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A design science approach to developing and determining web site quality dimensions for the public accounting profession

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A Design Science Approach to Developing and Determining Web Site Quality Dimensions for the Public Accounting Profession

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At the Faculty of Business and Law
Edith Cowan University,
Western Australia

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April 2007

DECLARATION

I certify that this thesis does not incorporate, without acknowledgement, any material previously submitted for a degree or diploma in my institution of higher education and that, to the best of my knowledge and belief, it does not contain any material previously published or written by another person except where due reference is made in the text.

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USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.

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ABSTRACT

Public Accounting (PA) firms play an important role in both the local and the international business environment. Their accounting and business services functions cut across organisations, sectors and industries. Like other professional service firms, PA firms are becoming concerned about the World Wide Web (web) since the services they offer can be delivered via the web more efficiently (e.g. at a lower cost) and effectively (24/7). Thus there is a need to assess the quality of their web site.

This study developed an instrument for measuring PA web site quality based on an extensive literature review which identified the previously widely used "WebQuaL[1]" questionnaire but extended it to four quality dimensions (usability, information quality, interactivity and riskiness), supported by 24 research variables. Design Science, as conceptualised by Hevner et al. (2004), provided the guiding theory for the research. Hevner et al. (2004) proposed a framework consisting of seven guidelines to guide Information Systems (IS) researchers and practitioners on how to conduct, evaluate and present design science research. Two of the guidelines, namely design artefact and design evaluation, were followed in this study.

The study was executed in a controlled laboratory setting in which post-graduate university students, potential clients of PA firms, used the WebQual/PA questionnaire to evaluate the web sites of six leading professional accounting firms. One hundred-and-two students participated in the study. The data collected was analysed using quantitative analysis techniques to assess the reliability and validity of the instrument and quality of the PA web sites. Moderating factors were investigated in relation to their effect on the constructs and variables determining PA web site quality.

A number of conclusions can be drawn from the outcome of the study. They cover practical as well as theoretical aspects. First, the study provides PA practitioners with validated, reliable web site quality dimensions. With the emergence of online professional services, PA firms will increasingly seek to evaluate the quality of their

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[1] WebQual[TM]'s trademark is noted on the abstract and the [TM] has been omitted the other parts of the study

web sites. Second, this study adds to our understanding of WebQual, an instrument that has been widely used in IS research. WebQual/PA has its origins in WebQual version 4 but was refined to meet the needs of the PA sector. Third, the results of a relative assessment of quality provide valuable feedback to professional practices. The study shows that 'usability' was ranked highest by study participants of all the firms and indicates that this dimension is the most developed dimension within the PA sector. It is followed by 'information quality', 'Interactivity' and 'riskiness' are areas requiring attention as they seem to lag behind the others.

The study enabled recommendations to be made to improve the quality of web sites of the sector as well as the individual firms that were evaluated. In this way, the research adopted the philosophy of pragmatism in which knowledge is strongly linked to action. In the study, the knowledge gained is translated into action via recommendations made to each of the firms. Furthermore, since action permeates on knowledge, there have to be linkages "to an actable world" (Goldkhul, 2004, p. 18). A simple test for this is to be able to trace "concrete consequences" (p. 19). This will occur when PA firms take up the recommendations made in this study.

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CHAPTER ONE

INTRODUCTION

1.1 Background

Public Accounting (PA) firms play an important role in both local and global business operations. Their accounting services functions cut across organisations, sectors and industries. These are functions which cannot be avoided, especially with the legal requirement of disclosing business operations to stakeholders. However, PA firms nowadays act as business advisers to their clients, offering many types of business services. Like most service firms, PA firms are becoming concerned about the World Wide Web(web) since the services they offer can be delivered via the web more efficiently (e.g. at a lower cost) and effectively (24/7). Thus they have become part of what is referred to as e-commerce.

E-commerce refers to transacting electronically; that is buying and selling products, services, and information via electronic networks. Electronic business dates back as early as the 1970's in areas such as electronic fund transfer (EFT) and automated teller machines (ATM) (Roth, 1997), expanding further to electronic data interchange (EDI) (Stalling, 1990). The presence of the hypertext interfaces and the commercialisation of the internet have created an enabling environment for e-commerce to reach new levels (Berners-lee, 1999). Due to the ease, efficiency and cost effectiveness of internet business, a wide range of products and services are currently delivered to millions of users through the Web. Suppliers have benefited from e-commerce in a number of ways. These include: the opportunity to market their services globally at low cost, quick and convenient storage, retrieval, update and creation of services (Alam, Khatibi, Ismail, & Ahmad, 2005; Downing, 2006; Ratnasingam, 2002).

