e-Commerce Competitor Analysis

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Summary

The ultimate aim of the MSc project is to design a classification framework for e-commerce competitor analysis in any market sector. This is available for download at www.cheunglee.co.uk. The idea of the framework is to allow one e-business to look over the shoulder of their competitors or alternatively, it would allow any business without an online presence to look at how their competitors are adding value to their business. By following through a series of pre-defined statements for each e-commerce web site, the framework would automatically produce a set of analytical results both numerically and graphically.

The project is approached by a number of phases and milestones. The first phase involved gathering information from both the author and literature research on the criteria that would measure competitive advantage. The second phase is about design which involved how best to categorise and layout the classification framework that would be useful, easy to use, and provide results that are as objective as possible. The third phase is to test the framework in order to ensure the results are consistent.

The outcome of the project is a classification framework with a number of layers. The top layer consists of dimensions: level of transaction support; customer / company relationship; and web site design. Under each dimension is the middle layer known as critical success factors, which are further categorised into a number of statements and these statements form the measurement criteria, and hence the bottom layer.

Acknowledgements

Contents

1. Introduction

1.1 Project objectives

The objective of the project is to develop a scientific classification framework that allows the comparison of e-commerce web sites in terms of 'competitive advantage'. The comparative classification framework would enable users, in particular the computing audience, to evaluate the competitive edge of one e-business over their direct competitors. The capability of the framework is not in any way limited to any particular market sector, nor is it limited to any particular industry. Instead, the framework has the capability to be used and applied in a comparative manner for all markets / industries.

Furthermore, the focus of the framework is purely based on the measures that have a significant contribution / value add towards the e-commerce competitive position of the e-business under assessment. In addition, the results provided by the framework must be useful in the sense that the information would be highly objective and unbiased. This implies that the variance in the information provided by the framework shall be very small when different assessors use it.

In order to achieve the main objective as discussed above, there are sub objectives that collectively form the main objective. These include: conducting literature research; designing and refining the framework so that it is useful through the process of iterations; and testing the framework so that it can be used with confidence.

1.2 Structure of report

The report is structured in a logical and constructive sequence that flows in a systematic way in which the project is approached. The report begins with a summary that sums up the report and the project in a short form. Then the introduction provides the project objectives. The project domain sets the scene for the project including the approach and other issues that are identified. A discussion on the design issues follows, which shows the full justification on the building blocks of the scientific classification framework. The next section is about testing the framework. The report closes with a conclusion and information for further research.

2. Project domain

2.1 The need for the classification framework

A classification framework may be defined as a tool that allows the categorisation of data into a sorted or filtered form. The purpose of a classification framework is to enable individuals to assess and evaluate some data that provides useful and meaningful information.

As far as the author is aware and through thorough literature research and information finding, there exist no classification framework that measures competitive advantage between e-commerce web sites. Schubert and Selz (2001) have further accepted this and found that, "to date, we know of no comprehensive study assessing [competitive advantage]." In particular, there are no frameworks that allow one to compare e-businesses, whether for a particular market sector / industry or for the masses. In addition, there are no quick and simple methods for evaluating the competitive advantage of e-commerce web sites (see Appendix K).

Today's e-commerce environment can be characterised as being turbulent and highly competitive. According to Schubert and Selz (2001), perfect competition played a major role in this, which has triggered increasingly fierce marketplaces. This is the result of the elimination of physical distances between businesses in which the Internet, World-Wide-Web and virtual communities have made possible. This point is further accepted by Travis (2001) who claimed that consumers are just 'one click away' to find whatever they want. Buyers can now compare both price and quality at the click of a mouse button, saving both time and money. This is even truer when the cost of permanent Internet connection comes down, such as ADSL (Asymmetric Digital Subscriber Line). In such an environment, many firms are anxious to look over the shoulders of their competitors, i.e. to find out the competitive advantage of their e-commerce web site in comparison to their competitors.

It is therefore apparent that there is a definite need for a comparative classification framework for measuring competitive advantage in e-commerce.

2.2 The approach

The project is approached by a series of phases and milestones (see Figure 2.1). Each phase consists of activities that are required for each milestone. The approach is highly organised and structured in a systematic way. This enabled one to track down the status of the project at any time in order to re-schedule activities where and when necessary. A detail discussion can be found in Appendix L.
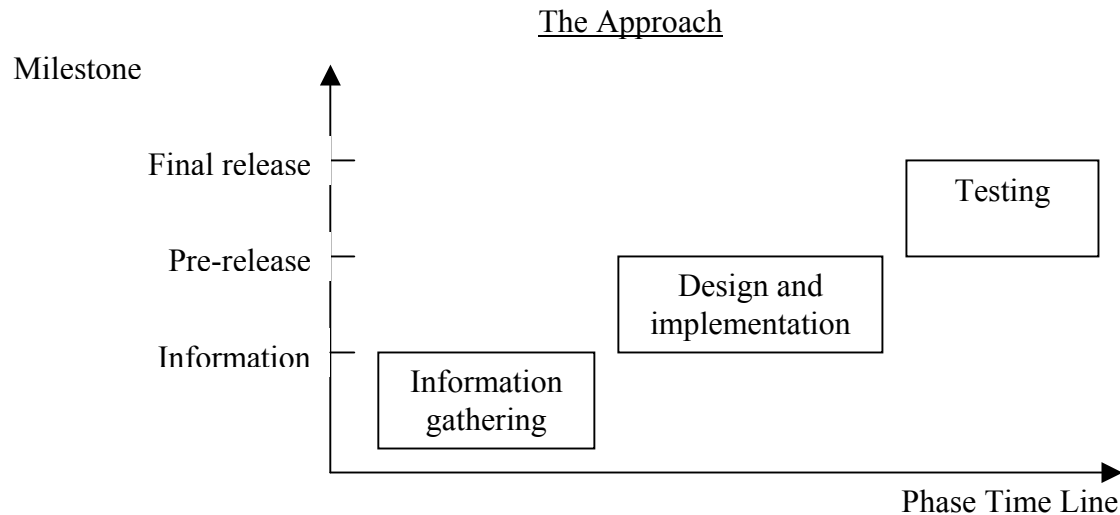
The Approach

(Figure 2.1: The Approach)

2.3 Alternative approach

The alternative approach in which the project could have been carried out is the use of questionnaires or interviews. These could be used to determine the criteria for the framework, but they are not ideal because the author's knowledge in literature research would provide much better criteria than MSc students or companies for example. MSc students might have no clue or little idea based on their own knowledge. Companies might not be willing to provide such information and the time it takes to receive the completed questionnaires might be too long given that it is a 3 months project. As a result, it is apparent that the chosen approach is the most appropriate. (See section 2.8 for the alternative approach in benchmarking).

2.4 Traditional management theories on competitive advantage

Traditional management theories measure the strategic values that are internal to the business (see Appendix F). Therefore, the application of such theories as the value chain model would require privately available information that can only be ascertained internally. Even if publicly available information can be used, great effort is required into finding such information. In addition, these theories have no focus on e-commerce and purely concentrate on the bricks and mortar side of businesses. As a result, it is obvious that they would not provide any ideas for the framework.

2.5 Objective analysis v. subjective analysis

First of all, let's define objective analysis and subjective analysis. Objective analysis is defined as "… existing in the real world outside the human mind [and] not biased" (Collins New Pocket English Dictionary 1992). Subjective analysis is one that is "… based on personal feelings or prejudices" (Collins New Pocket English Dictionary 1992).

The author's definition of an objective analysis is one that provides unambiguous and reliable information, which is not influenced by any individual's personal perspective and believe. On the other hand, the author's definition of a subjective analysis is one that provides highly varying results according to an individual's personal perspective and believes.

In view of the above definitions, developing an analytical framework that is objective rather than subjective is much more useful and more widely accepted. This is due to the fact that having an objective framework would lead to more accurate results because personal perspectives and feelings would have no influence over the framework. In addition, because the project domain includes

developing a framework that can be used by the wider computing audience, then this necessitate the need for a more objective framework.

There are two issues with an objective framework: weights (see section 2.6) and limitation. The scope of the framework is limited to a certain extent, because the criteria that are good measures of competitive advantage but can only be measured subjectively would not be included in the framework at all. Examples include the measure of good user interface and aesthetically pleasing.

2.6   Weighted analysis

Weights used in the framework are pre-defined with different weights assigned to the criteria. The purpose of this is to balance the results among the layers (dimensions and success factors) in the framework. For example, there are nine pre-sale success factors and five performance success factors. If a company meets all these success factors, then the results would show pre-sale almost twice as important as performance, which is not a good overall indicator of competitive advantage because some layers have more criteria than others.

Therefore, the purpose of weights is to ensure the layers are more balanced, which eases distortion in the results. Section 4 shows how the weights are determined. Despite the fact that there are no literature on weights in measuring e-commerce web sites, but the use of weights still yields interesting and accurate results. This is particularly true when the framework is applied to the books market which shows that Amazon is the most competitive. A review of the books market conducted by Vellotti and Metz (2001) has showed the same results.

In addition, the weights are converted into percentages to further balance the inequality between dimensions. The application of these methods is accepted by Mendenhall and Sinich (1995), who found that it makes data more comprehensible and meaningful.

2.7   Information reach

The framework's design aim of enabling the wider computing audience to be able to use it without being committed to any obligations in the e-commerce web sites have restricted the framework's capacity to further analyse other criteria. This requires other forms of information that is not publicly available to the general public and might require the co-operation of the firm to ascertain it. Figure 2.2 illustrates the extremes of information that is available publicly and those that is only available privately, and hence internal information.
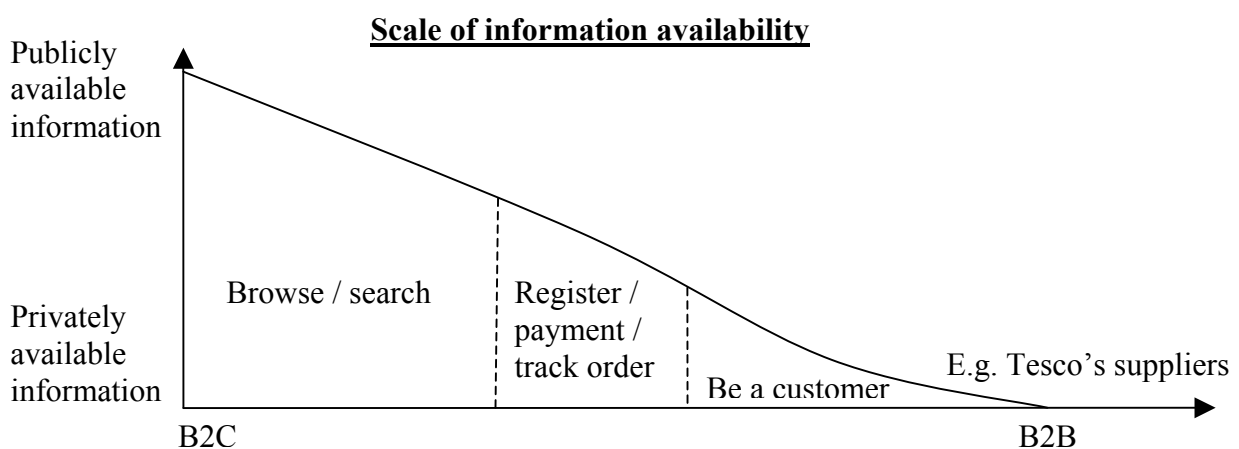
(Figure 2.2: Scale of information availability)

With reference to Figure 2.2, there are some criteria that are good measures of competitive advantage but only able to assess providing if the assessor engage in some form of commitment, such as to become a customer and purchase a product, for example. As a result, some useful criteria are discarded including order tracking, on time delivery and the ease of returning products.

2.8 Benchmarking

Benchmarking may be defined as "… criteria by which to measure something." (Collins New Pocket English Dictionary 1992). In order to have benchmarking, it is important to base the analysis on a set of objective criteria as a requisite. Then benchmarking may be used to measure an e-commerce web site against a scale. Given the time scale of the project, it would be a highly challenging and may be over optimistic to include good benchmarking. Even if benchmarking is used, it probably would have little substance and therefore unreliable results that cannot be used with confidence. This is because this area of research is still in its very embryonic stage in e-commerce. In terms of hard issues, there are virtually no existing frameworks that measure what the project's objective intends to measure. However, in terms of soft issues, there is more research information but still limited and too fragmented. The result of all this suggests that there are currently insufficient quality information to develop a useful benchmark. However, an approach similar to the one used by Skok et al (2000) could be used. Their method is to develop a benchmark by using importance-performance maps.

Furthermore, since the project domain is to develop a framework that can be used for all general e-commerce web sites, then having a benchmark would imply having an inclusive set of benchmarks for each and every market sector / industry. Otherwise, having only a limited number of benchmarks for a few market sectors would constrain the usefulness of the framework.

Moreover, the project domain is to develop a comparative e-commerce classification framework for measuring competitive advantage. The idea is for an e-business to see what and how they are adding value to their business over and may be under their competitors. This implies that providing comparative analytical information between e-commerce web sites would be much more useful and effective than measuring them against a benchmark. This point is particularly important in e-commerce over traditional bricks and mortar commerce, because the competitive gap between the smaller rivals and the big players in e-commerce is becoming narrower.

2.9 Assessment of readily available tools

There are many readily available tools on the Internet that measure web sites in a number of different criteria. Web Site Garage is determined to be one of the most appropriate tools to be used in conjunction with the framework because it provides accurate results. Measurement of 'load time' is the only aspect of the tool that is used because it provides results that are accurate, reliable and meet the objective of the project. It measures the download time for any web page and provides a break down into different Internet connection speeds. The results of manually testing the download times of various homepages by using a stop watch are compared with those provided by Web Site Garage. Results from both sources are the same for each homepage and are consistent throughout.

In addition, other factors that have determined the use of Web Site Garage include easy to use, no need to register or subscribe, it is free, and it provides results instantly.

Moreover, although there are numerous tools that are readily available on the world-wide-web for measuring broken links, scripting errors, web site integrity check and so on. But the usefulness of these tools is very limited. The limitation may be discussed in two ways. The first is that many tools only diagnose the first page of the e-commerce web site and does not look into other linked

pages. An example of this is Website Garage. The second limitation with tools is that good web servers would reject any attempts to check the integrity of their web sites. A good example of this is Amazon, which rejected the HTML Validation tool (World Wide Web Consortium, 2001) straight away.

3.   The design

The framework is limited to 30 web sites, but it is capable and easy to increase the numbers in the future. 30 is the number determined to be appropriate because on average, it takes 20 minutes to apply one web site, which works out about 2 days work if 5 hours is considered to be one day's work of applying the framework. Appendix J shows the activity diagram of the framework.

The results are displayed in numerical and graphical forms. The numerical forms consist of a summary of all sites and the top 10 sites. The author has determined the need to have the top 10 sites displayed because firstly, the assessors can concentrate their study on the top 10 whilst ignoring the rest and secondly, it is displayed in a more spacious and more presentable format which helps to provide a better analysis. The top 10 sites are also displayed in graphical form, because graphs are a much better way of presenting information as any trends can be spotted easily.

3.1   Understanding e-commerce competitor analysis

In order to determine the evaluation criteria, it is necessary to gain an understanding of the term 'e-commerce (or electronic commerce) competitor analysis'. Till (1998) defined e-commerce as "the ability to conduct business electronically." This is a narrow definition of e-commerce. Instead, e-commerce covers the extremes of simply having an online presence to having a fully automated process that handles all activities within the buying process.

With reference to the Collins New Pocket English Dictionary (1992), analysis is the "separation of a whole into its components for study and interpretation." This implies that competitor analysis involves the analysis of a firm's competitors, i.e. other firms in the same line of business.

The framework is focused on the analysis of 'competitive advantage'. According to Porter (1990), competitive advantage "…. translates into higher productivity than that of competitors." Porter (1990) has further identified two types of competitive advantage: lower cost and differentiation. Lower cost is when a firm produces the same amount of products with relatively fewer inputs than their competitors. Differentiation is when a firm is able to gain higher revenue relative to their competitors by offering uniqueness in terms of the products, quality and service.

A further definition of competitive advantage is when a firm "…. matches target market needs and expectations, and is superior to those offered by competitors." (Dibb et al, 1994). This definition is similar to that by Schubert and Selz (2001). The definitions on competitive advantage are based around a central theme, and that is the ability of a firm to offer more than their competitors. Competitive advantage is sometimes referred to 'competitive edge' and 'value add'.

It is apparent that 'e-commerce competitor analysis' may be defined as the analysis of competitive advantage between firms operating in the same line of business in e-commerce.

3.2   The determination of evaluation dimensions

The criteria are categorised into different 'dimensions' that are appropriate for measuring competitive advantage. Dimensions include: level of transaction support; customer / company relationship; and web site design. The dimensions are further categorised into a number of critical success factors, and these categories form the breakdown of the criteria. Both the dimensions and critical success factors are discussed in section 3.2.1 to 3.2.3

3.2.1   Level of transaction support

The idea of this dimension is derived from the work of Schmid's (1993) and Zbornik's (1996) (in Schubert and Selz 2001). They have identified that a market transaction may be categorised into three
consecutive phases: information; agreement; and settlement. Likewise, the framework has used pre-sale, sale and post-sale which are along the same principles as the market transaction phases. In

addition, they also provide more meaningful boundaries between the phases in a typical market transaction. This is illustrated in Figure 3.1.

| Pre-sale | → | Sale | → | Post-sale |

(Figure 3.1: Market transaction phases)

3.2.2 Customer / company relationship

In e-commerce, gaining the trust of customers is critically important because firstly, both transacting parties are separated by physical boundaries. Secondly, it is a sensitive issue that derives from concerns in security, support and company awareness. Korper and Ellis (2000) have further found that the attainment of trust leads to loyalty and confidence which ultimately provides a more desirable buying experience. As a result, the critical success factors identified here include: language support, corporate information, registration, privacy and feedback.

3.2.3 Web site design

It is common to classify web site design into three areas: usability, performance and security. Here, the first two are included in this dimension as the critical success factors, but except for security which is included in the customer / company relationship dimension. This has been thoughtfully considered because concern for security is the main driving force behind building a trusted relationship between the customers and the company. A study by Lam (2001) has found a high co-efficient in this relationship. In addition, listing in the major search engines is also a critical success factor in web site design because the design of a web site is as good as it can be found.

Usability may be defined as the ease with which customers can complete a task within a reasonable length of time. "Good site usability is crucial for attracting and retaining customers; indeed, one study indicated that 67 percent of customers did not complete online purchases because of poor usability." (Lam 2001). Furthermore, Spool et al (1999) have also accepted this point and it is apparent that this critical success factor is a 'must have' measure for competitive advantage.

4. The framework in detail

This section is about the determination of the evaluation criteria. The justifications are made in respect of empirical studies, experts' views and whether the criteria provide an objective and effective measure for competitive advantage. The author has found that the perspective and argument of the majority literature research are more or less along the same line. Therefore, the justification is based on the literature research that provides the most inclusive set of information (see Appendix K for a discussion of other literature research).

