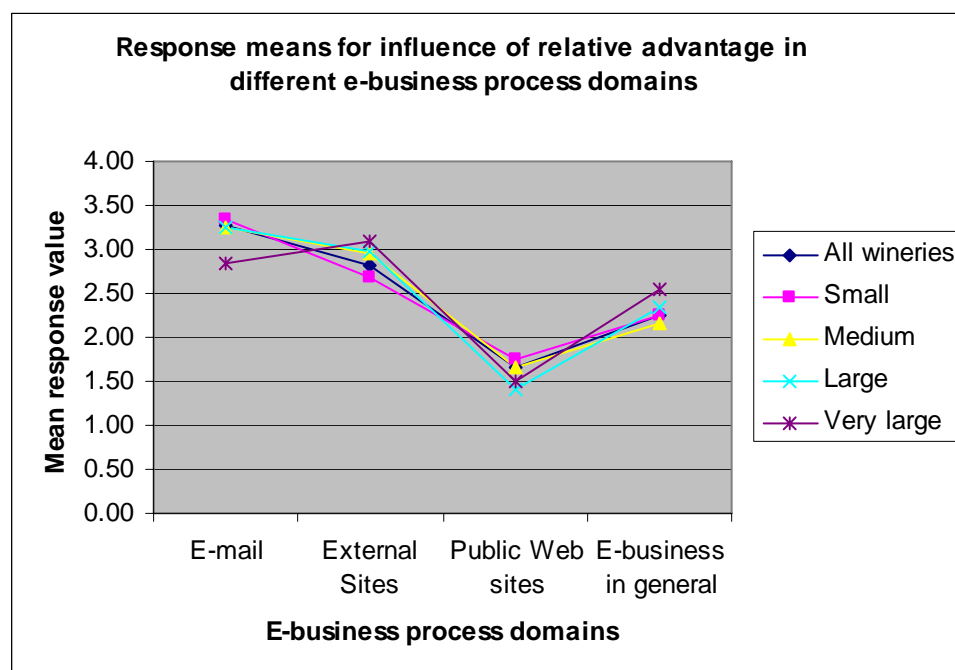


Figure 2: Mean responses for influence of relative advantage in e-business process domains



It is interesting to note that the relative advantage associated with the adoption of winery's own B2C web sites is perceived to be much lower than the relative advantage of using e-mail or use of other organisations' web sites. In the case of the Australian wine industry, this is partially explained by the observation that smaller wineries are generally disappointed by the performance of their web sites as an online sales medium, whereas the larger wineries, while not trying to use the web as an online sales tool, find it difficult to quantify the benefits delivered from their B2C web sites which are mainly used as an additional marketing tool to promote their brands and labels and in some cases to support their existing distribution chain. The associated advantage and benefits from these online marketing activities is difficult to quantify, and as a result the degree of relative advantage for the larger wineries is unclear. So, for Australian wineries at least, B2C web sites have not yet delivered sufficient reward for the factor of relative advantage to be considered a major driver of adoption and diffusion.

## 4.2 Resources factor

Once again, while access to the necessary resources required to adopt, implement and use innovations is reported to be a dominant antecedent factor [24], this research indicates that its level of influence does vary between e-business processes. Table 4 reports the results for the resources factor – once again, all results show significant difference between the mean factor values regardless of winery size. The results indicate that the availability of resources to enable and support adoption and diffusion of e-business processes affects e-mail use more than the use of external web sites, and that a winery's own B2C web site is least affected by the perceptions of available resource capacity – perhaps because the level of daily interaction with the web site is much lower compared with frequency of e-mail use and lower also when compared with the wide range of external web sites wineries now access regularly for compliance and information gathering purposes.