As the web becomes increasingly interactive and widely used, service organisations are particularly concerned with its capabilities because it offers them a unique opportunity to attract and retain customers locally and globally. In order to provide

consistent quality to clients through the web, organisations are paying attention to the clients' requirements and factors that affect their perceptions of quality and the satisfaction of services delivered via the web. Consequently, service firms have to be aware of clients' requirements and factors contributing to their satisfaction (Adam & Deans, 1999; Evans & King, 1999; Gounaris & Dimitriadis, 2003; Lindroos, 1997; Nah & Davis, 2002). They include

i)   Alternative service delivery can be sought easily and web clients have become sophisticated in their knowledge base.

ii)   The web becomes the first contact for a potential client; hence it is a source of company information and an input to decision making processes. As observed by Zhang & Dran (2002) "the web site functions as a 'window' through which users have their initial interaction with the organisation". (p11)

iii)   There is a wide range of services and clients are increasingly becoming impatient with sites that are difficult to use and understand.

iv)   Web use is on the increase as supplementary information for firms to build their image and obtain marketing data.

Barnes and Vidgen (2004b) assert that e-commerce has become increasingly competitive especially in regard to Business to Consumer (B2C) markets and "users expect to find the information they want, find it quickly and do so with little effort" (Nah & Davis, 2002 p98) This suggests that e-commerce requires consideration of factors which are beyond the mere creation of a presence in the e-marketplace. Therefore, for organisations to have a successful online presence, they need to strengthen client relationships and encourage continuous assessment of web site quality in order to positively differentiate themselves from their competitors (Chang, Kannan, & Whinston, 1998; Dutta & Segev, 2001; Zhang & Dran, 2002). This presents a major challenge for the suppliers of services. The providers need to understand their customers' requirements and develop a web presence to satisfy these requirements.

What is required includes the presence of an effective web site and an awareness of the web site quality at the firm level as well as industry level in a global environment. As noted by Liang and Lai (2002) web site quality has a positive correlation with the likelihood of customers visiting and transacting at web sites. It is therefore important to assess site effectiveness in relation to customer interaction and satisfaction. This implies that organisations should have a 'yard-stick' to assess the quality of their e-commerce offering, both at the firm and industry level. To be successful in the e-market place PA firms need a way of assessing the quality of their web site achieve increasing web site visitors, revenue and improving competitiveness.

A domain specific approach is necessary because PA firms are different from other service organisations with a web presence. PA firms are all-round business advisors, serving a wide range of customers (clients) by offering a variety of services. Some of the services offered by the PA firms include market intelligence, consulting, counselling, relationship networks, education and training in such areas as taxation, auditing, finance, business, systems analysis, design and implementation and accounting (Evans & Volery, 2000).

1.2   Significance of the Study

Despite existing studies reported in literature on assessing web site quality (Barnes & Vidgen, 2001a; 2001b; Eschenfelder, Beachboard, McClure, & Wyman, 1997; Gounaris & Dimitriadis, 2003) it is still pertinent that a study be conducted to determine the key dimensions of PA web site quality for reasons outlined earlier. There is a need to determine if existing WebQual instruments can sufficiently assess the quality of PA firms' web sites or if a new or modified instrument may need to be developed. It is also necessary to test the instrument within this sector. This study focuses on these activities.

The reason for selecting the PA sector is three folds: first, WebQual is a sector specific instrument as it has been applied across a number of sectors as discussed later. Second, WebQual has not been applied to the PA sector, an important professional service sector. Third, the researcher is an accountant with a particular

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interest in what is happening in the accounting profession. The findings of this study will therefore add to existing research and contribute to PA firms by:

- Determining the web site quality dimensions applicable to PA sector.

- Conducting research into the current levels of web site quality.

- Potentially assisting professional firms to improve their web business offerings and enhance management ability to exploit the potential of the Internet.

In addition, the study extends the existing WebQual instrument and provides a base for further research where the instrument can be applied to other professional service sectors and/or the same sector over a period of time

1.3   The Purpose of the Study

The field of professional accounting has increased in importance because of what seems to be ever increasing complexity of tax laws and accounting regulations, the growth and sophistication of corporate activities and the presence of online servicing of clients. As a result, contemporary PA firms are not only concerned with the ascertainment and reporting of financial positions of their clients but also offer such services as consulting, counselling, relationship networking, education, and training (Evans & Volery, 2000). In the electronic environment, clients seek to find a quick, reliable and efficient method of sourcing for these 'additional' services. At the same time, PA firms are constantly on their 'toes' in order to maintain a competitive advantage; that is to expand the services they provide and to maintain and increase their market share (Downing, 2006). E-commerce via the web provides an opportunity for both PA firms and the clients to fill the 'sourcing gap'.