The weights for all criteria are determined from one to three (see Figure 4.1). The higher the weight, the more important or value add it is to the business. A weight of one represents a low strength of competitive advantage which means that the criterion adds little value to the business. A weight of two means that the criterion adds medium value to the business which is relatively more than a weight of one but the value add is insufficient to bear a weight of three. A weight of three represents a high value add to the business, which provides the greatest and may be unique characteristics of the business.

Weight	Strength of competitive advantage
1	Low
2	Medium
3	High

(Figure 4.1: Table of Weights)

4.1 Level of transaction support dimension

4.1.1 Pre-sale success factors

4.1.1.1 Advertising and promotions

The term competitive advantage is commonly used in marketing, which involves the 5 Ps: Price, Place, Product, Promotion and People. Therefore, businesses that promote their products or services must be adding more value than their counterparts not doing the same. Similarly, according to Korper and Ellis (2000), offering promotions would generate goodwill. This can be accepted because having promotional offers on own site does attract the attention of users. This is because the promotions are from the site that the users are browsing and therefore, a weight of two is ideal for this criterion.

In contrast, Spool et al (1999) found that adverts in general distract users when they are retrieving information from the site. Although this is the case, but it does not really matter if users are distracted from the company's own ads, and hence the purpose of ads is to seek the attention of users.

Statement generated: The site promote its products or services by advertising or promotional offers (assigned weight: 2)

4.1.1.2 Search facilities

Having a search facility does not only add value to the business, it is now becoming a necessity in e-commerce. As Spool et al (1999) have found in their study that one third of users used the search facility of the e-commerce web site as their first approach to find information. Although the remaining users used it as their last resort, but at least they eventually found what they want by using it. This study has demonstrated that a search facility adds value to the business because its absence could make a company's prospective customer to be their competitors' customer. This view is further shared by Vellotti (2001) who found that in order to cater for a wide audience, there

needs to be a simple search and preferably, advanced search too. Similarly, Korper and Ellis (2000) talked about the importance of being customer oriented, which means that the business' aims and strategies need to be customer focused. One of the components in customer orientation is by having search tools.

In the framework, simple search and advanced search carried different weights with the latter being one weight heavier in adding value than the former. This is because an advanced search gives the user more flexibility by allowing search customisation. Being more customised implies that customers are able to find precisely what they want efficiently.

Statements generated: Simple search is available (assigned weight: 2)
                    Advanced or customised search is available (assigned weight: 3)

4.1.1.3   Shared interests
If an e-commerce web site allows users to speak out and share their views on products, whether they are positive or negative views, then that would definitely enhance the trustworthiness of the business and hence, gaining a competitive edge. Since this criterion adds high value and it is not commonly available in the majority of e-commerce web sites, then it deserves a weight of three. According to a number of theorists in Schubert and Selz (2001) including: Armstrong et al (1996), Erickson (1997), Iacono et al (1997), Weisband (1997), and Figallo (1998), this criterion is the way forward in building communities of trust among users. Further, they claimed that this facilitates the personalisation of the e-commerce web site. The idea of trust is further expanded by Schubert and Selz (2001) who claimed that "a commercial web site should help to establish a relationship [and hence trust] among customers on the one hand and between customers and the company on the other hand." This relationship provides an additional level of confidence for customers when doing business with the company. An excellent example is Amazon.

Statement generated: Users are allowed to read product reviews submitted by other users (assigned weight: 3)

4.1.1.4   Product comparisons
Having product comparisons is a sign of helping customers to choose between a selection of products or services. Although this criterion has already been identified by Stobie et al (1997) as their level 2 category, but competitive advantage has not been mentioned. It is mentioned here because it does add value and certainly deserve the same weight as 'allowing shared views', which is a weight of 3. This is because they both add as much value as each other. Furthermore, Korper and Ellis (2000) have found that this criterion is the "… driving force in the sales process."

Statement generated: Multiple products may be selected for comparison (assigned weight: 3)

4.1.1.5   Product categorisation
A site with an organised content in the form of categorised products or services would ease the browsing experience of users. In the absence of this, customers who are unable to find what they want will become frustrated and therefore go elsewhere. As a result, this is a clear measure of competitive advantage, which scored a weight of 2 because it is important but adds less value than 'product comparisons', for example. This is also accepted by Vellotti (2001) and Korper and Ellis (2000), who raised two more reasons for adopting this criterion. The first is that products will get more exposure and the second is that, products will become easier to find.

Statement generated: Products are categorised under appropriate sections (assigned weight: 2)

4.1.1.6 Product range

Unlike traditional bricks-and-mortar commerce, shelf space is unlimited in e-commerce and for those companies not taking advantage of this criterion by offering a large product range, then they will certainly be operating at a competitive disadvantage. In today's competitive e-market environment, customers expect choice and if a company does not keep a product in store, then it is very easy for customers to locate it elsewhere. This criterion adds as much value as having 'product comparisons' because they are both equally important. Similarly, Korper and Ellis (2000) found that "… a site's breadth of product offerings is a branding attribute of a company's implicit promise." This implicit promise is critical in adding value to the business. This is further accepted by Lam (2001), who claimed that this criterion is now central to many e-commerce systems.

Statement generated: Large product range (assigned weight: 3)

4.1.1.7 Cross sales

With reference to Davenport (2001), cross selling is a sign of understanding the customer and being customer oriented. A company that is able to cross sell products or services not only generate more revenue, they also make the purchasing experience more complete and gives the experience that the company have taken an interest in selecting other products or services that the customer might have forgotten. In reality, cross selling provides a competitive edge that is unique but also rare, particularly in e-commerce. As a result, a weight of two is determined.

Statement generated: Once a product is selected, the site cross sell other products (assigned weight: 2)

4.1.1.8 Gift vouchers

Gift vouchers are rare in e-commerce and they are an effective way in which a company can attain new customers and expand their awareness at the same time. This is because gift vouchers are normally bought for other people as presents. The criterion got a weight of one because it adds little value in terms of the share in revenue.

Statement generated: Gift vouchers can be purchased and used online (assigned weight: 1)

4.1.2 Sale success factors

4.1.2.1 Auction

Having an auction is certainly a high competitive advantage which has determined a weight of three. It creates a community among users, which enhances both awareness and traffic, as users repeatedly come back to the site to see what new offers are available in auction. In addition, Korper and Ellis (2000) provided two value adds of auction. The first is that it provides an alternative revenue stream by charging commission on products sold on their auction. Secondly, it provides a way to reduce surplus inventory.

Statement generated: Auction is available where customers can also offer their products for sale (assigned weight: 3)

4.1.2.2 Delivery

Free delivery is a key competitive advantage, not only in e-commerce but also in the bricks and mortar commerce such as the fast food market. With the exception of heavy and bulky products, e-businesses should attempt to replicate the way to do business in traditional bricks-and-mortar commerce into the area of e-commerce by offering free delivery. Customers buying a book in a bricks-and mortar shop, for example, are accustomed not to pay delivery charges. In respect of buying a book in e-commerce stores, customers would prefer free delivery and therefore those e-

businesses offering it are more likely to get the sale. The result of this high value add got a weight of three.

Statement generated: Free delivery on all orders of any amount (assigned weight: 3)

4.1.2.3 Payment
In e-commerce, being able to pay online by credit card is taken for granted by customers and those companies not adopting it will definitely lose out. So although it is a necessity to have, it is also a competitive advantage because not having it implies a competitive disadvantage. In addition, allowing customers to pay by other means other than online, such as by telephone or fax, is a stronger competitive advantage over online payment. Having offline payment would enable the company to serve those customers who are concerned about passing over credit details online. In addition, Korper and Ellis (2000) shared the same view and also claimed that this will gain the trust of customers. As a result, offline payment weighted three and online payment weighted two to reflect this.

Statements generated: Credit cards are accepted online (assigned weight: 2)
Offline payments are accepted (e.g. telephone, fax, postal cheques) (assigned weight: 3)

4.1.2.4 Prices
This is justified in section 4.2.1.

Statement generated: Prices are displayed in the local currency of the customer's location (assigned weight: 2)

4.1.2.5 Deferring purchase
Allowing customers to select products or services they want to buy, but buy them at a later date is a competitive advantage because firstly, the company is generating a shopping list and every time a customer returns to the site, they are reminded of products yet to buy. Secondly, the company can use the information and communicate to the customer if there are special offers on the products. This criterion is considered to carry a weight of two because it is more than essential to have, but does not add too much value.

Statement generated: Products may be 'saved' to be purchased later (assigned weight: 2)

4.1.2.6 Security
Security is one of the primary concerns for users in e-commerce, particularly with the increasing Internet connection attacks (see Figure 4.2).

Internet Connection Attacks
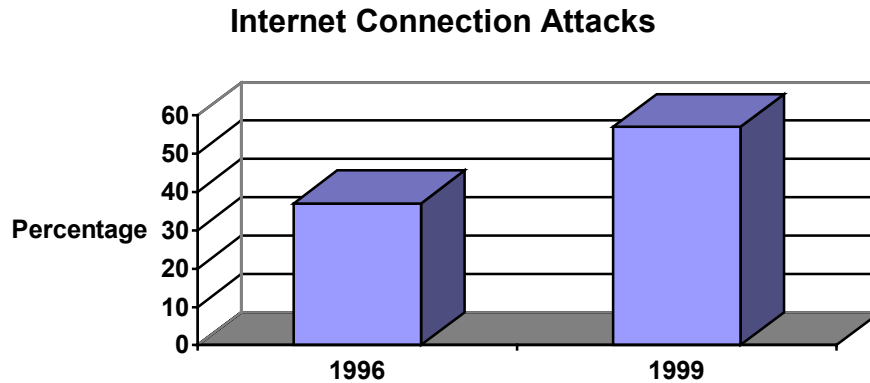
(Figure 4.2: Internet connection attacks. Source: Korper and Ellis, 2000)

As a result, an e-commerce web site with excellent security standards would be much more competitive advantageous than those with inadequate security. The term 'value proposal' may be used in this area, which measures the balance between the effort of doing something and the reward for doing it. As a result, the ultimate aim is to present a negative value proposal to the interlopers, i.e. the effort is greater than the reward. However, according to Lam (2001), security in its own right is a major barrier in e-commerce, because the increase in credit card fraud has deterred customers away from e-commerce sites as they feel insecure and uncomfortable with them.

There are many ways to measure security, but many require internal information which is not publicly available. As a result, the range of criteria available is limited and includes: Secure Sockets Layer (SSL) and passwords. For SSL, Lam (2001) has claimed that it is the de facto standard. Furthermore, Vellotti (2001) has added that other forms of security must also be used and thus, SSL cannot be used in isolation because "that's kind of like saying 'my money is safe because it travels to the bank in a Brinks truck … [but] if the bank doesn't have proper locks and vaults, it doesn't make a difference that the money was secure in transit." (Telljohann in Vellotti, 2001).
This is clearly accepted but due to the above reasons discussed, at least SSL can be measured since the information required to do so is publicly available.   128 bits is the minimum required for competitive advantage because many sites do use SSL, but not all encrypt data in 128 bits and also it is a much more complex encryption than 40 bits, for example. As a result, a weight of three is allocated.

For passwords, Korper and Ellis's (2000) study found that passwords should consist of eight or more alphanumeric characters. In general e-commerce, particularly B2C (business to consumer), the author has not yet come across sites that require passwords to have more than eight alphanumeric characters as the minimum requirement. Therefore, the password criterion is the toughest and a weight of three is determined.

Statement generated: Minimum Secure Sockets Layer (SSL) of 128 bit is used on pages that display customer's personal information (assigned weight: 3)

See section 4.2.3.3 for the statement generated for password.

4.1.2.7   Seals of approval
This criterion is a component of building trust and confidence for customers. According to Korper and Ellis (2000), the purpose of seals of approval is to enhance the security of the site by showing that the site is a member of Which? Web Trader, for example. However, in e-commerce there exists many new and perhaps unknown names and if customers are unsure or never heard of them

before, then having them would not establish any if not, little trust. In addition, it is doubtful whether and for how long the sites would live up to the requirements of the seals, and what forms of audit are in place to ensure the registered sites do conform to their requirements.

Although the above views cannot be denied or ignored, but this criterion still adds value because of the reasons made above and therefore a weight of three is considered appropriate, as it is one of the critical and sensitive areas in e-commerce.

Statement generated: Seals of approval exist (e.g. digital certificates, VeriSign, Which? Web Trader) (assigned weight: 3)

4.1.3 Post-sale success factors

4.1.3.1 Despatch time
In e-commerce there is a dilemma between paying for the product and receiving the product. As a result, letting customers know how long products will take for delivery is important. This clearly adds value as it fills the dilemma gap in some way and therefore deserved a weight of two.

Statement generated: Despatch time available for the product (assigned weight: 2)

4.1.3.2 Loyalty schemes
This criterion adds value as customers are encouraged to buy from the site because they can collect points and also, they have a feeling of being part of a community by being a member. However, this criterion is not particularly effective to generate goodwill because as in Tesco's club card for example, customers are aware that they need to spend a lot in order to accumulate points. The result does not really encourage spend as intended in the first place and therefore a low weight of one is allocated.

Statement generated: Customers are rewarded with points/tokens on their purchases, which can be redeemed for products or services (assigned weight: 1)

4.1.3.3 Support media
According to Korper and Ellis (2000), providing both telephone and email support add value in the form of offering a personal touch. In addition, Vellotti (2001) found that live text chat would add value. All these points are accepted because they do provide the personal touch. Customers are already interacting with machines (i.e. the web pages) and there is a need to offer a personal touch to the service. However, some email management systems are fully automated that generate standardised replies, which are ineffective in most situations.
In terms of telephone support, customers are reluctant to pay for the phone calls, particularly when premium rates are charged. Therefore, those that provide free phone numbers would gain the extra competitive edge.

With the exception to email, all these forms of support are allocated a weight of three each. Although email is commonly used for communication on the Internet and therefore not having it would be highly detrimental, but it is not synchronous, which is highly desired by customers needing support on an ASAP basis. Furthermore, live text chat seems more unique than telephone support, but they are assigned equal weights because they both provide synchronous communication.

Statements generated: Live text chat is available (assigned weight: 3)
Support is available by email or web based forms (assigned weight: 1)
Telephone support is available (assigned weight: 3)

FREEPHONE telephone number is available (assigned weight: 3)

4.1.3.4 Returns

These criteria provide the complete peace of mind for customers. They enhance the confidence and encourage customers to buy because customers will feel they have nothing to lose and as a result, a weight of three is assigned to each one. This is similar to Argos' 16 days money back guarantee. On the downside, customers who know for sure what they want will think twice before making their purchase because they would have the impression that they might not be the first original user of the product.

Statements generated: Customers can return products that are in re-saleable condition for a full refund or exchange for other products (assigned weight: 3)
If the return is not due to the fault of the seller, then it can be returned by FREEPOST or at a local store (if one is available) (assigned weight: 3)

4.2 Customer / company relationship dimension

4.2.1 Language support success factors

With reference to Korper and Ellis (2000), sites should address the global economy. The use of English language is a criterion because English is the dominant language in the world (see Figure 4.3) and therefore should be used as the primary language in e-commerce and as a result, it is allocated one weight more than foreign languages. This is further accepted by Lam (2001) who also found that non-English sites are becoming common and are required in order to capture the foreign markets. As a result, the most popular foreign languages in the criteria are those listed in Figure 4.3.

Language	1998 (millions)	2000 (millions) projected
English	107.2	160
Japanese	14.4	23
Spanish	14.2	Not listed
German	13.9	25
French	8.3	16
Chinese (Mandarin)	6.4	Not listed

(Figure 4.3: Online populations, Global Reach www.euromktg.com in Korper and Ellis 2000)

The importance of foreign language implies that displaying prices in local currencies is equally important if that country is to be served in a customised way. In terms of weights, prices in local currency adds more value than foreign languages and therefore a weight of two is determined, because it creates the convenience for customers as they no longer need to deal with the exchange rate.

Statements generated: English language is used (assigned weight: 2)
Languages in Japanese, Spanish, German, French or Chinese are available (assigned weight: 1)

See section 4.1.2.4 for the statement generated for prices.

4.2.2 Corporate information success factors

For well-known companies, particularly those with a bricks-and-mortar presence around the world, corporate information might not be as important as the unknown and start up companies. However, corporate information is essential because it tells customers about the company and provides a perspective on the company. As Korper and Ellis (2000) have found, corporate information will establish the trust of your customers. Less than four lines of information are considered too brief and insufficient to get a good feeling about the company. So it is assigned one weight less than those with more than or equal to four lines of information.

Statements generated: *There are less than 4 lines of corporate information (assigned weight: 1)*
There are more than 3 lines of corporate information (assigned weight: 2)

4.2.3 Registration success factors

4.2.3.1 Registration and subscription
Although Korper and Ellis (2000) found that registration is a barrier to entry, but it adds value because customers feel that they are part of a community because they have personalised password for the site. The second is that the company can make effective use of the registration information to solicit more business by emails and newsletters, for example.

Newsletters are a form of push technology because marketing information is *pushed* to customers. Personalised newsletters add value to the business because it pushes product updates for example, to customers rather than having them to search for it. Similarly, Korper and Ellis (2000) claimed that this encourages customers to return to the site, and hence increase traffic and visits.

In terms of weights, both are considered equally important and so both assigned equal weights.

Statements generated: *Users are required to register before making a purchase (assigned weight: 2)*
Subscription to e-newsletters / newsletters are available (assigned weight: 2)

4.2.3.2 Value proposal
Unlike interlopers, presenting a positive value proposal (see section 4.1.2.6) would encourage customers to give out their personal information, i.e. the reward is greater than the effort. By using the precious information, the company can better target their customers' requirements. As a result, a weight of three is assigned because it adds as much value as SSL where the opposite occurs, which is to present a negative value proposal to the interlopers.

Statement generated: *Incentives (e.g. discounts) are offered when customer's personal information are requested (assigned weight: 3)*

4.2.3.3 Password
This is justified in section 4.1.2.6.

Statement generated: *Passwords must consist of at least 8 alphanumeric characters (assigned weight: 3)*

4.2.3.4 Cookies
Cookies may be defined as "…. small pieces of information that are used to store and sometimes track information about …. shoppers." (Tower Records, 2001). These small pieces of information are stored in the client side. However, as Lam (2001) has pointed out that not all users enable cookies in their browsers and some users place limits on the file size of cookies. On the same line of argument, "users are simply not 'cookie monsters' and are turned off if they are constantly being

bombarded with them." (Zona Research 2001). These definitely restrict the effectiveness of cookies. However, it is nevertheless a competitive advantage because the company will be able to store every customer's session. A weight of two is allocated because of this limitation.

Statement generated: The site makes use of cookies (assigned weight: 2)

4.2.4 Privacy and feedback success factors

4.2.4.1 Privacy policy

According to Korper and Ellis (2000), a privacy policy would establish the trust of your customers. The underlying reason was found by Schubert and Selz (2001), where there are customers "… who prefer the anonymity of the Web to the face-to-face encounter in a bricks-and-mortar shop." Having a link to a privacy policy on the homepage adds value more than having the link on other pages, because traffic on the homepage is relatively heavier as it is the entrance (i.e. door way) to the site. As a result, it gains one more weight.

