Small Business Web Site Implementation Decisions: A Decision Support Tool for Small Businesses

Stephen Burgess
Victoria University, Melbourne, Victoria, Australia, Stephen.Burgess@vu.edu.au

Don Schauder
Monash University, Melbourne, Victoria, Australia, Don.Schauder@sims.monash.edu.au

ABSTRACT

This paper discusses a model that has been set up to assist small businesses in the decision making processes associated with setting up a web site by which they can interact with their customers. Specifically, the paper addresses the use of a spreadsheet to support decision making processes in relation to the level of capital needed to devote to the web site and who should be used to develop it. The paper describes the process followed from the initial SWOT analysis used to collect information about the business through to the decision making process modelled in the spreadsheet.

INTRODUCTION

Spreadsheets have been used as a decision support tool to assist businesses. This paper discusses a model that has been set up to assist small businesses in the decision making processes associated with setting up a web site by which they can interact with their customers. A particular aspect of the model, the decision processes needed to determine the cost of the web site and the skills needed to implement it, are described here.

A Model for Small Businesses to Interact with Customers Using the Internet

Burgess and Schauder [a] (2000) identified a number of steps that are common to models that can be used to assist firms to identify strategic IT ideas (such as Porter and Millar, 1985; Barton and Peters, 1990; Osterle, 1991) and/or electronic commerce opportunities (Marchese, 1998; Al Moumem and Sommerville, 1999). These steps included a need for a thorough business investigation. This is typically the first step in any model and needs to occur to increase the likelihood that decisions to be made later in regards to web design and content are based upon a sound knowledge of the firm. Typical analysis tools used at this stage are Critical Success Factors (CSFs) and SWOT Analysis.

The SWOT analysis has been traditionally used in the marketing or economics areas of the business. The term **SWOT** is an acronym for **Strengths, Weaknesses, Opportunities** and **Threats.** An analysis is performed on the various areas of the organisation to identify current or potential strengths and weaknesses when compared with other competitive forces. From this analysis, the organisation identifies actual or potential opportunities to gain strategic advantage or threats to the organisation's well being. Actions taken by the organisation to take advantage of an opportunity are **proactive.** Actions taken by the organisation to combat a threat are **reactive** (Kotler et al, 1989).

Electronic commerce is seen as a way in which small businesses can compete with large businesses (DIST, 1998; Penhune, 1998), but small businesses have little time or resources to address potential changes to their current activities. Many lack the availability of technical expertise and avoid proper planning techniques to help them to take advantage of opportunities that may present themselves (DIST, 1998; Engler, 1999; Conhaim, 1999; Conroy, 1999). In order to address some of these problems facing small businesses that wish to use the internet to interact with customers, particularly those relating to a lack of proper planning techniques, a conceptual version of a model to guide small businesses was proposed by Burgess and Schauder [b] (2000). Figure One shows the model that was developed.

The model is based upon the major steps in other IT and e-commerce models. It represents an attempt to address the specific needs of small businesses (refer Burgess and Schauder [a], 2000) by guiding them through a proper planning process that is relatively easy to comprehend.

Figure 1: A summary model to assist small businesses to interact with customers on the Internet
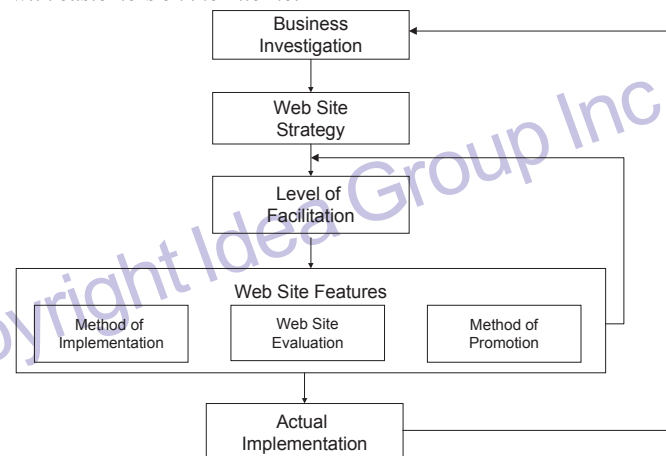
The initial stage of the model, the business investigation, involves a modified SWOT analysis. The firm's internal and (some) external forces are examined. Internally, the firm's resources in relation to time, money and expertise are examined, as well as the characteristics of the firm's goods and services. The firm's overall strategy is also examined, as a firm wishing to grow in size may require a more 'aggressive' web strategy than a firm that is satisfied with its existing customer base.

Externally, the web sites of competitors are examined, as well as the ability of customers to access the firm's web site.

Other steps of the model after the business investigation refer to identification of the firm's overall web site strategy, what web site features they are going to implement, what method they use to implement these features, how they promote the web site and how they evaluate its success.

The next stage was to develop it into a more detailed, 'usable' model. This applied version of the model consisted of two major components: a procedures manual (showing the various steps of Business Investigation, Strategy, and so forth) and a spreadsheet program, for recording the results of the analysis provision of recommendations. It is this model which is being tested in this study.