The growth of e-commerce has meant that PA firms with web sites face challenges such as getting people to visit initially (unique visitors), making them stay at the site (stickiness) and encouraging repeat visits (loyalty) (Dholakia, Zhao, Dholakia, & Fortin, 2004). A 'quality' web site will save valuable customer/client time and facilitate revisits with a possibility of initiating or concluding a transaction. Existing instruments have successfully been applied to various sectors and organisations such as the auction, bookshop and airline industry (Barnes & Vidgen, 2001b; 2001c;

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Shchiglik & Barnes, 2003). An important characteristic of these studies is that they have been developed from the customer's viewpoint and/or used in B2C environments. Some of the studies focus on specific aspects of the web site (Gounaris & Dimitriadis, 2003) while other studies focus on specific sectors (Barnes & Vidgen, 2001b; 2001c; Shchiglik & Barnes, 2003) whose results cannot be generalised to the PA sector, but useful in informing other sectors.

As an extension of existing domain specific instruments, this study aims at developing an instrument for the PA sector. Considering the range of service offered by PA firms and the possibility of offering these services online, it is necessary and valuable to develop and test a web site quality evaluation instrument whose outcome is useful to 'owners' of these web sites.

The specific aims of this study are therefore to:

i) Determine web site quality dimensions for PA firms and develop a domain specific instrument based on refinement of the existing WebQual instrument

ii) Apply the instrument by PA clients (using students as surrogates of clients) against PA web sites

iii) Provide recommendation for the sector and individual firms regarding the web site quality using the results of evaluation.

The problem to be addressed by this study is mainly that web site quality dimensions for the PA sector are largely lacking. Further-more there is lack of an appropriate model that supports the research approach that can be used to evaluate PA web sites.

The expected outcomes namely a Web site quality evaluation instrument and the perceived web site quality of PA firms contributes both to theory and practice in this area.

1.4 Organisation of the Thesis

Chapter one sets the scene for the study. The reader is oriented to the significance, purpose, and organisation of the thesis. The chapter further provides some background to put the study in context. This research deals with the quality

evaluation of PA web sites, where the web site quality dimensions are determined, developed and applied for PA firms. The quality evaluation of the web site is carried out from the perception of the client.

Chapter two comprises the literature review of web site quality and provides a brief explanation of web site quality dimensions and evaluation before discussing the evolution of the WebQual instrument. As this study deals with the services offered by PA firms via the web, the nature of online accounting services is revealed. Based on design science premises, the chapter explains the theoretical framework which shows how the seven research guidelines proposed by Hevner, March, & Park (2004) are applied in this study. The final section examines the four dimensions of the web site quality evaluation instrument used in the study.

The research methodology applied to the study is outlined in Chapter three. Various philosophical perspectives of research are discussed as well as the research approach used in this study. After explaining the rationale for using the experimentation method, the research design of the study is described. This includes the laboratory experiment design, sample design (web sites and surrogate clients) and conduct of the study.

Chapter four deals with the development of the instrument, where four dimensions of web site quality are determined using various variables. The instrument development process is described in detail and includes refining web site quality constructs, the development of variables for each construct, questionnaire design, testing and refining the questionnaire.

Chapter five outlines the analysis of the laboratory experimentation data. The chapter starts with the demographic data of the participants, followed by a detailed determination of validity and reliability. Assessment of web site quality is conducted for dimensions and variables established for the public accounting sector as well as for the individual firms.

Chapter six provides a discussion of the experiment findings. This chapter discusses the PA web site quality evaluation instrument, assessment of the perceived quality of web site of the PA sector and the six PA firms. Outcomes of this study are discussed and integrated with supporting literature and put into perspective to support the

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recommendations for the public accounting sector as well as the PA firms. The recommendations are aimed at improving the online service offerings by the PA firms.

The last chapter offers conclusion on the findings and presents the revised theoretical framework of the study. The significance and limitation of the study and opportunities for future research are also covered.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the existing literature on web site quality evaluation models, marketing of services, online business services and accounting professional services. It examines existing web site quality measures, instruments and practices in order to identify those that may be applicable to the evaluation of the quality of web sites belonging to PA firms. The literature review shows that variety of web site quality dimensions are used to evaluate web site quality by various evaluators in diverse sectors. In addition, the development of a web site quality evaluation instrument for PA firms is carried out using design science as a lens.