Statements generated: Homepage has a link to the 'privacy policy' (assigned weight: 2)
Pages that ask for customer's personal information have a link to the 'privacy policy' (assigned weight: 1)

4.2.4.2 Feedback

Inviting feedback is a sign demonstrating that the company cares for their customers. This creates both loyalty and trust. However, the density of these highly depends on how the company responds. As a result, this competitive advantage is considered to carry a weight of two, because although it is a good criterion, but the way in which the company responds is still unknown.

Statement generated: The site welcomes feedback on its business, products, services, or the site (assigned weight: 2)

4.3 Web site design dimension

4.3.1 Usability and navigability success factors

4.3.1.1 Navigation

This criterion measures the practical usability of the site. If customers are able to find what they want within four mouse clicks, then this shows that the site is highly usable with ease. As a result, a weight of three is allocated. Lam (2001) shared the same view and called it the 'four-click rule'. Furthermore, Korper and Ellis (2000) argued that it should be three clicks, but this might be too stringent to put as a good criterion for the general wider e-commerce.

Statement generated: Finding a specific product or information can be done within 4 mouse clicks from the homepage (assigned weight: 3)

4.3.1.2 Help and homepage links

Both criteria are widely accepted. For example, Vellotti (2001) found that customers would not hesitate to leave if they are frustrated with the site and argued that "… help should be a click away." (Vellotti, 2001). In addition, Korper and Ellis (2000) found that the site should mimic the concept of the information desk. Therefore, having 'help' readily available determined a weight of three because without it, customers would leave with no hesitation.

Having a link to the homepage on every page is assigned a weight of two because it is less important than a link to the help page. Here, Lam (2001) claimed that this criterion would allow users to return to a central reference point.

Statements generated: A link to the 'Help' page is available on every page (assigned weight: 3)
A link to the homepage is available on every page (assigned weight: 2)

4.3.1.3   Plug-ins
Flashy graphics may attract the attention of customers, but what if customers are more concerned about the speed of page download or what if customers have not got the plug-in installed and are not willing to download the plug-in? These points raise the need for non-plug-in versions of the site. Without it, it would be a potential barrier for customers to enter the site. Therefore, a weight of three is given.

Vellotti (2001) found that plug-ins drive customers away because they take time to load. Therefore, a balance must be made between design and performance and one of the ways to do this is to ensure the site is not entirely dependent on plug-ins. This is further accepted by Lam (2001), who argued that "… it is unreasonable to turn away a potential e-customer simply because the site is unusable without the plug-in." (Lam 2001)

Statement generated: Users can still use the site without plug-ins (assigned weight: 3)

4.3.1.4   Accurate and up-to-date content
According to Raijas and Tuunainen (2001), having up-to-date content is important to keep current customers and to attract new customers. Spool et al (1999) have further added that 'good content' is the most important of all. Both views are accepted, but having up-to-date content adds value more than having accurate product information and therefore it is assigned one weight more, because out of date sites simply send customers away.

Statements generated: Content information is up-to-date (assigned weight: 3)
Product information is accurate (i.e. it tells the fact and nothing but the fact) (assigned weight: 2)

4.3.1.5   Predictability
This criterion builds comfort and a sense of control on customers because if they know what is happening and what lies under each link, then they will have a feeling of control over the site. As a result, it adds value as much as site map. Mueller (in Vellotti, 2001) studied the United Airlines site and found that it has a high degree of predictability. After studying the site, this point can be accepted and is a good example of high degree of predictability.

Statement generated: Users have an idea of where they are and what should come next under every link (i.e. there is a degree of predictability) (assigned weight: 2)

4.3.1.6   FAQ
FAQ (Frequently Asked Questions) is assigned a weight of two because it is as important as degree of predictability. The justification for this may be drawn from Korper and Ellis (2000), who found that FAQ is a contributing factor of the most successful companies because it creates the value of a sales clerk.

Statement generated: A list of FAQ (Frequently Asked Questions) is available (assigned weight: 2)

4.3.1.7 Consistency of navigation links

The idea of this criterion is from Korper and Ellis (2000) and further accepted by Vellotti (2001) and Lam (2001). It is a value add criterion but not as value adding as 'not plug-in dependent' and therefore a weight of two is allocated.

Statement generated: Nomenclature, iconography and navigation bars are consistent on every page (assigned weight: 2)

4.3.1.8 User friendliness of navigation links

With reference to Spool et al (1999), links with descriptions help users clearer on what the links lead to. This is considered a low value add and is assigned a weight of one, because if the navigation terms are unbiased, then there is really no need for this, and therefore, a weight of two is allocated for the second criterion. This is further supported by Spool et al (1999) who claimed that ambiguous terminology in navigation is a negative sign. In addition, Korper and Ellis (2000) accepted this and found that there should be understandable terms.

Statements generated: Navigation icons are displayed with a brief description of what it is when the mouse cursor is moved over it (assigned weight: 1)
Words used in navigation links are unambiguous (assigned weight: 2)

4.3.1.9 Location of navigation links

The study conducted by Spool et al (1999) concluded that "sites with navigation buttons or links at the top and bottom of pages did slightly better than sites with navigation buttons down the side of the page." In slight contrast, Korper and Ellis (2000) argued that it does not make a difference whether navigation bars are on the top or side of the page. Spool et al's (1999) view is accepted with some amendments. It is believed that navigation bars on the top or the bottom of the page would perform better. As a result, it determined a weight of one because when its value add is not as important as 'shared interests', for example.

Statement generated: Navigation bars exist at the top or the bottom of every page (assigned weight: 1)

4.3.1.10 Types of navigation links

According to Spool et al (1999), graphics in navigation have no relation to the success of finding information. Instead, users prefer text link. Lam (2001) shared a similar view and found that users have preference on text navigation over icons and pictures. Both claims are accepted because text navigation is less ambiguous and its absence might create an unusable site. Therefore a weight of three is assigned.

Statement generated: Navigation links are displayed in the form of text (assigned weight: 3)

4.3.1.11 Site map

Site map is determined a weight of two because it adds value as much as 'degree of predictability'. According to Spool et al (1999), site map helps users to find information twice as successful. This is further supported by Lam (2001), who found that users will have an idea of where they are within the site and what other offers there are to see. Site map not only add value in these ways, it also provide a bird's eye view or a high level view of the entire site.

Statement generated: Site map is available (assigned weight: 2)

4.3.1.12 Horizontal rule

Spool et al (1999) argued that horizontal rules are competitive disadvantages in usability. This is because they discourage users to browse below the rules, as they are perceived as separators between content information and non-content information, such as copyright information. Though, this is considered a minor factor in measuring competitive advantage and so a weight of one is assigned.

Statement generated: The site does not have horizontal line that spreads over the full width of the browser (assigned weight: 1)

4.3.1.13 External ads

With the same view as Spool et al (1999) (see section 4.1.1.1), there should not be external ads in the company's own web site because they distract users from doing their information retrieval tasks. External ads are those that are outside the business of the company's web site. As Spool et al (1999) put it "… users saw advertisements as visual noise … [and] some users covered it up!" Similarly, Korper and Ellis (2000) found that companies do not place external ads on their own web site because they want their customers to focus on what they are buying rather than being distracted by the ads. As a result, the weight is the same as that of own ad placement on own site.

On the same subject matter, it would be ideal to also include a criterion that measures banner advertising by the company on external web sites. This is because "marketing leads to visits … visits lead to sales … sales lead to repeat sales." (Korper and Ellis, 2000). This is illustrated in Figure 4.4.
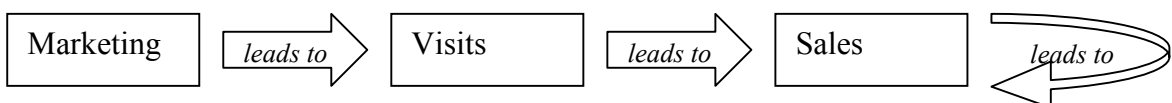
(Figure 4.4: Effects of marketing)

Even though the real world is much more complicated and not as straight forward as Korper and Ellis's (2000) view, but marketing in the form of promotions is one of the first stepping-stones to attract web site visits. In addition, Korper and Ellis (2000) found that banner ads are equally effective as television ads.

However, it is not included in the framework because firstly, the information is not available publicly and secondly, it would be highly impossible if not, extremely difficult to accurately locate the existence of banner advertising for a particular company. In addition, the author believes that Korper and Ellis's (2000) claim is over hyped because in reality, most banner ads are ignored or not as effective as television ads in generating sales leads.

Statement generated: The site does not have advertising from over sites (assigned weight: 2)

4.3.2 Performance success factors

4.3.2.1 Size of homepage and text only pages

In the global economy, not all Internet users have fast Internet connection speeds greater than 56kbps. For example, Zona Research has substantiated this for the U.S. (see Figure 4.5). For these users, speed is crucially important and the availability of 'text only' pages would adequately serve these users and therefore add value.

Estimated Connection Speeds of U.S. Users
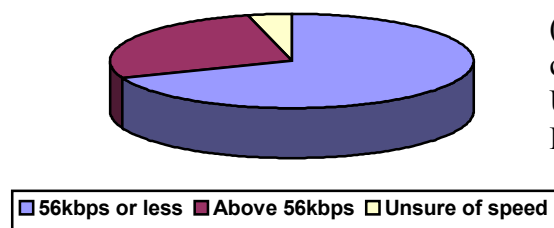
(Figure 4.5: Estimated connection speeds of U.S. users. Source: Zona Research 2001)

☐ 56kbps or less ■ Above 56kbps ☐ Unsure of speed

However, with the advancement in telecommunications technology and the increasing competition and deregulation in the telecommunications market, the cost of faster connection speed is becoming more affordable by the average household. As a result, this criterion adds value on the low end and is allocated a weight of one.

In terms of the size of homepage, "for top performance [and] for the widest possible audience, limiting web pages to between 35K and 60K is best." (Vellotti 2001). This is accepted and used in the framework. Also, the author has found that many homepages fall within this size and therefore included an additional criterion of less than 35KB, which is assigned a higher weight of three compared to two for the other criterion. This is simply because a homepage that is smaller than 35KB loads faster, which reduces the customers' waiting time and hence, adds more value.

Statements generated: *The site is available in 'text only' pages (i.e. with no graphics) (assigned weight: 1)*
Homepage is less than 35 KB (assigned weight: 3)
Homepage is between 35 KB and 60 KB (assigned weight: 2)

4.3.2.2   Download speed

Download speed account for other influential factors between the client and the server. So it is a good measure for competitive advantage. It is estimated that "… page load times of 8 seconds or more could cause up to 30 percent of customers to leave a site before buying anything." (Zona Research in Lam 2001). Similarly, a study by Digital Island (in Vellotti 2001) have found that, "not long ago, the accepted wisdom was that the average user would abandon a Web page if it didn't load within 8 seconds, even if in the middle of a transaction. Now, that figure has been cut in half." Vellotti (2001) has accepted the study's findings and further added that the Amazon site loads quickly because they are carefully designed pages. However, Vellotti (2001) must have based the argument on Internet connection speed greater than 128kbps. Otherwise, its argument is invalid because the author has tested the site and the homepage only load within eight seconds at a connection speed of 128K or more.

Furthermore, since many sites tested (see Appendix L) did not load within 8 seconds, another criterion is added to measure load time in 9 to 16 seconds. The purpose of this is to ensure the framework captures more web sites and therefore making it more widely application to the general e-commerce sites.

The test tool by Web Site Garage has been chosen for measuring these criteria (see section 2.9).

Statements generated: *Homepage loads within 8 seconds at 56 kbps (assigned weight: 3)*
Homepage loads in 9 to 16 seconds at 56 kbps (assigned weight: 1)

4.3.3 Search engine success factors

According to Georgia Tech University (in Korper and Ellis, 2000), the ways / channels in which the majority of people discover web sites include search engines and links from other sites. Although the results showed a small difference between the two, but nevertheless the use of search engines remained the most popular choice for discovering web sites (see Figure 4.6).

How People Discover Web Sites
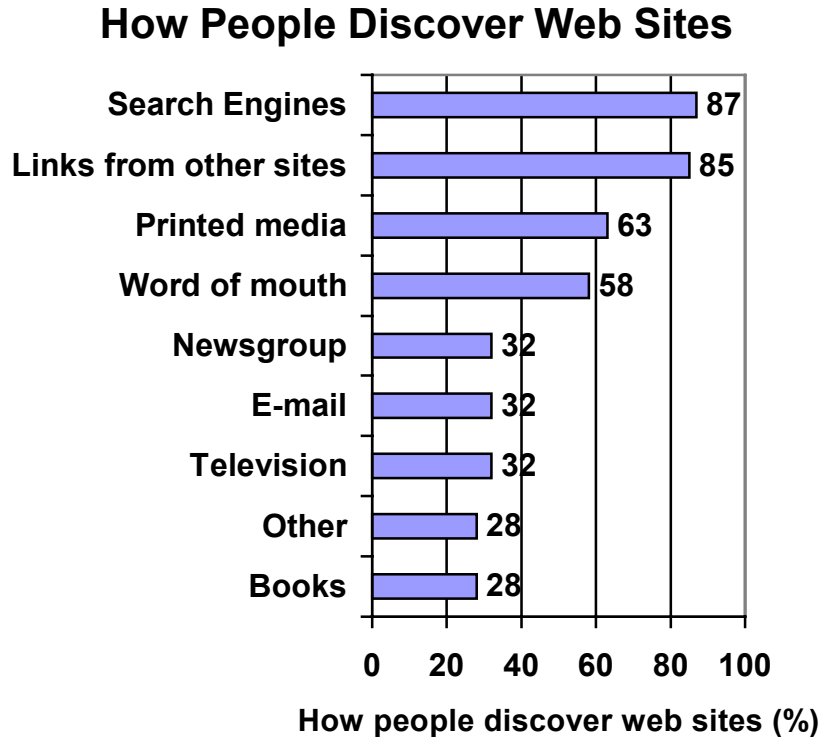
(Figure 4.6: How people discover web sites. Source: Georgia Tech University in Korper and Ellis 2000)

According to Search Engine Watch (2001), there are eighteen major search engines. However, the author has determined seven of them to be major search engines for the project area. These include: Yahoo, Excite, AltaVista, MSN, Google, Lycos, and Ask Jeeves. This is because some search engines integrate other search engines when performing the search. For example, Excite also performs search on LookSmart when users submit search on its engine.

Furthermore, Korper and Ellis (2000) have identified that Yahoo accounts for almost half of all Internet traffic, Excite accounts for almost a quarter and AltaVista accounts for one tenth (see Figure 4.7). These are included in the framework but the weights are determined to be the same for all because Korper and Ellis (2000) have not done justice for other search engines which are included in the framework.

<u>Percentage of Internet Traffic</u>
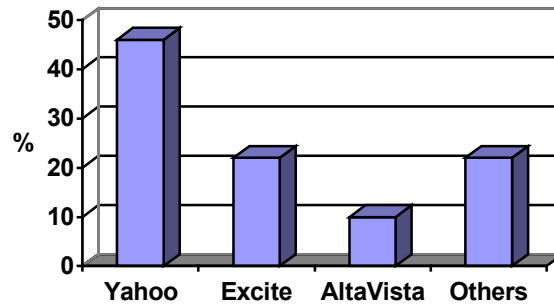
(Figure 4.7: Percentage of Internet traffic.
Source: Korper and Ellis 2000)

Statements generated: *The site can be found by a search on Yahoo! (assigned weight: 1)*
The site can be found by a search on Excite (assigned weight: 1)
The site can be found by a search on AltaVista (assigned weight: 1)
The site can be found by a search on MSN (assigned weight: 1)
The site can be found by a search on Google (assigned weight: 1)
The site can be found by a search on Lycos (assigned weight: 1)
The site can be found by a search on Ask Jeeves (assigned weight: 1)

5. Applying the framework

The framework is tested in three ways. The first is by inviting a number of MSc students to apply the framework on pre-selected sites: Amazon and Blackwell's Bookshop. The result of testing has produced the final release version of the framework (see Appendix G). The second is by applying it in a real life case study: MB Locking Logistics Group Ltd. The third is to test it out on the records/music market.

5.1 Application by MSc students

The author has two reasons for selecting the web sites of Amazon and Blackwell's for testing. The first is that based on the author's dealing with both bookshops, the author has found that Amazon is stronger in the area of competitive advantage. Secondly, Vellotti and Metz (2001) have rated Amazon as the 'best' in the books market. Therefore, in order to have a consistent framework, the results must show that Amazon is better than Blackwell's Bookshop.

The results showed that all students have consistently rated Amazon higher than Blackwell's Bookshop (see Appendix H). However, a minority of the results among the students are lower for both web sites. Although the framework might provide minor variations in results when applied by different individuals, but it nevertheless able to distinguish between the more competitive and the less competitive web sites.

The results between students are mostly consistent. Although Angela's results on Blackwell's Bookshop are relatively lower than others. This can be justified because she did manage to apply the framework marginally quicker than others. This can be attributed to several factors including: not bothered to look for information; applied the framework in a rush; and not paying enough attention or effort.

Overall, the majority of students have rated both sites with consistent results. As a result, it is apparent that the framework would provide consistent results when used by different people. However, due to the need to clarify some criteria statements to a minority of students, the framework is further refined to address this issue and then applied to MB Locking Logistics Group Ltd and the records/music market.

5.2 Application to MB Locking Logistics Group Ltd.

MB Locking Logistics Group Ltd is in the process of establishing their e-commerce web site. They have asked the author to carry out a competitor analysis on their key competitors. Consequently, the framework is applied to: Allgood; Eisenwareswan; George Boyd; Cairney; Ingersoll Rand Architectural Hardware; and Ingersoll Rand Security & Safety (see Appendix Q). The feedback derived from the presentation of the analytical results has highlighted some important positive points (see Appendix I). Goldberg (2001) has accepted the view that the results represent an accurate reflection of their competitors and also, the results are useful in measuring competitive advantage. In addition, the firm has further added that the "information [is] good to point out which area our website needs to be stronger." (Goldberg, 2001). As a result, it is apparent that the framework does provide an accurate measure of competitive advantage.

Furthermore, Goldberg (2001) has raised the point that although Allgood did relatively poor in establishing and maintaining a relationship with customers, but their hidden web pages which are only available to their clients, are one of the best under this dimension. This addresses one of the limits of the project framework as identified in section 2.7, which is about the availability of information to the general public without the need to co-operate with the firms being assessed. This is also one of the possible areas identified for further research in section 7.

5.3   Application to the records/music market

The results on the records/music market revealed similar results to what the author expected to see (see Appendix M for the results). Although Amazon is also determined the best in the records market, but it is not that far ahead of its rivals. In fact, Amazon is behind the competition in the customer/company relationship and web site design dimensions. This demonstrates that a firm operating competitively better in one area does not imply the same for other areas.