Table 4: Friedman test results for resource statements

Friedman test for resources factor, df = 3	E-mail	External Sites	Public Web sites	E-business in general	N	Chi-Square	Significance
All wineries	3.42	2.53	1.80	2.25	137	133.4	0.000
Small	3.36	2.54	1.83	2.27	78	68.0	0.000
Medium	3.31	2.60	1.72	2.36	29	25.8	0.000
Large	3.57	2.52	1.74	2.17	21	27.4	0.000
Very large	3.89	2.28	1.89	1.94	9	15.8	0.001

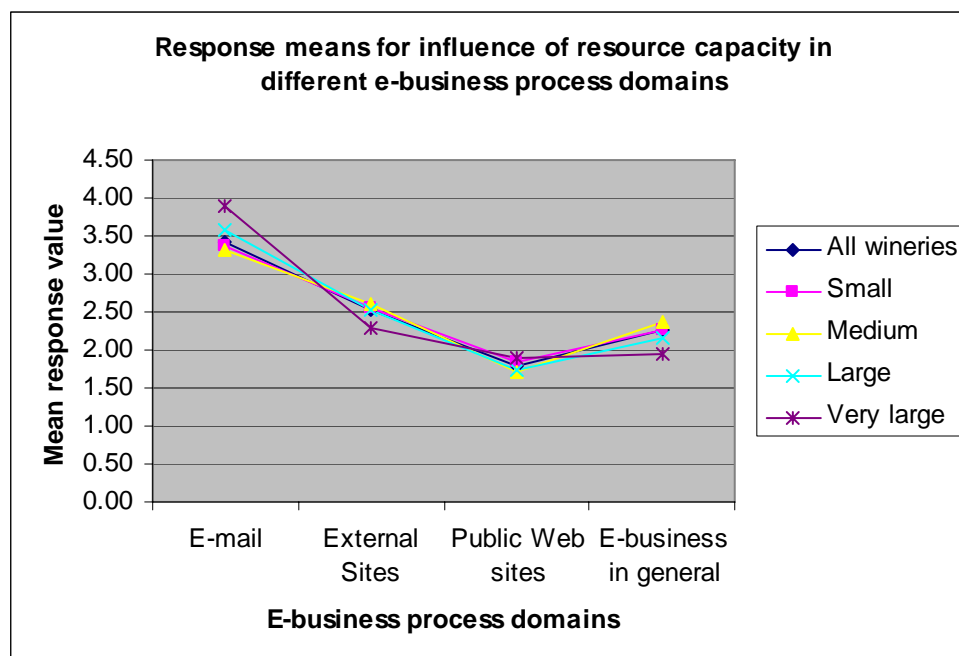


Figure 3: Mean responses for influence of resource capacity in e-business process domains

Figure 3 illustrates that the perception of resource capacity also operates differently in different e-business process domains, and has more influence on e-mail use than the use of web sites. The chart shows the consistency of response across all winery sizes.

### 4.3 Supply chain factor

Table 5 reports the results for the supply chain factor. The very large wineries provide the only exception to the otherwise consistent significant difference between responses to the supply chain statements for the different e-business process domains, but even so the trend here is similar.

Table 5: Friedman test results for supply chain statements

Friedman test for supply chain, df = 3	E-mail	External Sites	Public Web sites	E-business in general	N	Chi-Square	Significance
All wineries	2.76	2.93	2.23	2.08	126	44.5	0.000
Small	2.88	2.81	2.09	2.21	69	23.5	0.000
Medium	2.73	3.17	2.17	1.92	26	18.5	0.000
Large	2.52	3.00	2.52	1.96	23	8.9	0.031
Very large	2.50	2.94	2.69	1.88	8	3.4	0.336

Figure 4 illustrates the greater disparity between the mean responses of the different size wineries with regard to their perception of the supply chain influence compared with the previous factors.