2.2 Web Site Quality

Although some efforts have been made to define quality in the context of the Internet, Aladwani & Palvia (2002) noted that web quality concept remains underdeveloped and/or undefined. The existing literature on web site quality can be classified into three categories (Aladwani & Palvia, 2002; Shchiglik & Barnes, 2003).

1. Literature discussing focused instruments. These are instruments which capture part of the web site quality such as usability. These instruments can be useful when a specific area of quality is the main focus or interest.

2. There are studies that propose untested instruments. These proposed instruments lack rigor in measuring web site quality for example Bell & Tang (1998) put forward a quality instrument that does not disclose any form of methodology or validity testing. However, these are useful when a general view of web site quality is sought.

3. Some literature outlines the normative guidelines. These are guidelines that provide direction to web site designers, for example w3c (www.w3c.org), and they can be applied at the design level of the web site.

Web site quality has been defined in terms of the various dimensions and only few studies have clearly defined web site quality. For instance, Aladwani and Palvia (2002) defined perceived web quality "as user's evaluation of a web site's features meeting users' needs and reflecting overall excellence of the web sites" (p470). Recent studies have demonstrated a more rigorous approach to web site quality evaluation and resulted in a variety of web site quality dimensions. These are discussed below.

2.2.1 Web Site Quality Dimensions

There appears to be lack of literature on the quality of web site (Gounaris & Dimitriadis, 2003) particularly in sectors requiring domain specific instruments like the public accounting sector. Further-more studies have been undertaken which focus on specific aspects of web sites. As noted by Aladwani & Palvia (2002) "Current research on web quality seems to pay less attention to construct identification and measurement efforts. Only limited academic research exists, but it is fragmented and usually only discusses the meaning of some aspects of web quality" (p467). Examples of these studies include a pilot study conducted by Evans and King (1999) which used five dimensions of quality, namely home page design, overall site design and performance, text content, audio-visual elements, and interaction and involvement as they apply to business-to-business sites. A similar study examined five dimensions of quality namely interactivity, navigation, functionality, usability, efficiency and reliability (Bauer & Scharl, 2000). A different approach was used by Chen & Wells (1999), which measured consumers' attitudes towards online advertising by students and identified three main dimensions of quality namely entertainment, informativeness and organisation. Another model comprising four quality drivers namely convenience, merchandising, site design and financial security has been suggested to measure e-satisfaction in relation to e-shops (Szymanski & Hise, 2000).

More recently, based on the Technology Acceptance Model (TAM), the performance and quality dimensions of web sites included information quality, system quality, use quality, playfulness, response time, system availability, perceived usefulness and ease of use (Lin & Lu, 2000; Moon & Kim, 2001). While using web site portals, quality dimensions were identified as customer care and risk reduction benefits, information benefits and interaction facilitation benefits (Gounaris & Dimitriadis, 2003). Research on web site quality evaluation should focus on specific dimensions of web site quality which will be reflected by the benefits sought by the users (Gounaris & Dimitriadis, 2003) and the purpose of the site (Evans & King, 1999).

Service dimensions were often established through the Servqual model first developed by Parasuraman, Zeithaml and Berry (1985). Their research showed that consumers evaluate perceived quality of services using ten dimensions. These dimensions were later reduced to five namely tangibility, reliability, responsiveness, assurance and empathy (Parasuraman, Zeithaml, & Berry, 1988). Researchers have argued that Servqual has limitations but despite the criticisms Servqual has been useful in the evaluation of service quality of the IS function but not the web.

The WebQual model adapted the Servqual model and applied it in different domains resulting in four versions. This involved quality workshops and application in sectors dealing with homogenous products or services. Different versions of WebQual indicate different quality dimensions (Barnes & Vidgen, 2002). For example, the fourth version (WebQual 4.0) consists of three dimensions of quality namely usability, information and interaction. Another approach to WebQual yielded 12 dimensions of web site quality measure, namely informational fit-to-task, tailored communication, trust, response time, design, ease of understanding, intuitive operations, visual appeal, innovativeness, consistent image, online completeness, and relative advantage (Loiacono, Watson, & Goodhue, 2004). Song & Zinkhan (2004), with the aim of understanding what contributes to a satisfied or dissatisfied online customer, used a model with seven quality dimensions, namely interactivity, usability, reliability, content quality, entertainment, privacy and security, and merchant brand image.