6. Conclusion

The author is proud to share with the readers that the project objectives have all been achieved. The ultimate outcome is the comparative e-commerce classification framework for measuring competitive advantage. Although further refinements to the framework is still possible as the iterative development process can be an ongoing process with infinity! However, the author feels that the framework does what it intends to do and yields interestingly good analytical results. This is demonstrated when the results on the case study of MB Locking Logistics Group Ltd and a number of authors, such as Vellotti (2001), have all shared the same view and perspective of the results provided by the framework.

The framework is available for download at www.cheunglee.co.uk.

7. Further research

The author has identified a number of areas for further research that are outside the boundaries of the project solution. These include developing a benchmark for a limited number of market sectors; making more use of readily available test tools on the Internet; and include more measures that look into the internal operation of the business, and hence looking at privately available information. An example is the Allgood e-commerce web site which according to Goldberg (2001), has a better customer/company relationship dimension in their client side web pages than their publicly available web pages.

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Appendix A: Personal reflection

The following guidance is drawn from the author's experience on the project. The guidance should provide useful information to future students undertaking MSc projects in a similar topic area.

Upon inception of the project, students must be clear on the project objectives and must determine whether they are feasibly achievable within the time scale. It is important to fully understand the project objectives at the outset and agree or amend them as early as possible. Once the project objectives are agreed, students should start planning by organising the workload in a constructive way. However, students must not have the perception that the plan is fixed and must be adhered to. Instead, students must be lean and flexible with their work and amend the plan as and when required. Overall, students must prioritise their workload particularly during the revision periods for the semester 2 exams.

Students should never underestimate the scale and breadth of work required. Therefore, it is important to make an early start on the project and never leave things until the last minute! Though this does not imply the author has left things till the last minute. In particular, students are advised to get hold of the appropriate literature and text books as early as possible. Just think of the ratio between the number of students and the number of books (i.e. demand v. supply). Also, students should not think that more books would be available because the exams are over.

In addition, students should appropriate more time into producing the project solution and should not spend too much time on literature research. Although gaining the required knowledge for the theme of the project is important to establish a good foundation, but producing the project solution is not as straight forward as students might perceive. Students must be aware that there are many unforeseeable complications which would further strengthen the challenges in which students would most likely encounter.

Supervisors are a great source for everything that is project related. Therefore, students should not hesitate to make use of their knowledge, expertise and experience. After all, the project idea originated from them, so who else would have a clearer understanding of the project? In addition, students should meet up with their supervisors on a regular basis in order to ensure that they stay on track of their project. This avoids wasting precious time doing something that is out of line.

Students might find keeping an online 'action plan' that list the progress of the project and planned activities to be unhelpful and add no value to the project at all. There is really no need to have an online action plan providing students do keep to a schedule and put the number of hours of work into the project!

However, students should keep a 'resource page' that list all literature and text books researched to date. Not only would it make life easier when writing up the references in the report, it also provides a method for keeping track of all literature research. This information is particularly useful when producing the project solution whereby references need to be referred to the literature.

Last but not least, students must ensure they keep regular backup copies of all their work. Also, students must never rely on web disk space for the storage of important information, because they are not completely safe and secure places for such use.

Appendix B: Objectives and deliverables

School of Computer Studies

MSC PROJECT OBJECTIVES AND DELIVERABLES

This form must be completed by the student, with the agreement of the supervisor of each project, and submitted to the MSc project co-ordinator (Mrs A. Roberts) *by 22nd March 2001*. A copy should be given to the supervisor and a copy retained by the student. Amendments to the agreed objectives and deliverables may be made by agreement between the student and the supervisor during the project. Any such revision should be noted on this form. At the end of the project, a copy of this form *must* be included in the Project Report as an Appendix.

Student: **Cheung Ming LEE**

Programme of Study: **MSc Information Systems**

Supervisor: **Owen Johnson**

Title of project: **e-Commerce Competitor Analysis**

AGREED MARKING SCHEME

Understand the Problem	Produce a Solution *	Evaluation	Write -Up	Appendix A	TOTAL %
20	40	20	15	5	100

* This category includes Professionalism (see handbook)

OVERALL OBJECTIVES (continue overleaf if necessary):

1. By conducting literature review/survey, what are the frameworks and tools (i.e. hard criteria) used for analysing competitors in traditional '*bricks and mortar*' commerce and e-commerce. In addition, what are the soft criteria used for analysing e-commerce websites?

2. To develop a robust and publicly available classification framework for e-commerce competitor analysis that can be applied in all industries.

3. To validate the above framework by applying it to one or more industry case study/studies.

4. To implement the framework as a set of web pages (using Rational Rose and Dreamweaver). It is hoped to integrate a degree of interactivity which guide a user through the process of identifying competitors, classifying them and drawing conclusions about their relative e-commerce offerings.

5. It is hoped the framework is of sufficient high quality which could be used for teaching in the School of Computer Studies.

DELIVERABLE(s):

1. A project report.

2. A project log on my website.

3. A set of web pages for presenting the framework and case study/studies.

Signature of student: **Date:**

Signature of supervisor: **Date:**

Amendments to agreed objectives and deliverables:

Date	Amendment
16 July 2001	Objective 4 & 5 are to be dropped in response to the supervisor's and assessor's comments. In addition, objective 1 is to be amended to remove the study of competition in "bricks and mortar" commerce, because it is not appropriate for the framework. This will be addressed in the report. Finally, deliverable number 3 is to be amended to remove presenting the framework as a set of web pages, as this is not a primary objective of the project.

Appendix C: Marking scheme, interim report header sheet and assessor's comments

School of Computer Studies

MSc PROJECT INTERIM REPORT

All MSc students must submit an interim report on their project to the MSc project co-ordinator (Mrs A Roberts) *by 4th May 2001.* Note that it may require two or three iterations to agree a suitable report with your supervisor, so you should let him/her have an initial draft well in advance of the deadline. The report should be a maximum of 10 pages long and be attached to this header sheet. It should include:

- the objectives, deliverables and agreed marking scheme
- resources required
- progress report and project schedule
- proposed research methods
- a draft chapter on the literature review and/or an evaluation of tools/techniques
- the WWW document link for the project log to date

The report will be commented upon both by the supervisor and the assessor in order to provide you with feedback on your approach and progress so far.

The submission of this Interim Report is a pre-requisite for proceeding to the main phase of the project.

Student:	Cheung Ming LEE
Programme of Study:	MSc Information Systems
Title of project:	e-Commerce Competitor Analysis
Supervisor:	Owen Johnson
External Company (if appropriate):	

AGREED MARKING SCHEME

Understand the problem	Produce a solution *	Evaluation	Write-up	Appendix A	TOTAL %
20	40	20	15	5	100

* This includes professionalism (for details of what is included please see handbook)

Signature of student: Date:

Supervisor's and Assessor's comments overleaf

Supervisor's comments on the Interim Report

There are more objectives than necessary and there is a danger that the 4th objective - building a website detracts from the research focus of the project. "Learning Dreamweaver" was not in the original problem brief.

The literature review consists of a summary of papers read rather than an argued assessment of the literature resources as such it can't really be considered a "draft chapter".

Overall there is strong evidence that the project has a clear focus and that progress has been made. I would like to see a more detailed plan for the Information Gathering Survey including time for textbook reading and limits to time spent on each activity — there's a danger that the time will pass quickly with few results without a more detailed and systematic plan.

Assessor's comments on the Interim Report

2 main problems

① The objectives are spread too widely, hence a danger of addressing each at a superficial level (& will not gain high marks).
I would recommend you to focus on a sound framework & work through a sample sector as a case study.

② what do you mean by competitor analysis — how would a e-commerce competitor analysis differ from ~~~~~~~~ that on the 'traditional' ~~~ commerce?
You need that sorted to justify your framework (which may or may not adapt the 'traditional' methods —

Competitor analysis → market share, branding etc. etc.)
((See also the comments made — side))

Appendix D: Pilot assessment

E-commerce: Amazon UK Ltd.
URL: www.amazon.co.uk
Internet Connection: 50kbps.
Test Date & Time: Wednesday 27 June 2001, 6:40pm.

In this pilot assessment, two questions are answered:
1) What are the possible competitive advantages?
2) What are the possible competitive disadvantages?

Measuring the mean time for downloading the homepage

Attempt	1	2	3	4	5	Mean Time
Time taken (in seconds)	21	38	20	17	21	23.4

Possible Competitive Advantages
- Offers both graphical interface and text only interface.
- Clear, easy to read and well-organised page layout.
- Offers 30 days 'no quibbles' guarantee, where a customer can return book(s) for whatever reason(s). But delivery charges are not refundable, except for defective book(s) or if it was the fault of the seller.
- Best sellers chart.
- Easy to find a particular book and other related books.
- Book reviews by the general public (both positive and negative reviews are accepted) and ratings.
- Offers both 'quick search' and a detailed narrow search (i.e. full search).
- Books are categorised in an easy to browse way.
- Provides tips / guidance to improve search result.
- Once registered, the customer is addressed by their first name (seems like a more personal service).
- Provides order tracking.
- Terms and conditions are clearly shown.
- Gift vouchers available for purchase.
- Free phone 0800 contact number for UK customers.
- Allows book(s) to be saved for later purchase.
- Provides recommendations according to the customer's recent browsing.
- Keeps a log / record of accumulated purchases to date. With this information, the seller is able to analyse every customer's tastes and preferences.
- Provides 'waiting period' for dispatch. But how accurate and reliable is it?
- Offers security guarantee whereby the seller is willing to cover up to £50 liability for online fraudulent credit card transactions when the bank holds the customer liable.
- 128-bit SSL.
- Subscription to various newsletters.
- Easy to navigate around.
- All links are underlined and sensibly placed on the page.
- Virtually every book in publication is available.
- Content is up-to-date.
- No broken links found.

- Prices are relatively cheaper than traditional commerce.
- Everything is colour coded. This makes the online commerce easy to get used to.
- Every page is consistent throughout.
- Auction available where customers can sell their books online.
- Customers can pay by cheque(s) in addition to credit card(s), but this slows down the order.
- Customers can provide credit card details over the telephone or fax in addition to the secured pages over the Internet.

Possible Competitive Disadvantages
- A search on 'e-commerce' took quite long – 44 seconds.
- Credit card details are stored permanently. This is certainly a concern for customers.
- Customers have to pay delivery charges (59p per item and £2.16 per delivery).
- FREEPOST is not available for returns.
- Customers must sign up if they do not wish the seller to pass on their details to third parties.
- Downloading the homepage took 23 seconds, which is quite long.

E-commerce: Blackwell's Bookshop.
URL: bookshop.Blackwell.co.uk
Internet Connection: 50kbps.
Test Date & Time: Wednesday 28 June 2001, 6:00pm.

In this pilot assessment, two questions are answered:
1) What are the possible competitive advantages?
2) What are the possible competitive disadvantages?

Measuring the mean time for downloading the homepage

Attempt	1	2	3	4	5	Mean Time
Time taken (in seconds)	26	26	26	25	27	26

Possible Competitive Advantages
- Free delivery within the UK.
- Provides a good combination of search options: quick search, site search and full search.
- Books are categorised appropriately. This makes easier browsing.
- Links are underlined appropriately.
- Credit card details may be provided over the telephone instead of the secured page.
- Offers alternative methods of ordering / contact: email, telephone, fax and post. Though the telephone ordering service is not manned 24×7×365.
- Returns may be made at any Blackwell's bricks and mortar bookshops, as well as its online bookshop via post.
- Offers 28 days return policy if the book is not suitable. Though postage costs cannot be refunded except for damaged books or if it was Blackwell's fault.
- Dispatch time is provided for every book. Though the accuracy is no tested.
- Shipping details are automatically filled in.
- Status of order can be checked.
- Entire purchase history is logged.
- Blackwell declares that they will not pass customer details to third parties.
- Offers competitions from time to time.

- Provides full bibliography details, table of contents and a description of every book, including readership information, i.e. who / which level is the book aimed at (e.g. undergraduates).
- Provide book reviews, but only for a selection and are done by staff.
- A member of Which? Web Trader. This implies that it conforms to the Code of Practice under the Which? Membership.
- Registered customers are addressed by their full name.
- The New Books Section shows all new books that are relevant to the customer's interest. Even books not in print yet can be ordered in advance.
- Out of print and rare books can be searched and ordered.
- Order may be cancelled at any time prior to dispatch.
- Affiliates are encouraged to add Blackwell's website to their sites, which allows them to interrogate it's database.
- Provides alerting service of books of interest to the customer via the web or email.

Possible Competitive Disadvantages
- Navigation is quite complex on inner pages. For example, it is difficult to get back to the 'links' page on the next visit, because there are no clues or direct links for that page from a higher level.
- Homepage took 26 seconds to load up and this is quite long.
- A search on 'e-commerce' took 20 seconds, which seems quite long.
- Does not involve external parties to have their say in book reviews.
- Provide links to online resources for author web sites, literary links, publishers' links and other miscellaneous sites. But do these really add value? No. Also, it has links to its direct competitors including Amazon and Waterstone.
- Does providing date and time of last visit really add value?
- Search menu is split up across the top and also on the left hand side of the page. An impression of unorganised layout.
- Recommendations banner at the bottom of every page is like an AD Banner, which is sometimes annoying and distracting. This is a major disadvantage for those with small screens. In addition, the recommendations are not customised towards the customer's previous browsing.
- SSL is only 40 bit, though Blackwell claims it is the US industry standard. With reference to the guess speaker at the Halifax Bank Plc, the minimum SSL should be at least 56 bit.
- Free post is not available for returns.
- Some terms are confusing. For example, 9102 books in this category, 3181 on this level. What does level mean? No idea.
- Credit card is the only form of payment accepted for purchase made online.
- Found one broken link. On Blackwell's choice page, the link to Metaplus is broken.
- After registration, there are no links back to the homepage or any other page, i.e. dead end.
- Registration process is not complete when it feels as though it is all done, because the customer is required to provide details of interest and other information the next time the customer logs in.
- No text only version available.
- Credit card details provided are stored permanently. OK this might create greater convenience when placing an order, but would you want a seller to withhold your credit card details? No.

The Analysis
Both sellers offer a collection of similar features. Those that seems to provide a competitive edge include order tracking, book reviews, money back guarantee, quick search, full search, book categorisation that makes enhances the user's browsing experience, addressing every customer by their name when they login, record of purchases made to date, subscription to newsletters, consistency in colour coding and underlining links on all pages, massive range of books available to purchase, provides the waiting time required before dispatch, up-to-date content and for the more

cautious customers, they can provide their credit card details over the telephone instead of secured pages. If these features are common in the online marketplace for books, then they are the essential competitive advantages required for any e-commerce businesses in order to survive in the marketplace.

However, both Amazon and Blackwell have their own *unique* competitive advantages that are not common in the marketplace. It is these extra characteristics that provide them with the competitive edge. For Amazon, they offer free phone 0800 contact number for customers in the UK, gift vouchers, best sellers chart, listing of similar books written by the same author or purchased by other customers, book reviews by the general public, 128-bit SSL pages for receiving credit card details, easy navigation, no broken links, online auction where customers can sell their books, payment by cheque and relatively lower prices than traditional bricks and mortar commerce.

What gives Blackwell the competitive edge include free delivery in the UK, returns can be made to its bricks and mortar bookshops, customer details will not be automatically passed onto third parties without the customer's consent, competitions are conducted from time to time, a member of Which? Web Trader, out of print and rare books may be ordered, alerting service of books of interest and affiliates are welcomed to add its website to their sites and also to interrogate its database.

On the negative side, Amazon appears to have fewer competitive disadvantages when compared to Blackwell. This does not necessarily indicate Amazon is superior to Blackwell, because what need to be assessed are the effectiveness of the competitive disadvantages and the scale of impact they have in the marketplace. Both sellers does not provide free posting for returns. In addition, their intention of keeping customers' credit card details permanently might be to make the ordering process more convenient whereby the customer no longer need to input their credit card details in future purchases. But a cautious customer will be extremely concerned about the security in the way in which their credit card details are stored, particularly with poor publicity about customers' confidential details being released to third parties, whether negligently on their part or not.

Moreover, their homepages took quite a long time to load. Personally, I suggest a reasonable norm time of not more than 10 seconds for Internet connection speed of 56kps. However, the mean time for Amazon is 23 seconds and although it is comparatively better than Blackwell's 26 seconds, but it is still slow. Conversely, Blackwell performed better in the quick search test, which took 20 seconds on the keyword 'e-commerce'. In the same test, it took Amazon an appalling 44 seconds to display the result.

Furthermore, Amazon imposes shipping charges on every order and every item on the order. The minimum shipping charge for a single book for delivery in the UK would cost the customer an extra £2.75 to the price of the book. In this respect, Blackwell definitely has the competitive edge with free delivery in the UK. The question is, if Blackwell is able to offer this edge, then why can't the world's largest online bookseller do the same?

On the other hand, Blackwell seems to be falling behind the competition with many more unique competitive disadvantages than Amazon. The main weaknesses are a confusing navigation structure which can sometimes leave a customer totally lost; customers have no say in book reviews and this leaves the objectivity and honesty of its staff when reviewing books; the recommendations banner is more like an AD banner which is annoying and isn't really customised towards a customer's interest; a SSL of only 40-bit is lacking in today's online environment; broken link on one of the pages; no text only version for customers with slow Internet connection speed; and finally, why would any reseller have links to their direct competitors?

Overall, the analysis concludes that Amazon has the competitive edge over Blackwell. Though the only major disappointment is with the shipping charges imposed by Amazon.

Key Competitive Advantage Measures

This assessment has brought many thinking into some real and detailed issues surrounding the competitive indicators in e-commerce. At a high level view, the e-commerce competitor framework may be categorised into three distinct areas: pre-sale, the sale (i.e. the transaction) and after-sale. In addition, the result of this work has resulted in the following candidate criteria that can possibly be used in the framework.

Both graphical and text only versions of user interface available?
Easy to navigate and browse?
X days money back guarantee?
Top 10 book chart?
Book reviews by all?
Order tracking?
Personalisation in greeting and mailing?
Gift vouchers?
0800 contact?
Waiting time for every book?
128-bit SSL?
No broken links?
Variety and choice?
Delivery charges?
Competitive prices?
Up-to-date content?
Consistency throughout?
Freepost for returns?
Homepage loads up in less than 10 seconds?