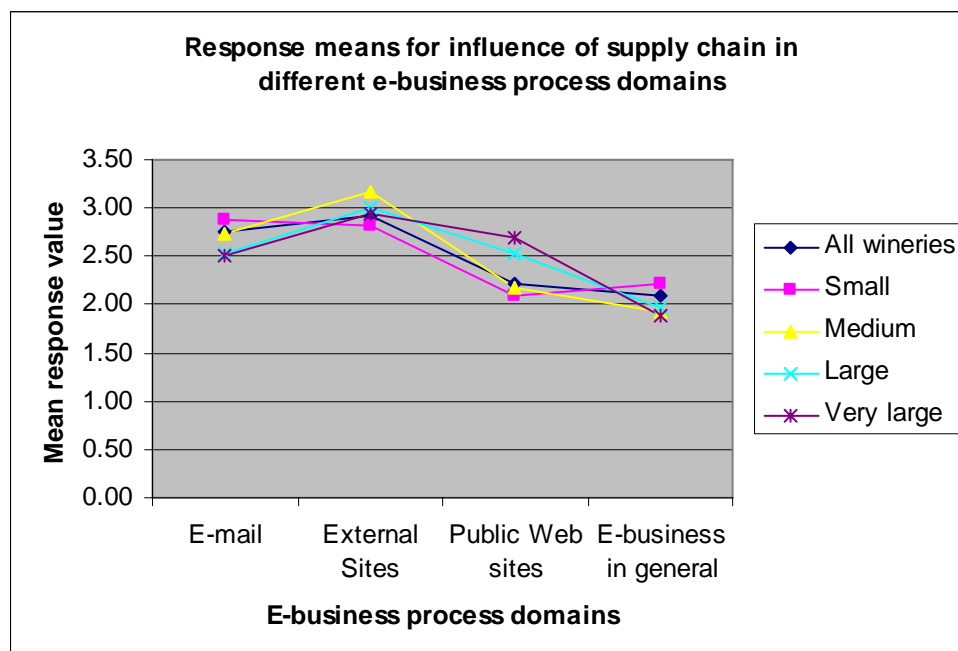


Figure 4: Mean responses for supply chain influence in e-business process domains

While the consistency of the results is lower for the supply chain factor than for the factors of relative advantage and resource capability, the results still indicate strong similarities. The largest variance in response is in relation to the influence of supply chain organisations on winery public web sites. This outcome is explained by the greater customer power that is exerted on the large and very large wineries compared with the level of customer power exerted on small and medium wineries. The very large supermarket customers such as Coles and Woolworths purchase mainly from the large and very large wineries because only these wineries produce the sufficient bulk they require. The large and very large wineries are well aware they need to support rather than compete with their business customer distribution chain and thus design their B2C web site strategy accordingly with the result that they avoid online sales. A quotation from an interview transcript with one of the very large winery representatives illustrates this external customer pressure: "We very specifically shy away from online ordering, we believe that selling online creates dangerous conflicts with our key trading partners, so our position is one of no direct sales other than through the cellar doors." The medium and particularly the small wineries feel this type of business customer pressure less because they do not deal with such powerful business customers, and so have more freedom to select their own B2C web site strategy. Another quotation from an interview transcript with a representative from a smaller winery illustrates the variable influence of supply chain organisations on e-business adoption: "If for instance we were going to have to supply domestically to Coles or Woolies then we wouldn't have a choice of how we use e-business, so maybe the bigger boys in town have to do business with them but we aren't in that situation."



#### 4.4 Government factor

Table 6 reports the results for the government factor. Once again the differences between the response means are significant and occur regardless of winery size.

Table 6: Friedman test results for government statements

Friedman test for Government, df = 3	E-mail	External Sites	Public Web sites	E-business in general	N	Chi-Square	Significance
All wineries	2.65	2.80	1.41	3.14	102	121.9	0.000
Small	2.66	2.68	1.52	3.15	60	60.3	0.000
Medium	2.68	3.03	1.32	3.00	19	26.2	0.000
Large	2.63	2.94	1.19	3.25	16	27.3	0.000
Very large	2.57	3.00	1.21	3.21	7	11.7	0.009

Figure 5 graphically illustrates the high level of agreement between the mean responses for the government statements. The influence of government activity is greatest in the area of external web site use and in e-business use in general: this result is easily explained by the increasing use of e-government sites for dissemination of information and also in the area of online compliance for business processes such as customs clearances, taxation, and wine export approvals. Note that since this research was undertaken the uptake of online compliance of export customs declarations has reached almost 100% for all exporting organisations in Australia due to the mandatory nature of the export component of the online Integrated Cargo System (ICS) introduced by Australian Customs in late 2004.