The following can be concluded from the foregoing. First, the literature review confirms the lack of a 'universal perception' of web site quality and indicates that the

perceived dimensions of quality vary across industries (Babakus, Pedrick, & Richardson, 1995; Gounaris & Dimitriadis, 2003; Homburg & Rudolph, 2001; Teas, 1993). Second, the majority of the suggested web site quality dimensions are more relevant to web designers than to web users (Liu & Arnett, 2000). Third, while some instruments or web site quality dimensions are comprehensive they are domain specific and may require refinement for application in other sectors.

2.2.2 Web Site Quality Evaluation Approaches

There has been various approach of evaluating web site quality (Cunliffe, 2000). The World Best Web site awards (www.worldbestwebsite.com) provides a list of criteria that are used by selected judges to identify exemplary web sites. However, it has been argued that such rating systems do not have clarity in criteria used and associated ranking methodology and they do not represent a customer's perspectives (Shchiglik & Barnes, 2003). In this study, web site quality is evaluated from a client's perspective. For this reason there are three main approaches to web site quality evaluation that are of interest: machine approach, expert as judge, and customer judgement (Loiacono et al., 2004).

Machine or automatic approach. In this approach the web site characteristics are recorded using software. The key qualities are enumerated automatically so that no user or human opinion is sought. While this method provides a quick way of evaluating a web site it is limited because it lacks data on the perceptions of those who visit the web, a means by which domain specific knowledge is increased (Bauer & Scharl, 2000).

Expert as judge. This approach relies on an expert, who identifies features for categorising the web sites. Various cases have applied this method. For example, criteria were developed by experts to evaluate Government web sites on the basis of information content and ease-of-use (Wyman, McClure, Beachboard, & Eschenfelder, 1997) and thereafter applied by other experts (Eschenfelder et al., 1997; Smith, 2001).

Customer judgement. This approach takes the point of view of the customer and establishes web quality from the customer's perspective. However, while this approach is desirable it is still undergoing ongoing refinement (Loiacono et al.,

2004). Furthermore, similar studies have used customer perspective (Barnes & Vidgen, 2002; 2001b; Jarvenpaa, Tractinsky, & Vitale, 2000; Klein, 2002). In addition Shchiglik & Barnes, (2003) pointed out that the best judge of the quality is the customer. This study has utilised the customer judgement perspective to evaluate PA web sites.

2.2.3   Web Site Quality Evaluation Methods

Various methods are used to determine the quality of a web site. They include competitive analysis, scenario, inspection, log analysis and online questionnaire (Cunliffe, 2000). A brief explanation for each method is presented below.

Competitive analysis. This involves an analysis of existing web sites for firms which are similar and/or having similar business objective or goals. The method helps to determine perceived strengths and weaknesses as well as the assist in determination of required or basic features for a particular category of organisations. As noted by Nielsen (1993) and supported by Cunliffe (2000) and Shchiglik & Barnes (2003), the analysis should be done by users to get the best results. Competitive analysis was chosen for this study due to the relative ease of conducting the analysis in other words PA web sites are publicly accessible.

Scenarios: This is a method which uses various scenarios involving tasks to be performed by web site users. Cunliffe (2000) noted that it is frequently unfeasible to involve actual users and suggests that

> "One alternative to using real users is to use those people who are available to simulate the actions of real users. These 'proxy users' are unlikely to be representative of the intended user population and so will need to be guided by some form of user scenarios" (p302).

In the current study, the 'proxy users' were the post-graduate students undertaking business studies. Scenarios were created to help the participants evaluate the quality of PA web sites.

Inspection methods. This method does not require either the users or surrogate users. It involves the setting of predetermined criteria and comparing it with what the site portrays. It is mostly used by expert judges. This method is beyond the scope of this study and hence not used.

Log analysis. This method involves an automatic collection and analysis of access logs. Although this method can help to build models of user behaviour and monitor actual site use, the current study was more interested in the perceived quality of the web site as opposed to the usage behaviour of users.

Online questionnaires. This is where information is captured about online user behaviour which may include technical, demographic, user satisfaction and/or visit information (Cunliffe, 2000). A major feature of online questionnaire is the self selecting nature of the sample. While this may pose concern as to whether real users (or surrogate users) responded to the online questionnaire (Day, 1997), large proportion of respondent may overcome this concern. Due to the limited time factor of the study, the method was deemed inapplicable.