Appendix E: Candidate criteria for competitive advantage

	Competitive advantage	Competitive disadvantage	Not sure
Site's theme	X		
Ad placement			X
Cross-browser compatibility	X		
Support for early browsers	X		
Flashing graphics (non-functional ones does not add value)			X
Pop-up windows (non-functional ones does not add value)			X
Consistent nomenclature and iconography	X		
Design hierarchy	X		
Degree of predictability	X		
Aesthetically pleasing (more of a subjective measure)	X		
Language support	X		
Cultural adaptation	X		
Hyperlinks to related content	X		
Availability of both graphical and text only pages	X		
Performance (Atesto Technologies)			
Scalability (requires internal information)	X		
Total response time (i.e. speed)	X		
DNS lookup time	X		
Connection set up time	X		
Bytes received	X		
Redirection time	X		
Content receiving time	X		
Error count (i.e. reliability)		X	
Downtime (i.e. reliability)		X	
Hangs in the middle of a transaction (i.e. reliability)		X	
Page size	X		
No. of objects (i.e. GIF / JPEG)	X		
Use of frames		X	
Use of JavaScript		X	
Dead hyperlinks		X	
Denial of service		X	
Secure user profiles	X		
Secure shopping carts	X		
Privacy policy	X		
SSL	X		
Login security	X		
Digital signature	X		
Seals of approval (e.g. VeriSign, Visa)	X		
Passwords are made of 8 or more alphanumeric characters	X		
Ease of navigation (i.e. simple to find information)	X		

Relevant content	X		
Site stickiness	X		
Help is a click away	X		
Effective help	X		
Simple search	X		
Advanced search	X		
Easy to complete tasks	X		
Request for customer information is done so gradually (i.e. from page to page)	X		
Customers are never asked for the same information again	X		
No. of steps required to find information	X		
Live chat	X		
Interactive voice help	X		
Personalisation	X		
Text links	X		
Up-to-date content	X		
Adverts / animation on own page(s)		X	
Animated ads on others' pages more effective than non-animated	X		
Banner ads on others' pages without click through are more effective than with click through (Empirical studies)	X		
Use of frames		X	
Navigation bar at the top and bottom of pages	X		
Navigation bar at the side of pages		X	
Consistent navigation bars	X		
Text navigation	X		
Icons/pictures navigation		X	
Site map	X		
Links with description	X		
Use of ambiguous terms		X	
Use of term dictionary	X		
Too many links on page		X	
Image links		X	
Use of embedded links (i.e. surrounded by text)		X	
Wrapped links		X	
More white-space (Text density formula)		X	
Horizontal rule		X	
Less readable pages (Gunning Fox Index)	X		
Lack of product information		X	
Appropriate handling of exceptions	X		
Appropriate handling of errors	X		
Catalogue navigation (i.e. products are categorised)	X		
Offensive, misleading and litigious content		X	
Infringements		X	
Order tracking	X		
Getting from A to B within 4 clicks	X		

Long pages include a table of contents	X		
Homepage link on every page	X		
FAQ	X		
Good structure of content	X		
Good user interface	X		
Reasonable information quantity	X		
No broken links	X		
Flexible delivery time	X		
Narrow delivery time window	X		
Promotional offers	X		
Plug-in dependent		X	
Session expiration	X	X	
Session storage (i.e. cookies)	X	X	
Loyalty discounts	X		
'Save and recall' for later purchases	X		
Alternative methods of payment to credit cards	X		
Auction	X		
Subscription to e-newsletters	X		
Listing in major search engines	X		
Registration is required			X
Lengthy registration process		X	
Use of push technology	X		
Follow up 'thank you' email after a purchase	X		
Phone support	X		
Free phone numbers	X		
Email support	X		
Discount pricing	X		
Product comparisons	X		
Customer Charter or something similar	X		
Corporate history	X		
Display of message that transactions are secure and encrypted	X		
Offer positive value proposal (e.g. gift vouchers) for registering and / or requesting customer personal information.	X		
Cross selling opportunity (via good products/service combination)	X		
Customer profile can be amended	X		
Guided ordering	X		
X days money back guarantee	X		
Returns accepted	X		
Feedback	X		
Reuse of customer personal information (e.g. in filling forms)	X		
Allows shared interests / views	X		
Top 10 best seller chart	X		
Gift vouchers	X		
Waiting time for despatch	X		

Large product range	X		
Free / minimal delivery charges	X		
Competitive if not cheaper prices	X		
Freepost for returns	X		

Appendix F: Traditional management theories.

Porter (1985) is famously known for his work on competitive advantage. The value chain model (see Figure F1) is used to evaluate the competitive advantage of an organisation in terms of its activities. The activities are categorised into the primary and support activities, which are further categorised into a number of business units. The advantage of this model is that it is very inclusive and flexible enough for all market sectors and industries.
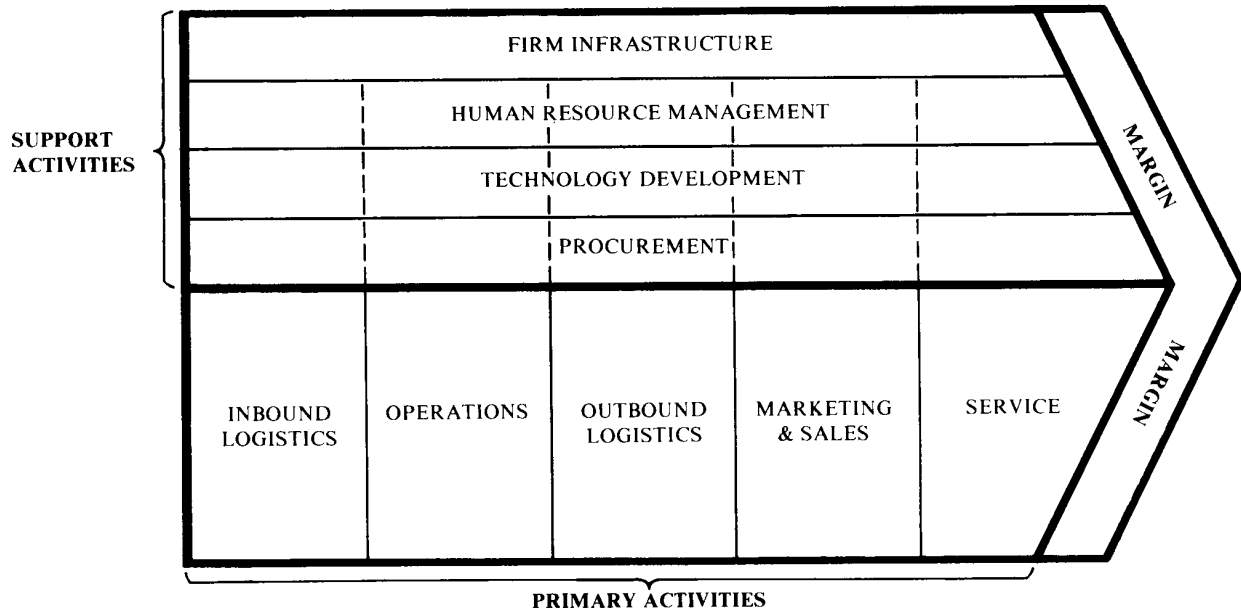
(Figure F1: Value chain – Source: Porter, 1985, p37)

Unlike the value chain, the Boston Consulting Group (BCG) (in Dibb et al, 1994) has focused solely on the product component. They have determined the growth-share matrix (see Figure F2) which evaluates the product portfolio of an organisation in terms of market share. Although this model is not directly linked to competitive advantage, but it does highlight some key points of the competitive position of an organisation's products in the marketplace.
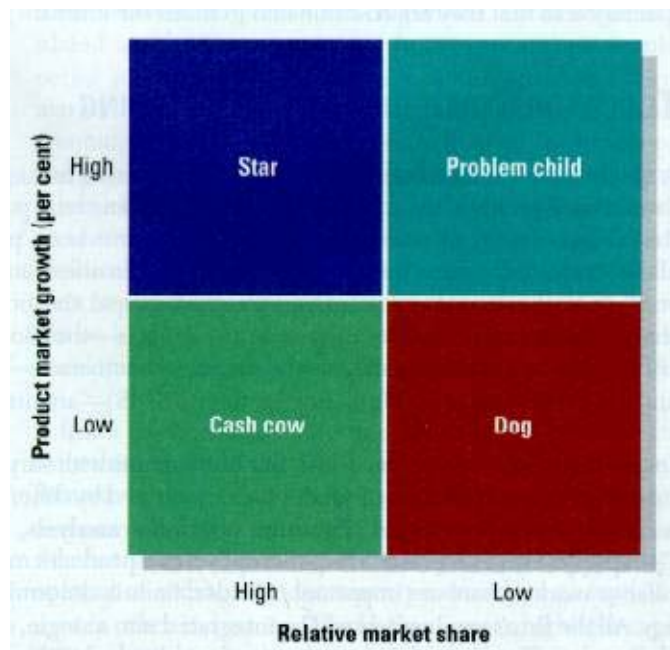
(Figure F2: Growth-share matrix – Source: Dibb et al, 1994, p540)

Stars and cash cows are products with a dominant share in the market. Since stars are high growth products, they require more cash to accelerate product sale and awareness. However, cash cows require less cash as they are low growth products and generate more revenue.

On the other hand, products with low market share are called dogs and problem child. Dogs are products in mature markets with low prospects for growth. Problem child is sometimes referred to as 'question marks'. These are products with the potential to grow but require heavy cash injection.

The 'market attractiveness & business position model' (in Dibb et al, 1994) (see Figure F3) has a wider perspective than the growth-share matrix, but still not as inclusive as the value chain. The model is a two dimensional matrix that evaluates the attractiveness of the market on the vertical axis and the position of the business on the horizontal axis. Measures for market attractiveness include "…. all strengths and resources that relate to the market, such as seasonality, economies of scale, competitive intensity, industry sales, and the overall cost and feasibility of the …. market." (Dibb et al, 1994). In terms of the business position, this includes "…. sales, relative market share, research and development, price competitiveness, product quality and market knowledge." (Dibb et al, 1994).
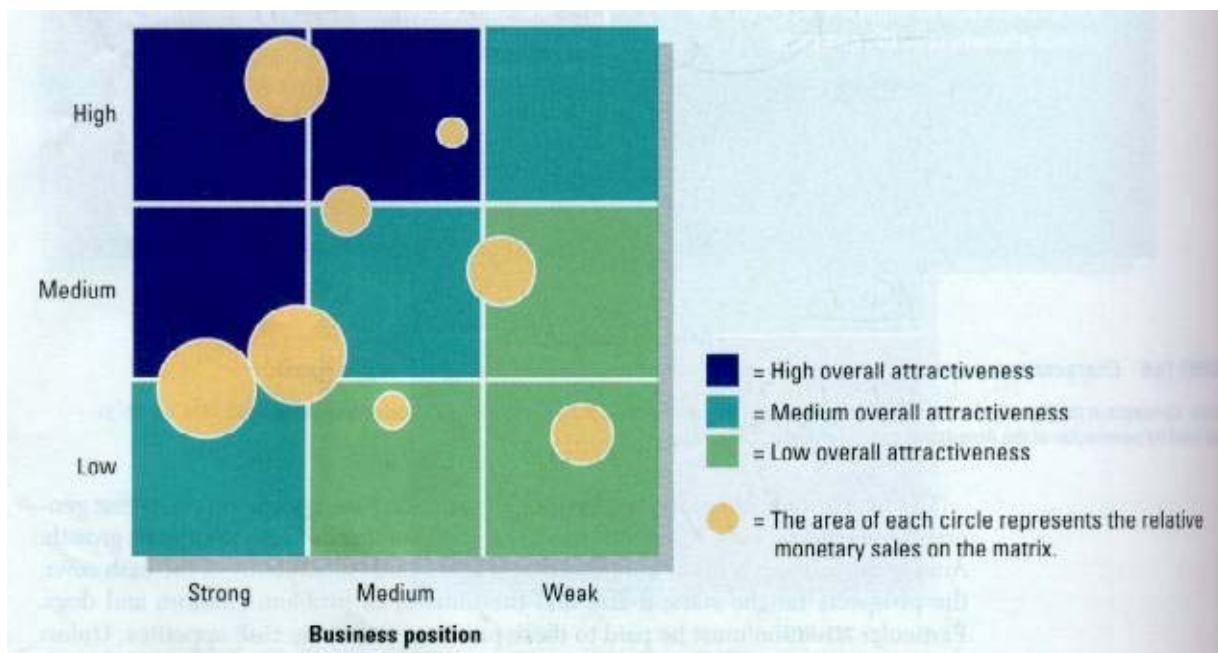
(Figure F3: Market attractiveness & business position model – Source: Dibb et al, 1994, p542)

Organisations operating with a competitive advantage would have a strong business position in a highly attractive market.

It is apparent that all the models discussed so far require some form of information that is only privately available. However, the models have provided some insights into the design of the project framework.

Appendix G: The blank framework (final version)

COMPARATIVE E-COMMERCE CLASSIFICATION FRAMEWORK FOR MEASURING COMPETITIVE ADVANTAGE

KEYS: A = Agree to the statement; D = Disagree to the statement / Not sure.

NAME OF ASSESSOR:

DATE OF ASSESSMENT (D/M/Y):

| | | Name of organisation | | Name of organisation | | Name of organisation | |
| | | URL of organisation | | URL of organisation | | URL of organisation | |

Level of Transaction Support Dimension

Pre-sale	Unassigned Weight	A / D	Assigned Weight	A / D	Assigned Weight	A / D	Assigned Weight
The site promote its own products or services by advertising or promotional offers	2		0		0		0
Simple search is available	2		0		0		0
Advanced or customised search is available	3		0		0		0
Users are allowed to read product reviews submitted by other users	3		0		0		0
Multiple products may be selected for comparison	3		0		0		0
Products are categorised under appropriate sections	2		0		0		0
Large product range	3		0		0		0
Once a product is selected, the site cross sell other products	2		0		0		0
Gift vouchers can be purchased and used online	1		0		0		0

Sale							
Auction is available where customers can also offer their products for sale	3		0		0		0
Free delivery on all orders of any amount	3		0		0		0
Credit cards are accepted online	2		0		0		0
Offline payments are accepted (e.g. telephone, fax, postal cheques)	3		0		0		0
Products may be 'saved' to be purchased later	2		0		0		0
Prices are displayed in the local currency of the customer's location	2		0		0		0
Minimum Secure Sockets Layer (SSL) of 128 bit is used on pages that display customer's personal information	3		0		0		0
Seals of approval exist (e.g. digital certificates, VeriSign, Which? Web Trader)	3		0		0		0

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Post-sale							
Live text chat is available	3		0		0		0
Despatch time is available for the product	2		0		0		0
Customers are rewarded with points/tokens on their purchases, which can be redeemed for products or services	1		0		0		0
Support is available by email or web based forms	1		0		0		0
Telephone support is available	3		0		0		0
FREEPHONE telephone number is available	3		0		0		0
Customers can return products that are in re-saleable condition for a full refund or exchange for other products	3		0		0		0
If the return is not due to the fault of the seller, then it can be returned by FREEPOST or at a local store (if one is available)	3		0		0		0

Customer / Company Relationship Dimension

Language support							
English language is used	2		0		0		0
Languages in Japanese, Spanish, German, French or Chinese are available	1		0		0		0

Corporate information							
There are less than 4 lines of corporate information	1		0		0		0
There are more than 3 lines of corporate information	2		0		0		0

Registration							
Users are required to register before making a purchase	2		0		0		0
Incentives (e.g. discounts) are offered when customer's personal information are requested	3		0		0		0
Subscription to e-newletters / newsletters are available	2		0		0		0
Passwords must consist of at least 8 alphanumeric characters	3		0		0		0
The site makes use of cookies	2		0		0		0

Privacy & Feedback							
Homepage has a link to the 'privacy policy'	2		0		0		0
Pages that ask for customer's personal information have a link to the 'privacy policy'	1		0		0		0
The site welcomes feedback on its business, products, services, or the site	2		0		0		0

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Web Site Design Dimension

Usability & Navigability

Finding a specific product or information can be done within 4 mouse clicks from the homepage	3	0	0	0
A link to the 'Help' page is available on every page	3	0	0	0
A link to the homepage is available on every page	2	0	0	0
Users can still use the site without plug-ins	3	0	0	0
Content information is up-to-date	3	0	0	0
Product information is accurate (i.e. it tells the fact and nothing but the fact)	2	0	0	0
Users have an idea of where they are and what should come next under every link (i.e. there is a degree of predictability.)	2	0	0	0
Nomenclature, iconography and navigation bars are consistent on every page	2	0	0	0
Navigation icons are displayed with a brief description of what it is when the mouse cursor is moved over it	1	0	0	0
Navigation bars exist at the top or the bottom of every page	1	0	0	0
Navigation links are displayed in the form of text (i.e. words)	3	0	0	0
Words used in navigation links are unambiguous	2	0	0	0
The site does not have advertising from over sites	2	0	0	0
Site map is available	2	0	0	0
The site does not have horizontal line that spreads over the full width of the browser	1	0	0	0
A list of FAQ (Frequently Asked Questions) is available	2	0	0	0

Performance

The site is available in 'text only' pages (i.e. with no graphics)	1	0	0	0
Homepage is less than 35 KB	3	0	0	0
Homepage is between 35 KB and 60 KB	2	0	0	0
Homepage loads within 8 seconds at 56 kbps www.websitegarage.com	3	0	0	0
Homepage loads in 9 to 16 seconds at 56 kbps www.websitegarage.com	1	0	0	0

Listing in Major Search Engines

The site can be found by a search on Yahoo! www.yahoo.com	1	0	0	0
The site can be found by a search on Excite www.excite.com	1	0	0	0
The site can be found by a search on AltaVista www.altavista.com	1	0	0	0
The site can be found by a search on MSN www.msn.com	1	0	0	0
The site can be found by a search on Google www.google.com	1	0	0	0
The site can be found by a search on Lycos www.lycos.com	1	0	0	0
The site can be found by a search on Ask Jeeves www.askjeeves.com	1	0	0	0

Name of organisation	Name of organisation	Name of organisation	Name of organisation	Name of organisation	Name of organisation	Name of organisation
URL of organisation	URL of organisation	URL of organisation	URL of organisation	URL of organisation	URL of organisation	URL of organisation

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e-Commerce Competitor Analysis

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Comparative e-Commerce Classification Framework for Measuring Competitive Advantage

Name of organisation	Name of organisation	Name of organisation	Name of organisation	Name of organisation	Name of organisation	Name of organisation
URL of organisation	URL of organisation	URL of organisation	URL of organisation	URL of organisation	URL of organisation	URL of organisation

A / D	Assigned Weight	A / D	Assigned Weight	A / D	Assigned Weight	A / D	Assigned Weight	A / D	Assigned Weight	A / D	Assigned Weight	A / D	Assigned Weight
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Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7
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Name of organisation	Name of organisation	Name of organisation	Name of organisation	Name of organisation	Name of organisation	Name of organisation
URL of organisation	URL of organisation	URL of organisation	URL of organisation	URL of organisation	URL of organisation	URL of organisation

A / D	Assigned Weight	A / D	Assigned Weight	A / D	Assigned Weight	A / D	Assigned Weight	A / D	Assigned Weight	A / D	Assigned Weight	A / D	Assigned Weight
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Comparative e-Commerce Classification Framework for Measuring Competitive Advantage

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Comparative e-Commerce Classification Framework for Measuring Competitive Advantage

Name of organisation		Name of organisation		Name of organisation		Name of organisation		Name of organisation		Name of organisation	
URL of organisation		URL of organisation		URL of organisation		URL of organisation		URL of organisation		URL of organisation	
A / D	Assigned Weight	A / D	Assigned Weight	A / D	Assigned Weight	A / D	Assigned Weight	A / D	Assigned Weight	A / D	Assigned Weight
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Comparative e-Commerce Classification Framework for Measuring Competitive Advantage

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Cheung Ming Lee (1 August 2001) University of Leeds 54

Comparative e-Commerce Classification Framework for Measuring Competitive Advantage