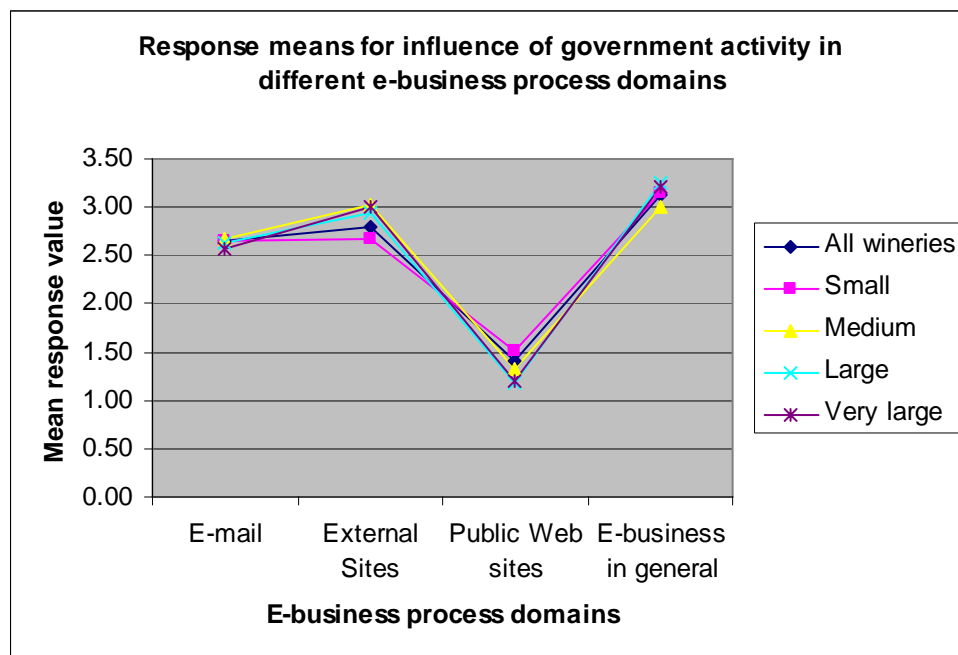


Figure 5: Mean responses for government activity influence in e-business process domains

The results graphically illustrate that e-government influence has little impact for winery B2C web sites as government plays only a very minimal role in the business-customer strategic interface. Overall, online government activity is considered a stronger influence on e-business activity in general than either relative advantage, internal resource capacity or the actions of other organisations in the winery supply chain. This work confirms the important role of government in enabling conditions supportive of e-business uptake and e-government services driving adoption [6-8]. Respondents also anticipated that their e-business activities in the next one to two years will be dominated by increasing use in the areas of B2B and B2G, with this adoption driven by compliance need and staying in line with their supply chain organisations.

## 5 Conclusions

The Friedman test results provide strong evidence that factors influencing e-business adoption behaviour do not exert the same level of influence within the wide range of e-business processes adopted by organisations. Thus the proposition that factors do not impact in the same way in different e-business process domains is supported. However the lack of adequate reliability for the supply chain statements does limit interpretation of this result. So while the research confirmed that the nature and extent of e-business adoption differs significantly between wineries in different size categories due to the different natures of the market operations and supply chain, the research also confirms that factors influencing adoptive behaviour in different e-business domains operate and combine in a very consistent fashion.

Theoretical implications of variable impact levels for factors in different e-business process domains exist in relation to complexity of models and frameworks. The conceptual models covering e-business adoption tend to collect all influential factors that are indicated in any e-business situation [4], [8] pp. 27-30, and the models risk decreasing relevance as a result. One possible solution to this problem is to customise theoretical frameworks for specific e-business process domains, rather than to continue developing ever more complex models which include factors for all possible situations and outcomes. However further research in specific domains is needed before customised frameworks can be developed.

One theoretical implication of this finding is that greater recognition of government influence needs to be made in explanatory models covering e-business adoption, at least for Australian conditions. However given that e-government adoption is an increasingly global trend, it is reasonable to suggest that the influence of government activity on e-business adoption by organisations is similar in many other countries. A suggested modification of the conceptual model of the antecedents and performance outcomes of e-business adoption (original model shown in Figure 1) is given in Figure 6, with changes formatted in bold.