Figure 2.1: web site evaluation approaches and methods

Possible approaches

Possible methods
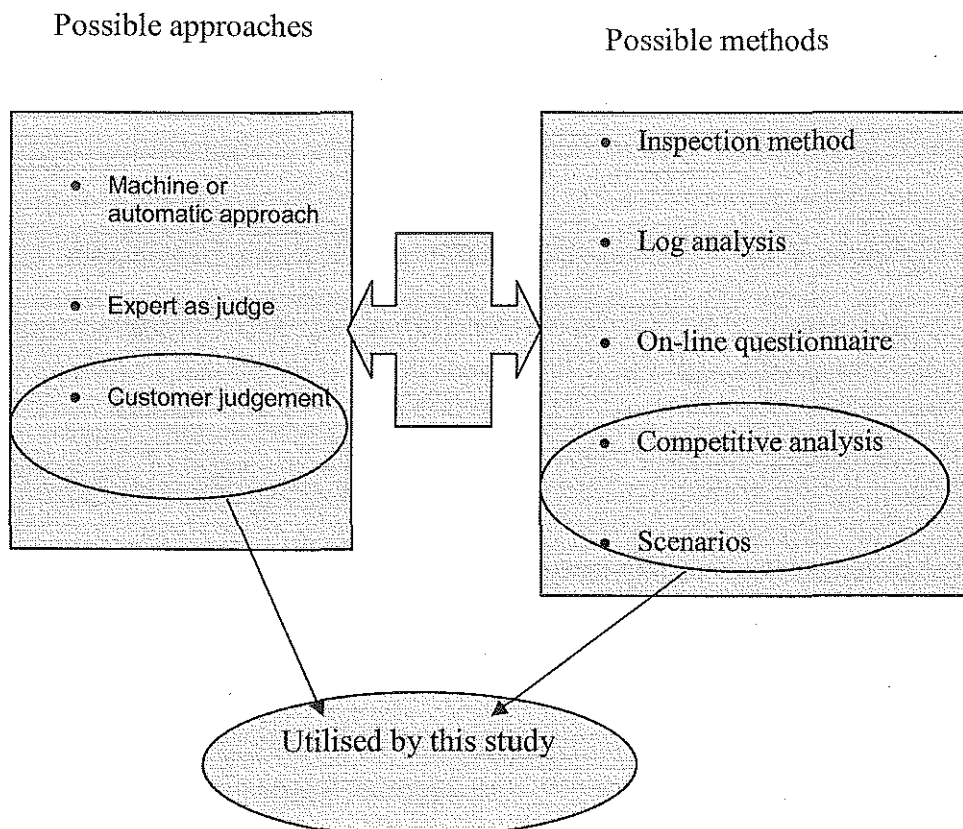
As shown in figure 2.1 and discussed above this study utilised scenario (i.e. in a small "scene setting" manner prior to start of laboratory sessions) and competitive analysis (i.e. students compared the competitive offerings of different firms). The

study targeted post-graduate students as surrogate clients (customers) of the PA firms. Each participant was asked to evaluate six web sites as if they were acting as potential clients.

2.3   WebQual Evolution

WebQual a well-known instrument used for assessing the quality of web sites across and within organisations. WebQual has evolved over the last five years and different versions have been developed over time (Barnes & Vidgen, 2002). These are discussed below:

WebQual 1.0. The first version of the WebQual instrument (WebQual 1.0) was developed in 1998 from the results of a quality workshop involving customers. It concentrated on information quality and it was used to evaluate a business school web site (Barnes & Vidgen, 2000). The workshop was supplemented with a review of literature on IS quality (e.g. Delone & McLean, 1992), and literature on web site evolution (e.g. Abels, White, & Hahn, 1997). The initial WebQual instrument was iteratively refined using pilot questionnaire, after which it was released to the larger population (Barnes & Vidgen, 2001b). This version utilised 24 questions comprising measures of quality, where respondents rated each business school web site using the 24 measures, indicating how important each was to them. Based on reliability analysis, questions were clustered into four major dimensions, namely ease of use, experience, information and communication and integration (Barnes & Vidgen, 2000).

WebQual 2.0. It was noted that when applying WebQual 1.0, the interaction perspective of quality was largely missing (Barnes & Vidgen, 2002). To cater for this omission and using WebQual 1.0 as a base, WebQual 2.0 concentrated on interaction quality in assessing web site information quality. The interaction aspect extended WebQual to become relevant as a service quality instrument. Based on ServQual (Parasuraman, 1995) service quality is evaluated by comparing the match between a service level delivery and customer expectations (lewis & Brooms, 1983). It is important to note that there is a service element involved in the delivery of any product, whether tangible or intangible. This essentially means, in addition to cost,

there are other factors contributing to competitiveness and hence influencing customer decision.