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Comparative e-Commerce Classification Framework for Measuring Competitive Advantage

SUMMARY OF RESULTS IN PERCENTAGES

Rank Position	Name of e-commerce	Overall Competitive Advantage	Level of Transaction Support Dimension				Customer / Company Relationship Dimension					Web Site Design Dimension			
			Pre-sale	Sale	Post-sale	Total	Language support	Corporate Information	Registration	Privacy & Feedback	Total	Usability & Navigability	Performance	Listing in Major Search Engines	Total
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	Name of organisation	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Prepared by Cheung Lee (ecommerce@cheunglee.co.uk)
www.cheunglee.co.uk

Final Release

Comparative e-Commerce Classification Framework for Measuring Competitive Advantage

MSc Project
University of Leeds

TOP 10 ANALYTICAL COMPARATIVE RESULTS

Assessed by:

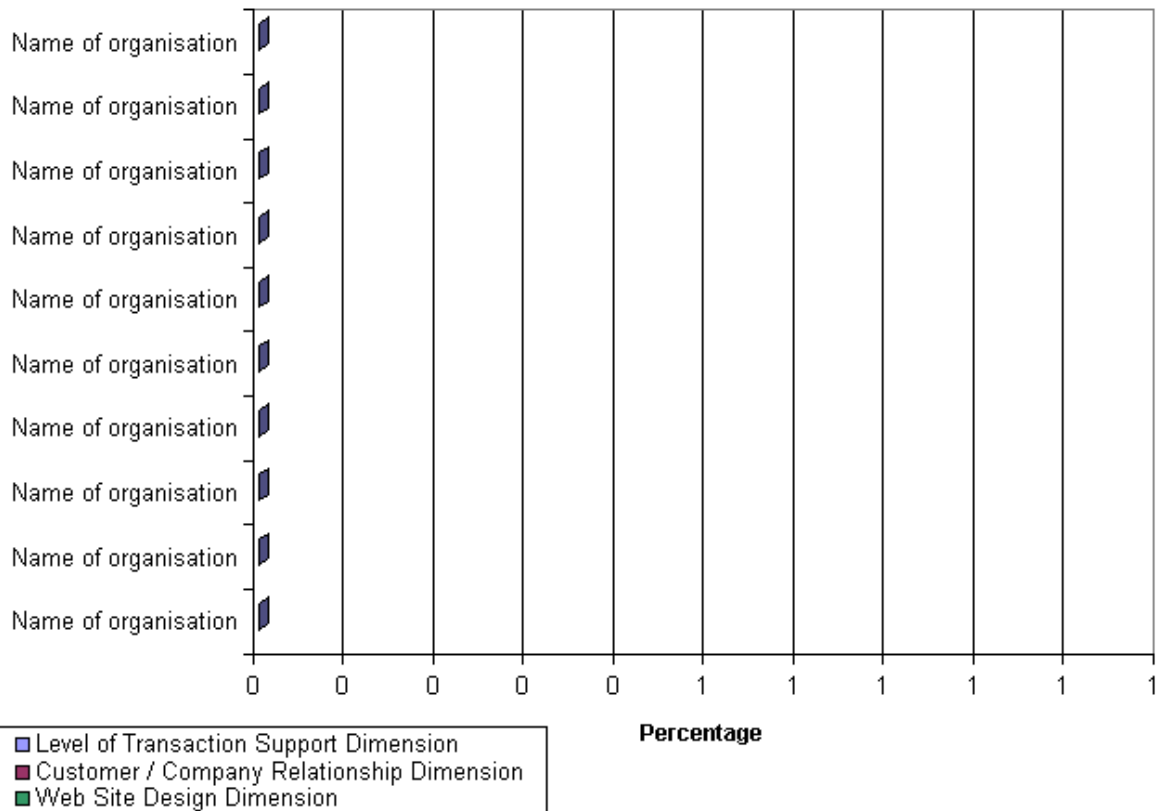|	Rank 1: Name of organisation	Rank 1: Name of organisation	Rank 1: Name of organisation	Rank 1: Name of organisation	Rank 1: Name of organisation	Rank 1: Name of organisation	Rank 1: Name of organisation	Rank 1: Name of organisation	Rank 1: Name of organisation	Rank 1: Name of organisation
Level of Transaction Support Dimension										
Pre-sale	0	0	0	0	0	0	0	0	0	0
Sale	0	0	0	0	0	0	0	0	0	0
Post-sale	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Customer / Company Relationship Dimension										
Language support	0	0	0	0	0	0	0	0	0	0
Corporate information	0	0	0	0	0	0	0	0	0	0
Registration	0	0	0	0	0	0	0	0	0	0
Privacy & Feedback	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Web Site Design Dimension										
Usability & Navigability	0	0	0	0	0	0	0	0	0	0
Performance	0	0	0	0	0	0	0	0	0	0
Search Engines	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
OVERALL PERCENTAGE	0	0	0	0	0	0	0	0	0	0

Prepared by Cheung Lee (ecommerce@cheunglee.co.uk)
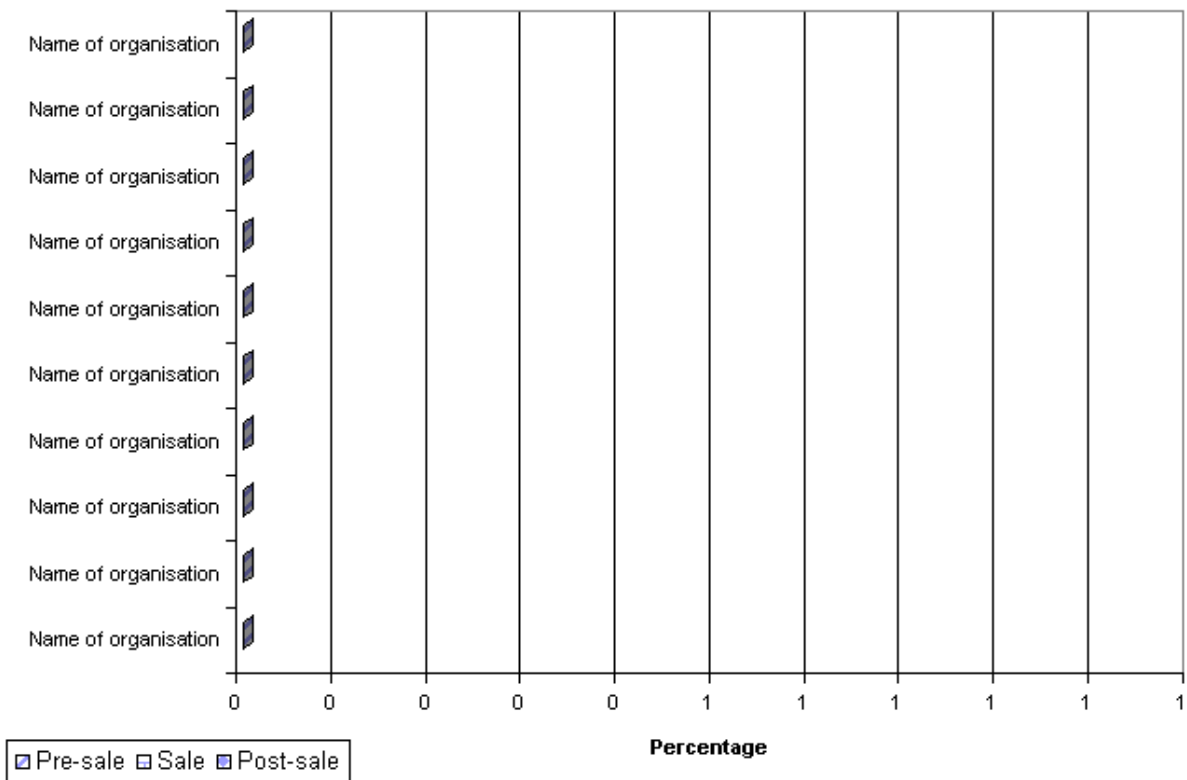www.cheunglee.co.uk

Final Release

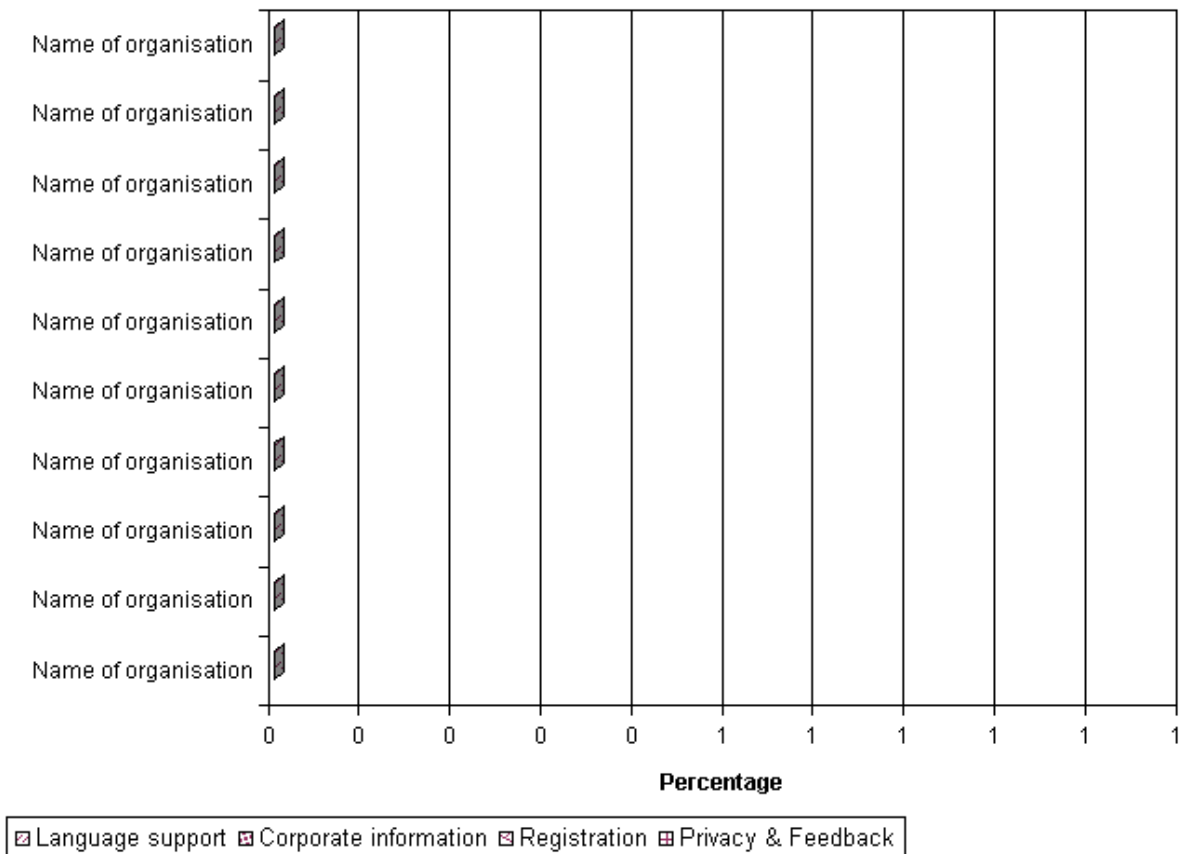Top 10 Analysis: Page 1 of 1

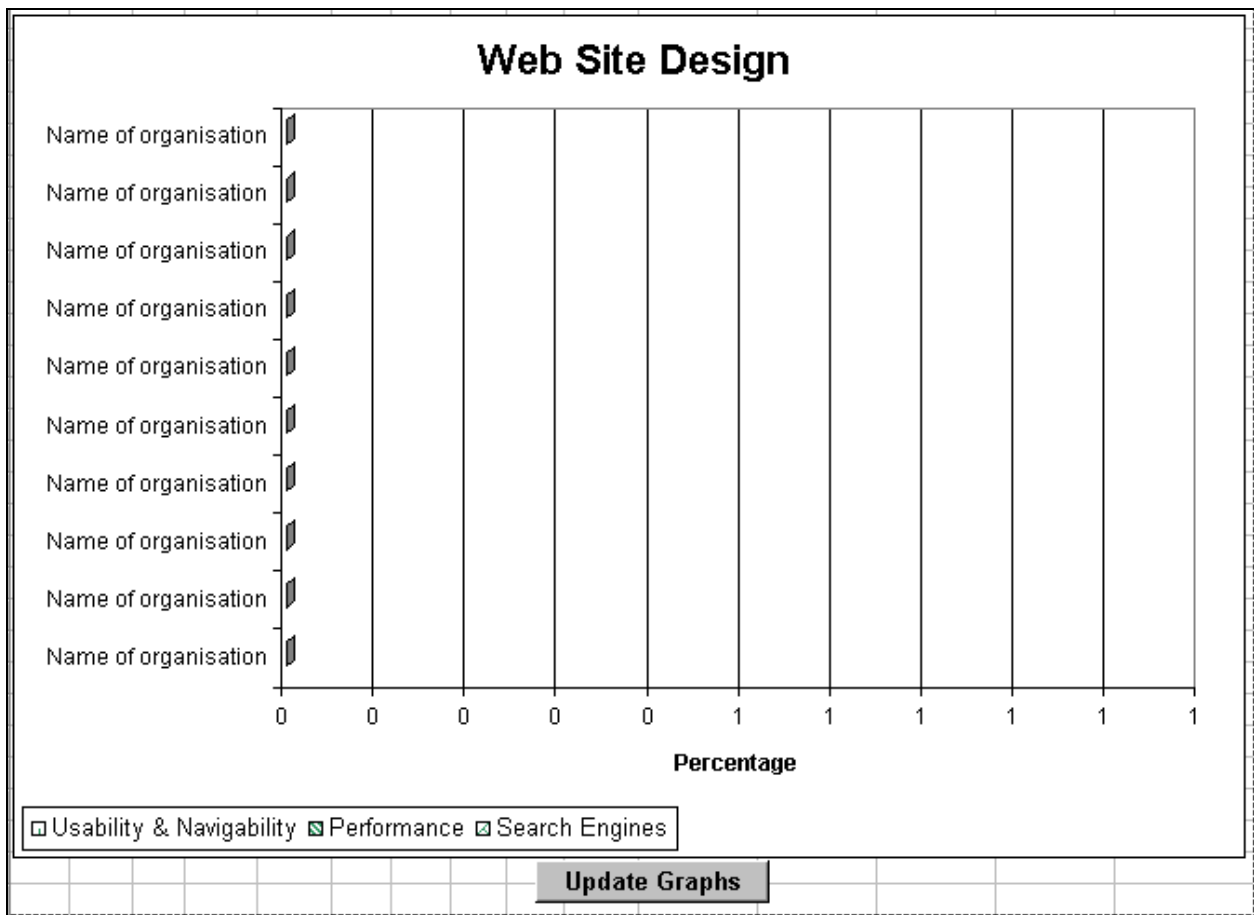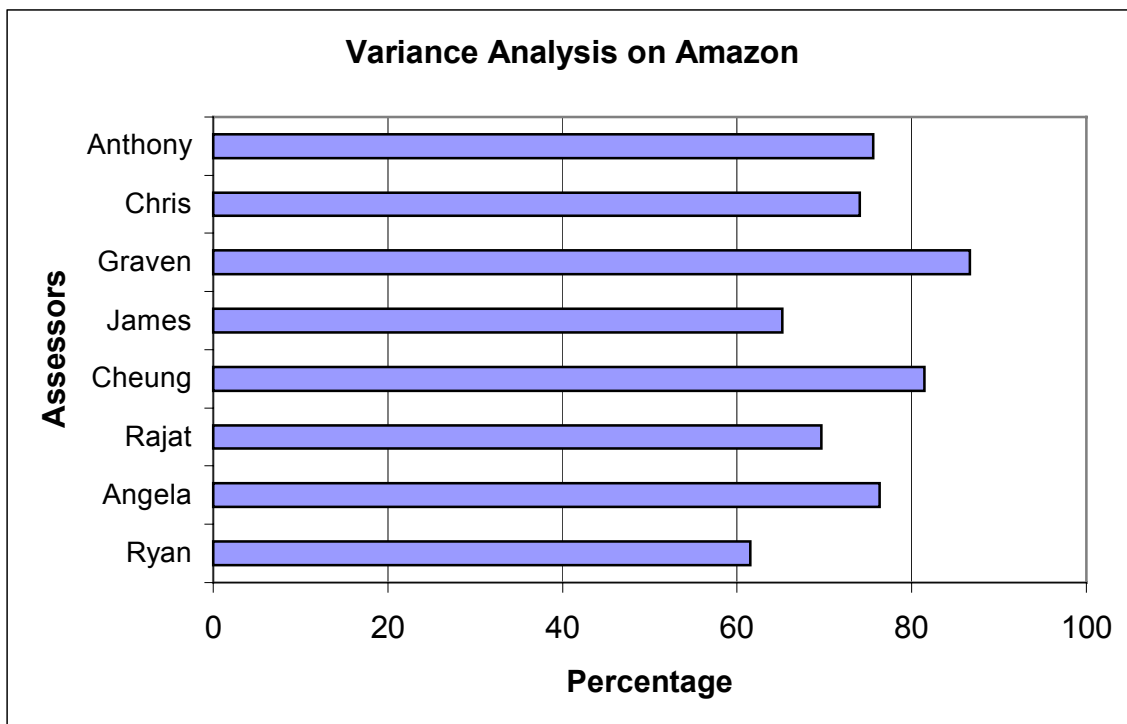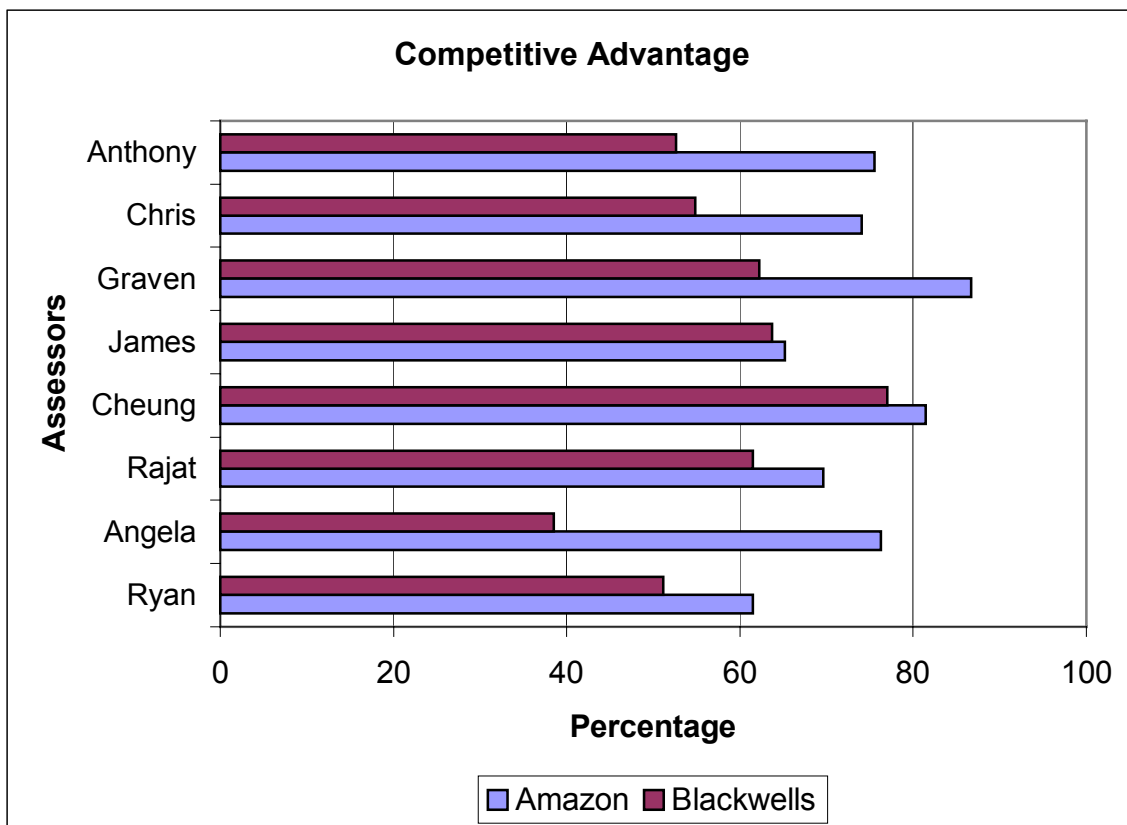**Update Graphs**