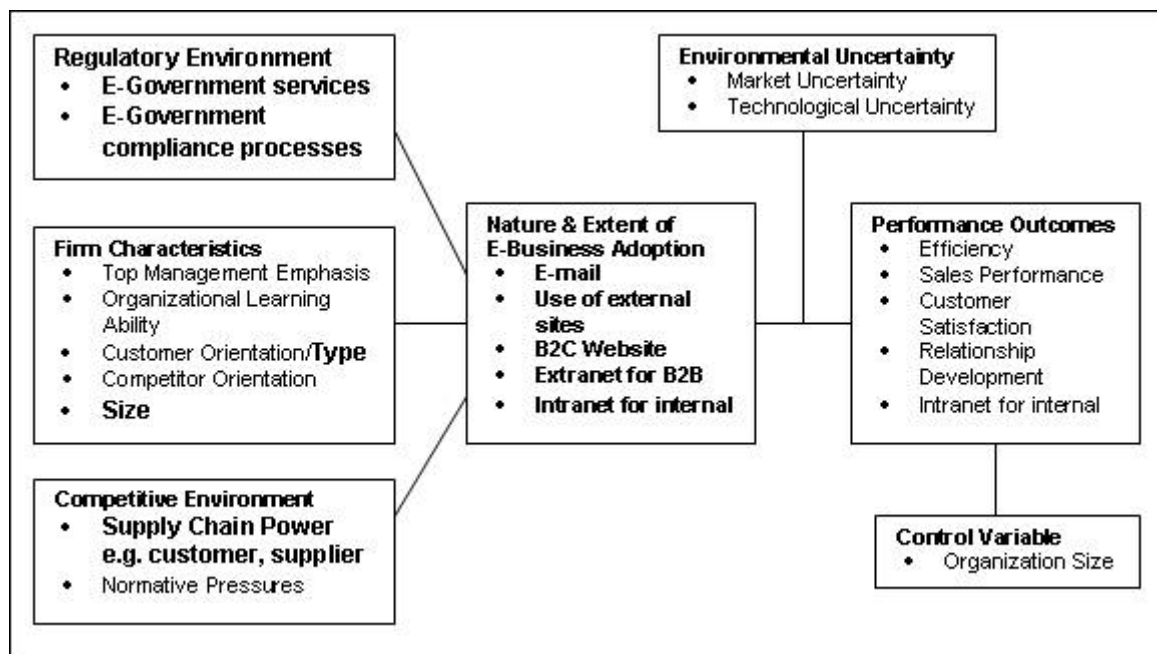


Figure 6: Modified conceptual model of antecedents and performance outcomes of e-business adoption

The modifications include: the addition of regulatory environment factors with the provision of e-government services and compliance processes identified as two key components; changing the competitive environment factor of customer power to supply chain power to acknowledge that the power is not necessarily held by customers in all situations; customer type included along with customer orientation; and recognition that organisation size has additional influence other than as a control variable for scalability effects. Also, the process domains used in this research to investigate the nature and extent of e-business adoption have replaced the domains used to describe the intensity of adoption in the original model, shown in Figure 1.

While this research focussed specifically on just one organisation type (wineries) in one country only (Australia), the characteristics of having a large range of organisation sizes with differing market focuses and differing supply chain customers, including powerful customers, is not unusual and is likely to have parallels in many industry sectors. Also, the growth of e-government activity in Australia is mirrored by similar activity in Europe and most other developed countries. It is likely therefore that the findings in relation to the consistency of factor influence within particular e-business process domains are likely to apply in other industry and country settings. In conclusion, the forces that

drive e-business adoption are complex and variable. Customising theoretical models of antecedent adoption factors for particular e-business process domains is likely to increase their relevance and improve the level of 'fit' between theory and practice, as one model does not fit all types of e-business.