The initial development of ServQual (Parasuraman et al., 1985) identified ten dimensions of quality, which later were reduced to five (Parasuraman et al., 1988). The ServQual instrument assesses the gap between the service that is expected by consumers and their perceptions of the service that is actually delivered. According to Pitt Watson, & Kavan (1995), ServQual is an appropriate instrument for assessing the service quality of the IS function hence Barnes and Vidgen (2001c) used the basic ServQual instruments. Service quality formed the foundation for the development of WebQual 2.0 by removing redundant questions and areas of overlap (ServQual and WebQual 1.0). WebQual 2.0 was applied where students were asked to evaluate online U.K. bookshops (Barnes & Vidgen, 2001c).

WebQual 3.0. WebQual 3.0 gives a greater integrated view of web sites by combining the features of WebQual 1.0 and 2.0. While WebQual 1.0 was strong in information quality, WebQual 2.0 lost some of the features of WebQual 1.0 as the instrument emphasized interactive quality. WebQual 3.0 combines their qualities into three distinct areas: site quality, information quality and interaction quality. It was tested in the domain of online auctions (Barnes & Vidgen, 2001b), with additional context specific questions being added.

WebQual 4.0. WebQual 4.0 had its roots in WebQual 3. Replacing site quality with usability, WebQual 4.0 emphasises the user and their perceptions rather than the designer and the site as simply a context-free software artefact. Usability draws from the literature in the field of human computer interaction (Davis, 1989; 1993; Nielsen, 1993) as applied to the web (Nielsen, 1999; 2000; Spool, Scanlon, Schroeder, Snyder, & Deangelo, 1999). The main concern of usability is how a user perceives and interacts with a web site as reflected by usability questions. Barnes & Vidgen, (2002) identified five factors based on customer perceptions of quality. These are usability, design, information, trust and empathy. They map with WebQual 4.0's three dimensions as follows: usability, (usability and design), information quality (information) and service interaction (trust and empathy). They further noted that organisations can address the three dimensions through web site design, web content management and process integration respectively. Barnes & Vidgen (2000), while

expounding on web site quality, observed that although customers (users) might drive quality, there are other perspectives to be considered, namely supplier perspectives, conformance to specification, general constraints and competitive pressure. The following diagram presents the evolution of WebQual.
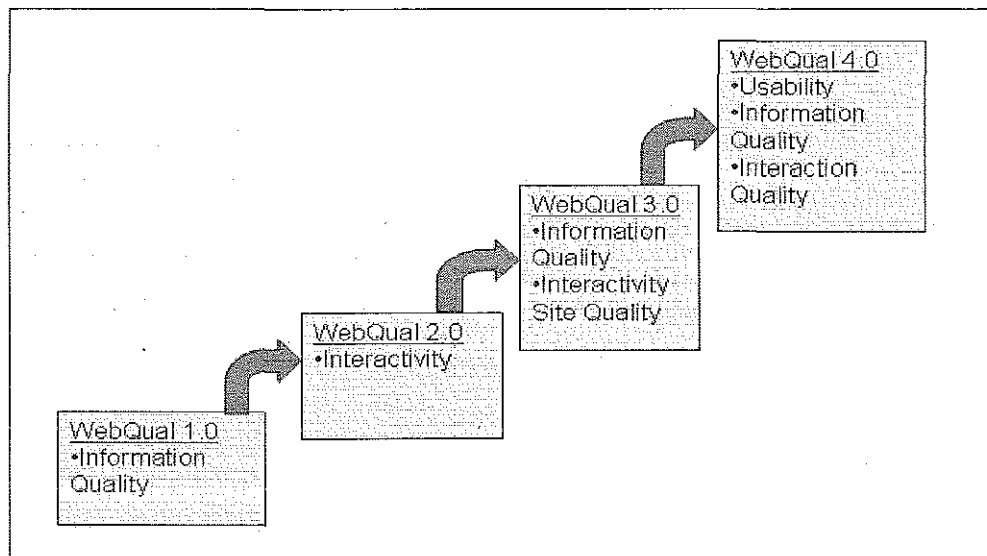
Figure 2.2: WebQual Evolution

While generic properties of WebQual are generalisable to B2C sites selling homogeneous products (like books and music CDs), sites with different business models and functionality require additional domain-specific qualities (Shchiglik & Barnes, 2003). The instrument developed in this study, WebQual/PA, is based on WebQual research and utilised four quality dimensions namely usability, interactivity, information quality and riskiness to evaluate the quality of PA web sites. This is discussed in subsequent sections. To understand the need to consider domain specific information, the nature of services offered by the PA firms are discussed below.