Competitive Advantage

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

0　　0　　0　　0　　0　　1　　1　　1　　1　　1　　1

Percentage

□ Level of Transaction Support Dimension
□ Customer / Company Relationship Dimension
□ Web Site Design Dimension

Level of Transaction Support

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

0　　0　　0　　0　　0　　1　　1　　1　　1　　1　　1

Percentage

☑ Pre-sale ☐ Sale ☑ Post-sale

Customer / Company Relationship

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

Name of organisation

0　　0　　0　　0　　0　　1　　1　　1　　1　　1　　1

Percentage

☑ Language support ☑ Corporate information ☑ Registration ⊞ Privacy & Feedback

Web Site Design

Appendix H: Results of application by MSc students

Competitive Advantage

Variance Analysis on Amazon

Variance Analysis on Blackwell's Bookshop
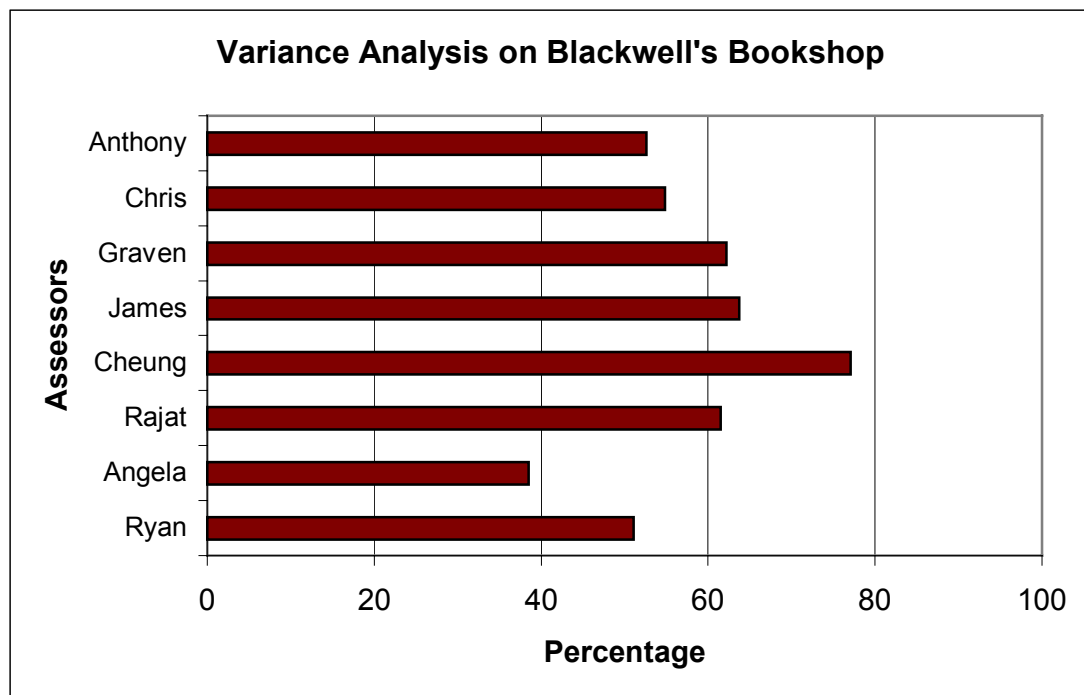
Appendix I: Feedback from the external firm: MB Locking

School of Computer Studies
University of Leeds

MSC PROJECT FEEDBACK FORM FROM MB LOCKING LOGISTICS GROUP LTD

Student:	Cheung Ming Lee
Programme of study:	MSc Information Systems
Title of project:	e-Commerce Competitor Analysis

Name of evaluator:	*RICHARD . GOLDBERG*
Position:	*DIRECTOR.*
Signature:	
Date:	*28 AUG 2001*

1. The results represent an accurate reflection of the e-commerce firms.

   ☐ Strongly agree
   ☑ Agree
   ☐ No comment
   ☐ Disagree
   ☐ Strongly disagree

2. The results are useful in measuring competitive advantage.

   ☐ Strongly agree
   ☑ Agree
   ☐ No comment
   ☐ Disagree
   ☐ Strongly disagree

Any other comments:

Information Good to point out wich area our Website needs to be Stronger.

Appendix J: Activity diagram of framework

List of e-commerce
web sites

Assign weights to
them all

Convert into
percentages

Rank the sites and
display the summary

Display the top 10
sites in a better
layout

Draw conclusion
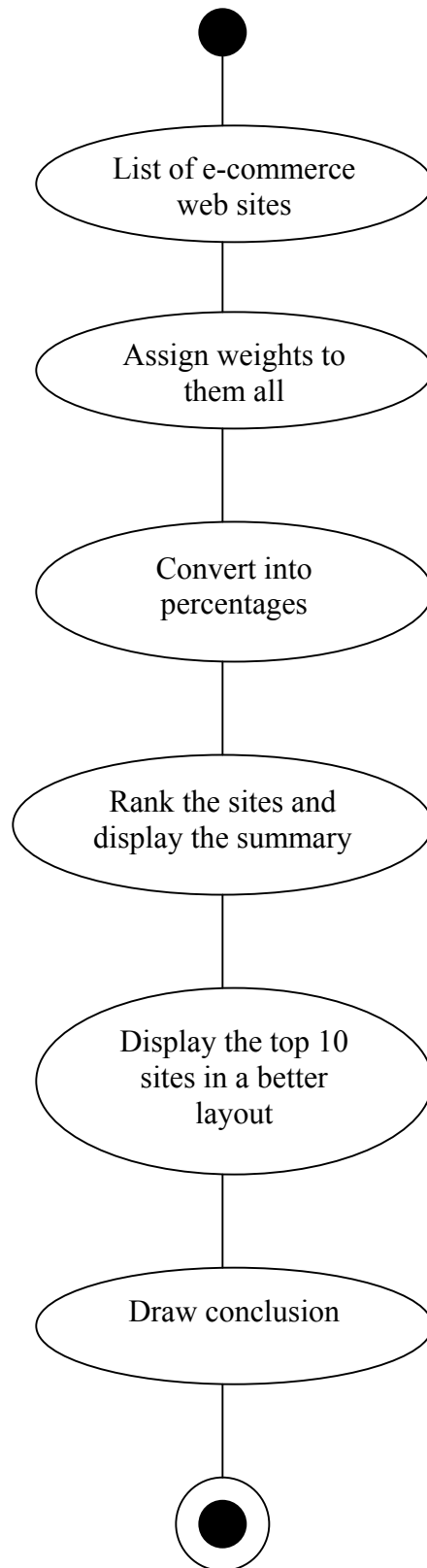
Appendix K: Discussion of other literature research and existing frameworks

The discussion of other literature research and existing frameworks is divided into a number of categories.

e-Commerce sophistication

Stobie et al's (1997) work is based around the complexity of e-commerce web sites. The framework is in a hierarchical form with levels that range from one to seven (see Figure K1). E-commerce web sites are classified under one of the seven levels and the higher the level an e-commerce web site is rated, the greater the complexity.

Level of complexity	Characteristics of the e-commerce web site
Level 1	Promotion of the e-business and / or its product range.
Level 2	Provides help / assistance for customers to choose between a selection of products or services. This may be in the form of a product comparison.
Level 3	Customers can place orders online.
Level 4	Payments may be made online.
Level 5	Delivery is fully automated.
Level 6	Follow up services or support.
Level 7	Customers are treated as individuals through personal customer intelligence.

(Figure K1: Stobie et al's level of e-commerce, 1997)

In general, does increasing complexity in any e-commerce web site provide the competitive advantage? It depends on the kind of complexity and the e-commerce environment in which the complexity is based. However, Stobie et al's (1997) work does provide the basis for which any e-commerce web sites should consider adopting, particularly in today's e-commerce market environment. Though, their work does have some flaws. For example, if an e-business has the requirements of level 6 but not level 4, then what level of classification would it fall under?

e-Commerce transaction process

Unlike the work of Stobie et al (1997), Schubert and Selz's (2001) work is much more inclusive and include a more comprehensive perspective on e-commerce web sites. They have come up with a web assessment model which consists of a set of criteria for assessing e-commerce web sites in general. Their work does not involve the study of competitive advantage in e-commerce and they have claimed that further research in this area is required. Also, their work is the "… first pass to stimulate discussion in the important area of developing metrics to evaluate web sites." (Schubert and Selz, 2001). The model is based on the three market transaction phases: information phase, agreement phase and settlement phase. The criteria for each phase are shown in Figure K2.

Phase	Criterion
Information	Good user interface; good structure of content; reasonable information quantity; apparent benefits from stored customer profile; good products/service combination possibilities; good availability/performance of the system; and cost benefits passed on to the customer.
Agreement	Adjustable customer profile; guided ordering according to profile; possibility of customised products; transparent and interactive integration of business rules; good implementation of security issues; and good contact possibilities with vendor.
Settlement	Easy selection of generic services; good integration of generic services; e-commerce application makes effective use of customer profile; good tracing and tracking; good IT integration; and convenient after sales support.

(Figure K2: Web assessment model, Schubert and Selz 2001)

It is clear that Schubert and Selz's (2001) work provides a comprehensive list of criteria for assessing e-commerce web sites. Although they have no justification in the area of competitive advantage, they provide some useful but limited insight into the design of the comparative e-commerce classification framework. This is demonstrated in section 3.2.1.

e-Commerce value
Bloch et al's (1996) work is the first seen so far that looks into the business value of e-commerce web sites. They have determined 10 components that add value and these include: product promotion; new sales channel; direct savings; time to market; customer services; brand image; technological and organisation learning; customer relations; new product capabilities; and new business models. It is apparent that some of these components have already been determined in the project classification framework, such as the measure of product promotion and customer services.

The customer services component is further accepted by Daly (2001) and Regan (2001). In particular, they have emphasized the importance of this component in today's e-commerce environment. Their studies have concluded that customer expectations are becoming higher all the time and many e-commerce organisations are struggling to meet the demands of their customers.

e-Commerce design
Unlike Schubert and Selz (2001), Gehrke and Turban (1999) have concentrated on the design of the user interface rather than the purchasing process in e-commerce. The area of design is commonly measured in three sets: usability, performance and security. Gehrke and Turban (1999) have further identified the need to establish some form of marketing and customer focus. Again, these measures have been taken into account in the determination of evaluation criteria for the project framework.

Furthermore, Jahng et al (2000) have determined three dimensions in their Congruence Theory and include: product, user and technology. The author shares the same line of view as Jahng et al (2000) whereby effective design comes from creating a good fit between the products/services on offer and the users of the site. As a result, the evaluation criteria are determined on the basis of whether they are good measures for the 'fit'.

Appendix L: Discussion of the approach

Information gathering phase

This phase began with a pilot evaluation on Amazon and Blackwell's Bookshop (see Appendix D). It is a subjective evaluation because it is purely based on the author's perspective of what elements found in the e-commerce web sites would constitute a competitive edge and thereby add value to the business. The analysis of this has drawn many ideas and techniques into the design of the classification framework.

However, there is a need for a more solid and wide spread view from a variety of experts in this field. This is absolutely necessary in order to substantiate and support the building blocks of the classification framework. The method adopted here is by conducting research into a number of secondary data sources, primarily in academic literature and text books, but also in a number of commercial magazines.

Data from both the pilot evaluation and literature research are put together and analysed. The purpose of the analysis is to determine whether the criteria constitute a competitive advantage in today's e-commerce environment. In other words, do they really add value to the business? This is fully discussed in section 4.

The information milestone may be defined as having all essential data from the appropriate sources collected and analysed. The analysis should conclude with a list of candidate criteria (see Appendix E) for the initial design of the classification framework.

Framework design phase

On inception of this phase, the list of candidate criteria are thoroughly thought through into how best to present them into a classification framework that is firstly simple and yet easy to use, and secondly provides highly objective and unbiased results. In order to produce a simple framework, the words used are carefully thought through in order to ensure that it is meaningful and easy to understand. For ease of use, the framework is implemented on a spreadsheet that is fully automated. Spreadsheet is the chosen format for implementation because it is simpler and quicker to implement and meets the requirement of the project objective. In addition, Microsoft Excel is the chosen tool for the spreadsheet because it is a Microsoft product and this product in particular has the largest user base in the world. This ensures greater compatibility and audience reach. In order to develop a framework that provides highly objective and unbiased results, the framework is refined over and over again. This ensures that the results would give an accurate reflection of how one e-commerce web site compares to another. In addition, weights are allocated to the criteria according to the strength or density in which they add value (see section 2.6).

This phase involved developing the first initial version of the framework, which is then refined through a number of iterations and resulted with a number of versions. Each version is an enhancement over the previous version. In the first iteration, version 1 of the framework is developed in the following steps:

- Pick out all possible criteria in the pilot study (see Appendix D) and literature research.
- Filter the list of candidate criteria that represent an effective measure of competitive advantage.
- Filter the above list that can be measured objectively, i.e. no ambiguity.
- Categorise the above list into the appropriate sections and sub-sections, i.e. dimensions and critical success factors.
- Assign weights to all criteria.

A full justification of the reasons behind the decisions in the above steps and in this section can be found in section 3.2 and 4. Version 1 is then applied on the same e-commerce web sites as used in the pilot study: Amazon and Blackwell's Bookshop. The results are compared to those obtained in the pilot study and the framework is further refined with the result of version 2. This version is then applied on a number of e-commerce web sites in the books, grocery and department store markets (see Appendix N, O and P for results).   The range of web sites applied include: Amazon; Blackwell's Bookshop; Hatchards Bookshop; Seekbooks; Internet Bookshop; Barnes and Noble, Tesco; Sainsbury's; Asda; Safeway; Debenhams; John Lewis; and Harrods.

Version 3 is developed to include the comparison of more e-commerce web sites over version 2. The enhancements in version 4 over version 3 include a neater layout of the user interface and a more extensive and thorough quantitative comparative results. The results from the application of version 4 in the e-commerce web sites in the books, department store and grocery markets are further analysed. The information from the analysis has contributed towards further refining the framework that has provided much more accurate results than before. The end result of this is the creation of version 5, which is also the pre-release version.
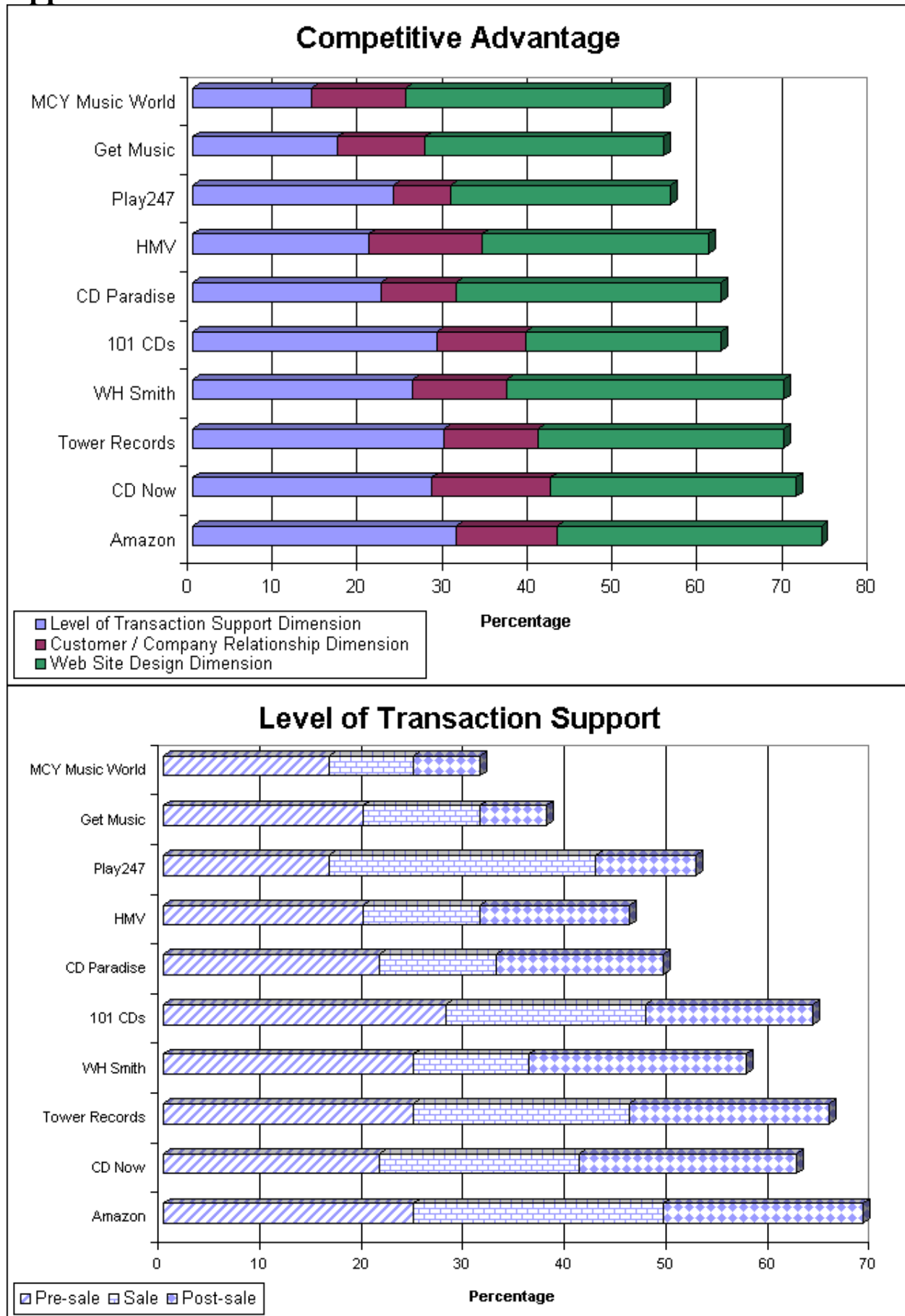
The pre-release milestone is defined as having a pre-release version of the framework. This version is the ultimately refined version that provides sound and accurate information to the assessor. The requirement to provide accurate comparative information is the requisite for this milestone. Information is said to be accurate when they provide a true reflection of the web sites.
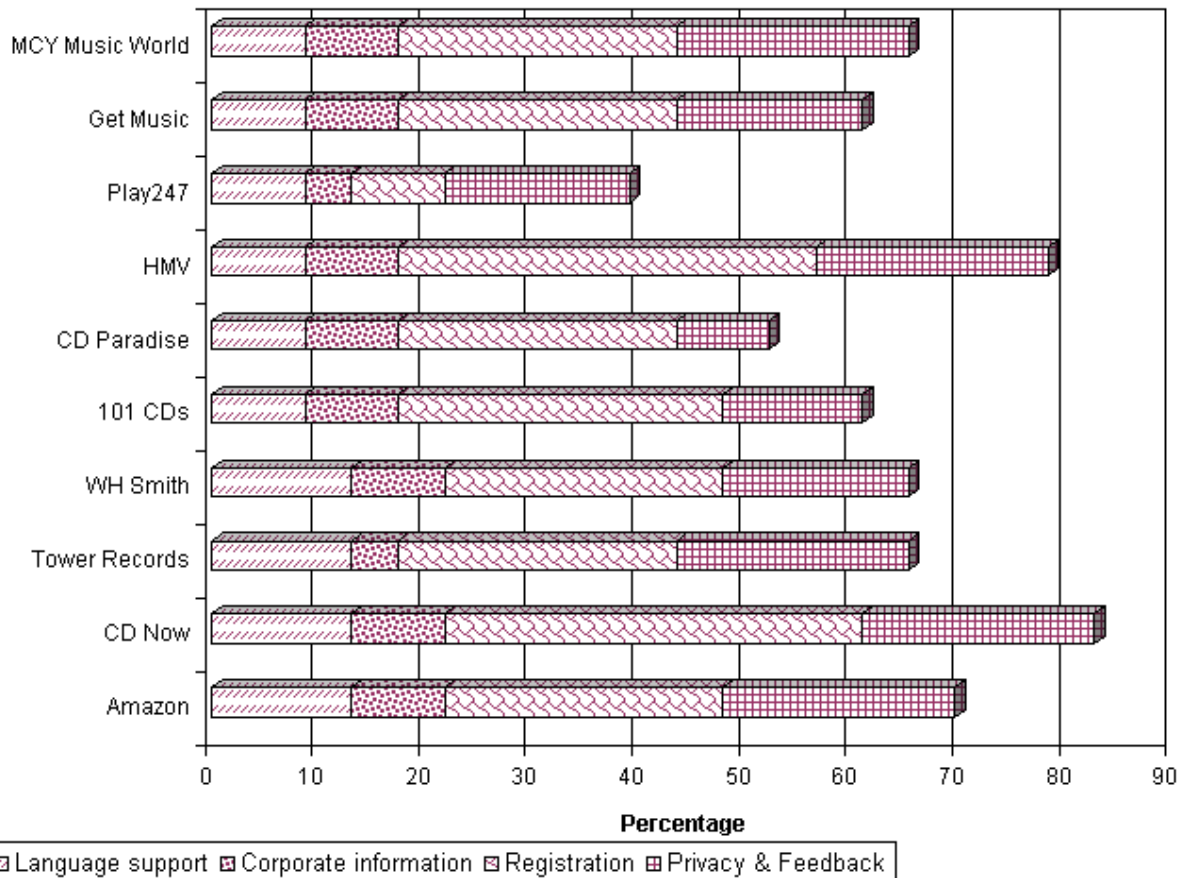
Testing phase
This phase is to ensure the comparative results provided by the framework are consistent when used by different assessors. The result of this would create a more reliable framework and also, it would place greater confidence for people to use it. In order to reliably test the framework, a number of MSc students in the School of Computing are invited to apply the framework on a number of pre-selected e-commerce web sites. The study is carried out in a test environment and the comparative results from each student are analysed for consistency (see section 5.1).