THE USE OF SPREADSHEETS FOR DECISION SUPPORT

Spreadsheets have been used as decision support tools in many different ways. For instance, one recent example describes the use of spreadsheets to allocate production resources and combine raw materials in an optimal mix in wood panel manufacturing (Buehlmann, Ragsdale and Gfeller, 2000).

Spreadsheets, Decision Support and Small Business

Spreadsheets provide users with the capability to alter figures and to see the effects the alterations have on recommendations. Although spreadsheets have been associated with the concept of decision support for a number of decades (Stair and Reynolds, 1999), there are few documented examples of their successful use in small businesses. Much of the limited research into small businesses has investigated the success factors for information technology, based upon the current use of IT/DSS, or the design and development of specific DSSs for SMEs. Little work has been done specifically to identify those areas that have not been adapted to DSS, but show potential for its introduction for the small business (Duan, Kinman and Xu, 2002). In relation to their use of IT, small businesses are often resource-poor – suffering from a lack of appropriate 'know how' in relation to using IT effectively, and lacking the time, financial resources and planning ability to improve their situation (Burgess, 2002).

A 2001 study of 133 manufacturing small businesses in the UK (Duan, Kinman and Xu, 2002) revealed limited use of decision support systems. A lack of staff time to analyse needs and identify solutions was the primary reason given for the lack of use. Where used effectively firms with a more 'strategic' outlook implement them. They mainly take the form of previously developed packages and most of them are targetted towards support routine decisions.

Because of these factors, there is an opportunity for effective decision support tools to make a real impact on small businesses (Duan, Kinman and Xu, 2002).

THE CHOICE OF A SPREADSHEET

The major problem faced in this project was how to take the conceptual model and turn it into the applied model. The initial idea was to develop a manual or book that small businesses could work through and use to 'record' the results of the analyses that they carried out along the way. This would then lead to recommendations as to what web site features they should implement. There were two major concerns with this approach. The first was that if the small business person wished to go back and alter any of the data entered, he or she would have to use an eraser or liquid paper. The second concern was how to lead the person to the eventual recommendation once the analysis was completed. The need to follow the somewhat complex paths that were designed through to the various recommendations might have been enough drive the small business person to distraction and a subsequent decision to abandon the process.

It was finally decided that the spreadsheet package, Microsoft Excel, would provide the solution. Most small businesses that have computers use a spreadsheet package, and the majority of spreadsheet packages in use are Microsoft Excel. The spreadsheet has long been recognised as a tool that can be used to support basic decision-making. It provides users with the capability to alter figures and to see the effects the alterations have on recommendations (Stair and Reynolds, 1999). In this case, it provided a means by which the complex path from analysis to recommendation could be handled automatically by the software.

The programming language that is part of Microsoft Excel, Visual Basic for Applications, provided the flexibility to alter the software and the interface easily, based upon the suggestions of the micro focus group participants.

THE DECISION MAKING PROCESS

As was mentioned earlier, small business counsellors were asked to identify and measure a number of elements within the business and external to the business. Two of the elements that affected the decisions made by the model in relation to the cost of implementation of the web site and the skills needed to implement it were the financial outlay that the business was prepared to make and the skill level of employees.

Financial Outlay

In determining the mechanisms for asking small businesses to estimate the capital that they were prepared to commit to the web site, users were provided with a range of four 'typical' options as the estimated financial outlay for the project, ranging from the inexpensive (a small web site) to the most expensive (a larger web site with interactive features). A range of setup and maintenance costs was provided for each option in the accompanying manual. In this way some guidelines were provided for the small businesses as to what they would get for their money.

Employee Expertise

This section allowed the expertise level of employees who would be associated with the website to be entered. Again, a range of choices were provided and explained in the manual. Users of the model would then select the option related to the 'most skilled' employee that would be working on the web site.

COST OF IMPLEMENTATION AND SKILLS NEEDED TO IMPLEMENT THE WEB SITE
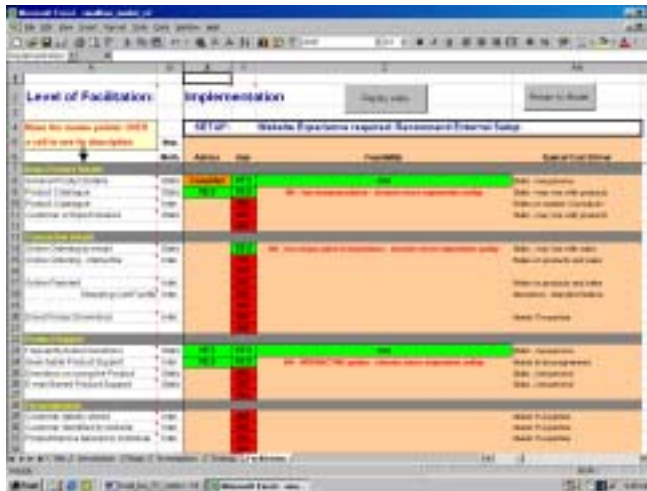
The Cost of the Web Site