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## Appendix

Survey respondents were asked to show their level of support for the following statements with regard to each of the particular e-business process domains under consideration.

Process Domain	Factor: Relative Advantage
E-mail	<ul style="list-style-type: none"> <li>E-mail improves our level of business communication</li> <li>We prefer to use e-mail because it is now the standard form of communication in business</li> </ul>
External web sites	<ul style="list-style-type: none"> <li>The ability to be able to access industry information online speeds up many aspects of our work</li> <li>Our use of external Web sites is increasing because of the advantages that the Web delivers</li> </ul>
Winery B2C web site	<ul style="list-style-type: none"> <li>Our public Web site is our most effective method we have had of presenting our business face to the world</li> <li>We would not like to be without our public Web site now as it delivers many marketing benefits</li> </ul>
E-business in general	<ul style="list-style-type: none"> <li>Benefits gained from internet/Web use for business are significant</li> <li>Using the internet/Web instead of other forms of communication has not delivered us any real advantages yet</li> </ul>

Process Domain	Factor: Resource Capability
E-mail	<ul style="list-style-type: none"> <li>We have sufficient resources within the company to ensure e-mail is available to all staff who need it</li> <li>A barrier to increased use of e-mail is the lack of computers in the winery</li> </ul>
External web sites	<ul style="list-style-type: none"> <li>We do not have enough time or opportunity to use the internet and other Web sites as much as we would like</li> <li>The degree to which we are able to use other Web sites is not affected by our level of internal resources</li> </ul>
Winery B2C web site	<ul style="list-style-type: none"> <li>We could do more with our public Web site if we had more resources</li> <li>Due to the use of outsourcing options, what we do on our Web site is not restricted by internal expertise and skill levels</li> </ul>
E-business in general	<ul style="list-style-type: none"> <li>Our decisions on how we use e-business are strongly influenced by the available computing resources within the business</li> <li>We do not have sufficient expertise and skills to do more with e-business</li> </ul>

Process Domain	Factor: Supply Chain Influence
E-mail	<ul style="list-style-type: none"> <li>Our level of e-mail use is driven by what others in our supply chain prefer</li> <li>We use e-mail to build closer relationships with others in our supply chain</li> </ul>
External web sites	<ul style="list-style-type: none"> <li>Our use of external Web sites is influenced by what others in our supply chain have placed on their Web sites</li> <li>Trading partners and industry groups now offer so much useful online information and transaction processing capability that we are opting to use their Web sites more and more</li> </ul>
Winery B2C web site	<ul style="list-style-type: none"> <li>The strategic role of our public Web site is restricted by the potential reactions of our existing customers</li> <li>We consider the reactions of our distribution chain when deciding on the functionality of our Web site</li> </ul>
E-business in general	<ul style="list-style-type: none"> <li>We cannot make decisions on how to use e-business in isolation – it depends on what others in the industry do</li> <li>We are not big enough to lead the way with e-business, so we only adopt it when other groups in our supply chain make it worthwhile</li> </ul>

## Appendix (cont.)

Process Domain	Factor: Government Influence
E-mail	<ul style="list-style-type: none"> <li>• The Government encourages us to communicate with them via e-mail</li> <li>• The easiest way to communicate with Government departments and agencies nowadays is by e-mail</li> </ul>
External web sites	<ul style="list-style-type: none"> <li>• The Australian Government is forcing increased use of e-business by mandating use of online options for export declarations by Dec 1st 2003</li> <li>• Compliance with Government regulations is easier now that necessary and relevant information can be located on the various Government Web sites</li> </ul>
Winery B2C web site	<ul style="list-style-type: none"> <li>• Some of the content on the Web site is included to demonstrate compliance with regulations</li> <li>• The Australian Government's push to increase e-business use by Australian companies has no influence on the content of our public Web site</li> </ul>
E-business in general	<ul style="list-style-type: none"> <li>• By providing the option to complete Wine Export Approvals online, the Australian Government is encouraging increased use of e-business by wineries</li> <li>• Soon most wineries will have to use some e-business simply because the Australian Government will force them to do so by its power to mandate how compliance will occur</li> </ul>