This leads the project into the final-release milestone, which may be defined as having a fully optimised framework that is useful, highly objective, unbiased and provides interesting results. The framework should be ready for final release to the wider computing audience.

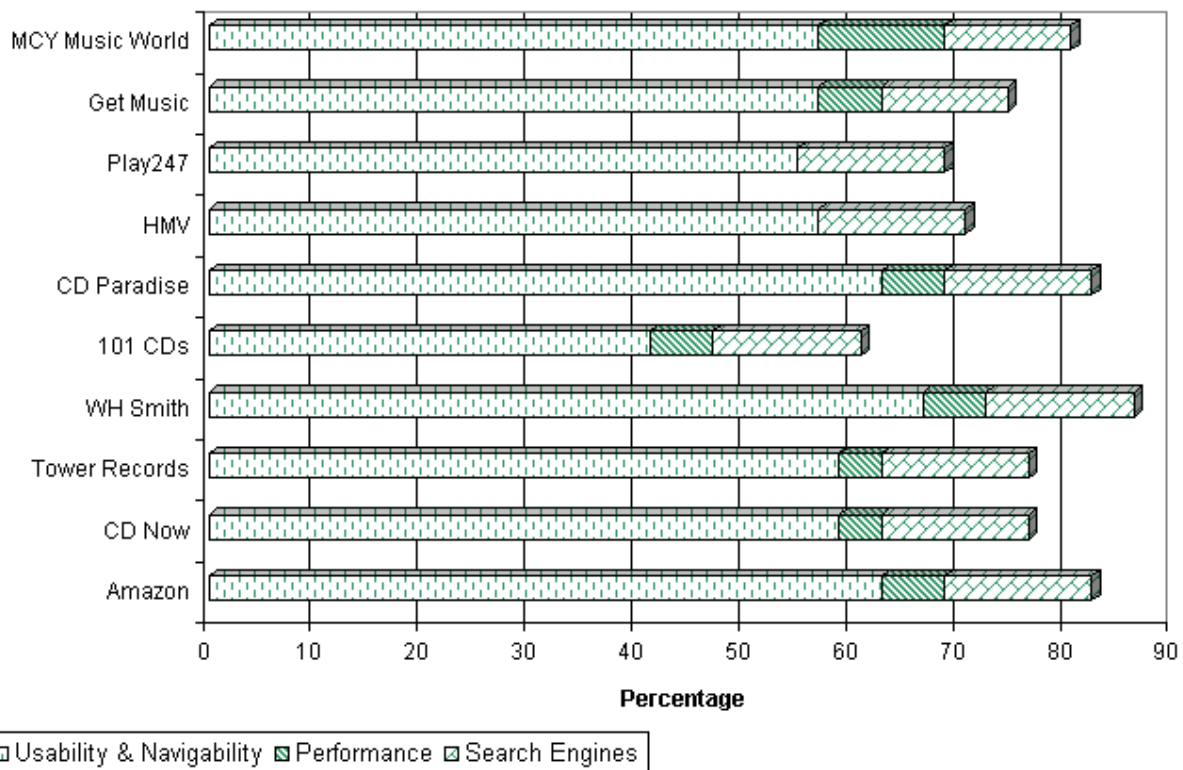# Appendix M: Results on the records/music market

Competitive Advantage

Legend:
- Level of Transaction Support Dimension
- Customer / Company Relationship Dimension
- Web Site Design Dimension

Level of Transaction Support

Legend: Pre-sale, Sale, Post-sale

Customer / Company Relationship

Legend: Language support, Corporate information, Registration, Privacy & Feedback

Web Site Design

Legend: Usability & Navigability, Performance, Search Engines

Appendix N: Results from early iterations of the framework on the books market

SUMMARY		Amazon Bookshop	Blackwells Bookshop	Hatchards Bookshop	Available Weights
Level of Transaction Support Dimension					
	Pre-sale	18	13	2	21
	Sale	18	16	7	24
	Post-sale	13	13	4	20
Total		49	42	13	65
Customer / Company Relationship Dimension		18	21	2	25
Web Site Design Dimension					
	Usability & Navigability	32	32	28	34
	Performance	4	2	2	7
	Listing in Major Search Engines	7	7	6	7
Total		43	41	36	48
TOTAL WEIGHTS FOR E-COMMERCE		110	104	51	138

SUMMARY		Seekbooks	Internet Bookshop	Barnes & Noble	Available Weights
Level of Transaction Support Dimension					
	Pre-sale	13	14	17	21
	Sale	16	10	18	24
	Post-sale	10	11	10	20
Total		39	35	45	65
Customer / Company Relationship Dimension		8	11	12	25
Web Site Design Dimension					
	Usability & Navigability	26	31	30	34
	Performance	2	2	2	7
	Listing in Major Search Engines	7	7	7	7
Total		35	40	39	48
TOTAL WEIGHTS FOR E-COMMERCE		82	86	96	138

Appendix O: Results from early iterations of the framework on the grocery market
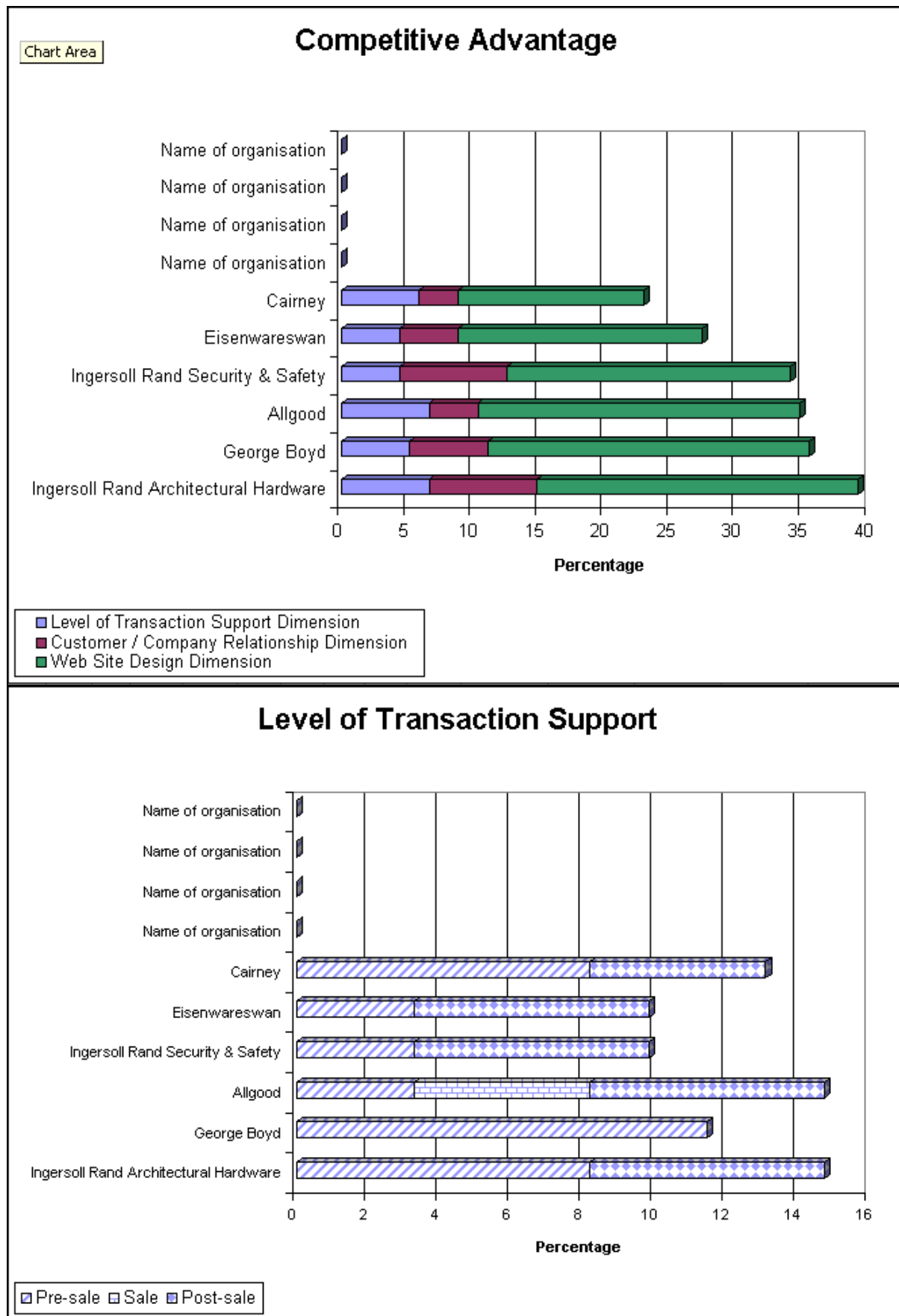
SUMMARY

	Tesco	Sainsbury's	Asda	Available Weights
Level of Transaction Support Dimension				
Pre-sale	9	11	8	21
Sale	5	7	8	24
Post-sale	12	6	12	20
Total	26	24	28	65
Customer / Company Relationship Dimension	6	12	10	25
Web Site Design Dimension				
Usability & Navigability	30	29	28	34
Performance	3	5	2	7
Listing in Major Search Engines	7	7	7	7
Total	40	41	37	48
TOTAL WEIGHTS FOR E-COMMERCE	72	77	75	138

SUMMARY

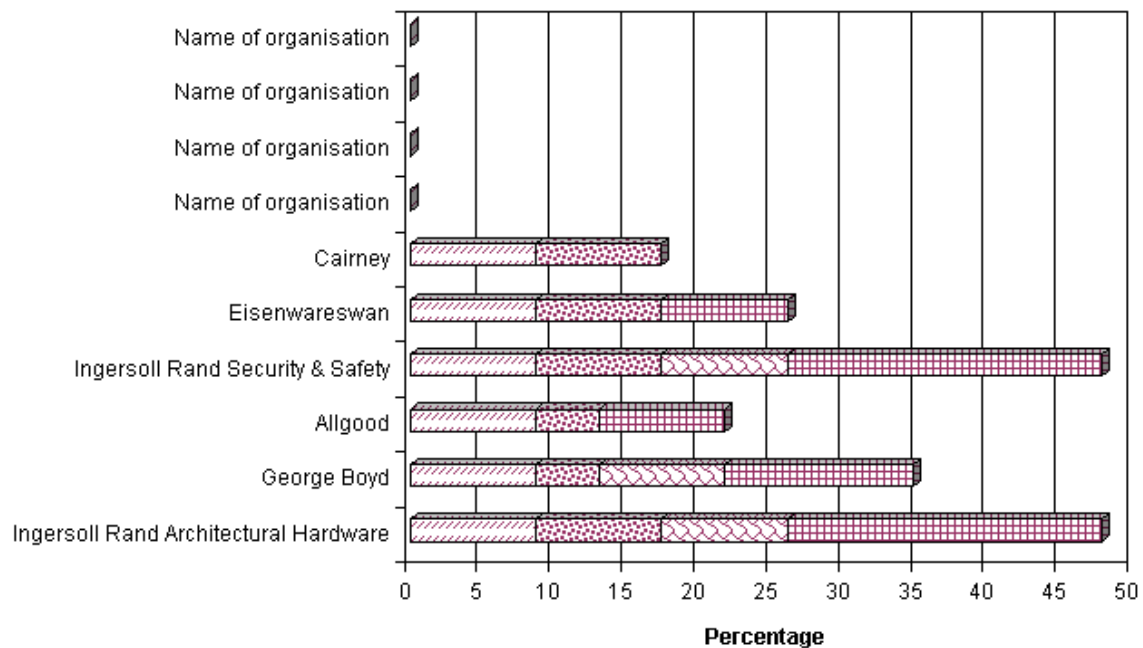|	Safeway	Name of e-Commerce 2	Name of e-Commerce 3	Available Weights
Level of Transaction Support Dimension				
Pre-sale	8	0	0	21
Sale	13	0	0	24
Post-sale	9	0	0	20
Total	30	0	0	65
Customer / Company Relationship Dimension	8	0	0	25
Web Site Design Dimension				
Usability & Navigability	29	0	0	34
Performance	0	0	0	7
Listing in Major Search Engines	7	0	0	7
Total	36	0	0	48
TOTAL WEIGHTS FOR E-COMMERCE	74	0	0	138

Appendix P: Results from early iterations of the framework on the department store market

SUMMARY		Debenhams	John Lewis	Harrods	Available Weights
Level of Transaction Support Dimension					
	Pre-sale	7	4	4	21
	Sale	5	5	2	24
	Post-sale	11	8	11	20
Total		23	17	17	65
Customer / Company Relationship Dimension		8	9	10	25
Web Site Design Dimension					
	Usability & Navigability	32	32	31	34
	Performance	2	5	5	7
	Listing in Major Search Engines	7	7	7	7
Total		41	44	43	48
TOTAL WEIGHTS FOR E-COMMERCE		72	70	70	138

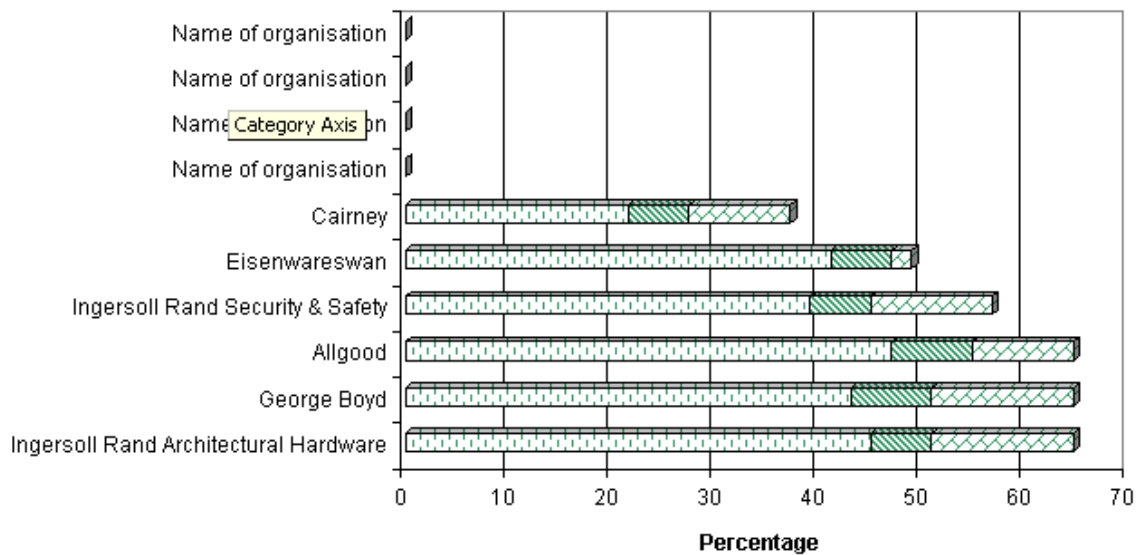## Appendix Q: Results on the case study of MB Locking Logistics Group Ltd

Customer / Company Relationship

Legend: ▨ Language support ▨ Corporate information ▨ Registration ▨ Privacy & Feedback

Web Site Design

Legend: ▨ Usability & Navigability ▨ Performance ▨ Search Engines