This section allowed the user to accept or reject the recommendations of the previous section for each website feature. Upon choosing to implement a feature, a judgement was made by the system as to whether or not it could be implemented within budget. This is based upon the costs of the website being affected by the following (Burgess and Schauder, 2001):

- The cost of hosting basic information provision features is relatively small. This statement does not take into account the time taken to transfer the information to the web site initially and the time needed to update it.
- The ongoing cost of providing product catalogues does tend to rise as the firm increases the number of products listed on the website.
- The ongoing and transaction-based costs increase when online payment features are introduced.
- Options that allow some interaction with the website (more than just viewing information) require a greater outlay.

The various website features were divided into the following categories (these can be viewed as 'Cost Drivers' in the Implementation screen of the software). Each website feature was assigned a value from '1' to '7'. The ability to implement the feature was based upon the outlay selected in the Financial Outlay section of the Business Investigation. These outlays were given a rating ranging from '1' for the most inexpensive (a small web site developed with a package or wizard) to '4' for the most expensive (a larger web site containing a number of interactive features).

The screen (refer Figure Two) allowed users to select particular website features for implementation, based upon the recommendation made in the previous section. It then made a judgement as to the ability of the firm to develop the site internally, based upon entries that had been made in the Financial Outlay and Employee Expertise sections of the Business Investigation stage.

Figure 2: The implementation screen

The model provided a message to the user, based upon whether or not it was considered possible to implement the web site. Table 1 shows the logic behind the message provided to the user, based upon the cost driver rating, the number of products on the website, the number of online transactions per month and the level of outlay selected in Business Investigation.

Skills Needed to Implement the Web Site

This section also provided a recommendation as to how the website could be developed, internally or externally. The recommendation was based upon the employee expertise identified in the Business Investigation stage and the **highest rating cost driver** (as per Table One) for the website features that were selected by the user.

Table 2 represents the logic used. If there was no internal experience at developing web sites, the recommendation was that the website

Table 1: Website feature cost driver classifications and implementation message provided, based upon outlay choice

Cost Driver	Rating	Implementation Message Provided
Static – inexpensive	1	**YES**
Static - may rise with products	2	If < 15 products or Outlay Rating > 1 then **YES,** else show **NO - too many products - choose more expensive outlay**
Static - may rise with sales	3	If < 100 online transactions/month or Outlay Rating > 1 then **YES** else show **NO - too many sales transactions – choose more expensive outlay**
Interactive - standard feature	4	If Outlay Rating > 2 then **YES,** else show **NO - INTERACTIVE option - choose more expensive outlay**
Interactive – Relies on number of products	5	If < 15 products and Outlay Rating > 2 then **YES** If < 15 products and Outlay Rating = (1 or 2) then show **NO - INTERACTIVE option - choose more expensive outlay,** else If Outlay Rating >3 then **YES,** else show **NO – too many products - choose more expensive outlay**
Interactive - Relies on products and sales	6	If < 100 online transactions/month and Outlay Rating > 2 then **YES** If < 100 online transactions/month and Outlay Rating = (1 or 2) then show **NO - INTERACTIVE option - choose more expensive outlay,** else If Outlay Rating >3 then **YES,** else show **NO – too many online transactions - choose more expensive outlay**
Needs IT expertise	7	If Outlay Rating = 4 then **YES,** else show **NO - INTERACTIVE option - choose more expensive outlay**

be developed externally. If there was some internal experience (either by the development of simple HTML pages or the use of a package or wizard), the option was provided to develop the website internally, provided that it does not contain any features that require IT expertise. If there was internal IT expertise, the option was provided to develop the website internally irrespective of the level of difficulty.

Table 2: Website feature cost driver classifications and Website development options, based upon level of employee expertise

Level of Employee Website Expertise	Website Development Message Provided
None	**No Website experience: Recommend External Setup**
Created Simple HTML Pages	If Static website (High rating <=3) then show **Static Web Site: Internal Setup Possible,** else If Interactive website (Highest rating >3 and <=6) then show **Interactive Web Site: Possible internal setup: Template/Package,** else show **Website Experience required: Recommend External Setup**
Used Template or Wizard	If Static website (High rating <=3) then show **Static Web Site: Internal Setup Possible,** else If Interactive website (Highest rating >3 and <=6) then show **Interactive Web Site: Possible internal setup: Template/Package,** else show **Website Experience required: Recommend External Setup**
Experienced	If Static website (High rating <=3) then show **Static Web Site: Internal Setup Possible,** else If Interactive website (Highest rating >3 and <=6) then show **Interactive Web Site: Possible internal setup: Template/Package,** else show **Website Experience required: May be available internally**

CONCLUSION

There are a number of examples of spreadsheets being used to support business decision making. This paper has shown how a spreadsheet can be used to support small business making in relation to how much they should outlay on a web site and where they can access the skills to implement the web site.

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