2.4 Nature of Online Business Services

As noted earlier, there is a service element involved in the delivery of any product, whether tangible or intangible. Services can be viewed as a core item for sale (for instance legal services, accounting services) or as a support to the core items of sale (e.g. delivery service for a computer, motor vehicle or books). Online business services are expected to increase as e-commerce maintains an upward trend with

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US$ 350 million recorded in 2000 and estimated increase of over US$ 1 trillion by 2005 Mosquera (2001), as reported by Shchiglik et al., (2003).

The accounting profession is no exception in being influenced by the e-commerce phenomenon. In a study carried out by Fink (2002a) to find out whether the services provided by professional accounting firms match the services demanded by clients, he concluded that the opportunity exists for small professional accounting firms to service business clients online. Transacting using the web implies paying attention to web site quality. As observed by Shchiglik & Barnes, (2003) and concluded by Liang and Lai (2002) "customers are more likely to visit and purchase at web sites that exhibit highly desirable qualities" (p1). In addition, Drucker (1985), quoted by Shchiglik & Barnes, (2003) pointed out that the best judge of the quality is the customer. This means that organisations that intend to retain and/or increase their online customers (e-customers) need to grasp customers' perception of the web site quality, with an aim of increasing the probability of generating web site visitors and sales. While some challenges may be common, there are challenges which prevail more in professional service businesses. They are:

Intangible nature of services. The products produced by the traditional organisation can be seen easily (different dimensions), felt and described (Hill, 1999). However, services are intangible i.e. they lack the physical substance. Hence clients cannot touch or even view a service before purchase. At best, clients can consult existing customers or make an evaluation based on a previous experience. This makes services difficult to conceptualise and evaluate from the client's perspective, creating increased uncertainty and perception of risk. Web quality features should act as a means of minimising the uncertainty thereby enhancing the chance of a client re-visiting the site and/or making a decision to purchase the services. From the firm's perspective, service intangibility can make services difficult to promote, control quality, and set a price (Nayyar, 1990).

Production and consumption of services is simultaneous. This creates special challenges in service quality assurance (Bowen & Ford, 2002; O'Farrell & Moffat, 1991). Unlike products, services are not tested before they are 'delivered'. For service production to be undertaken, the customer must be present. This creates a very different and challenging business environment where it is not possible to

eliminate poor service offerings before consumption. This essentially means experience of prior services becomes vital.

Trust is essential. Some level of trust in the service organisation and its people must be established before clients will engage their services. The requirement for trust is largely due to the increased risk perceived by clients using online services. Risks associated with services are due to intangibility and heterogeneity, which increases the perceived risk (Pires, Stanton, & Eckford, 2004). Perceived risk as a dimension of web site quality may "encompass issues such as concern shown for the user, the ease with which the user can communicate with the customer service personnel, the promptness of the latter to reply to users' questions and the security of the transaction" (Gounaris & Dimitriadis, 2003 p535). Risk is an important factor in predicting and explaining online purchase behaviour (Verhagen & Tan, 2004). As observed by Bryant and Colledge (2002) trust has become essential for the development and fostering of e-commerce relationships.

Heterogenous i.e. not homogenous or non-standardised quality. Unlike say a book, whose title and content remain the same to various buyers, professional services are not completely standardised. In some instances, the customer requires the service of an expert to determine the actual services demanded. More often than not, clients differ in their ability to specify the service they require. Table 1 shows the differences between a product and a service (Alexander & Hordes, 2003). Due to these unique characteristics of services, they cannot be 'dropped on your foot'. These differences impact on how an organisation produces, markets, sells, delivers, supports, and measures the performance of services.

Table 2.1: Uniqueness of Services

Dimension	Product	Service
• Production • Production costs • Involvement • Quality control • Poor quality procedure • Moral and skill level	➢ Built ➢ Uniformity ➢ Rarely ➢ Compare output to specification. ➢ Recall ➢ Important	➢ Performed ➢ Uniqueness ➢ Usually ➢ Compare customer expectation to experience ➢ Apologize and atone ➢ Vital

2.5 Nature of Accounting Services

In addition to the traditional offering of accounting services, other opportunities exist for firms to offer services online (Fink, 2002a). In a recent study, Evans and Volery (2000) established the opportunities that exist for the experienced business service providers as being intelligence, consulting, counselling, relationship networks, education and training.

Intelligence. This involves provision of information to sharpen, improve or support the 'cleverness' of clients. In other words, the service provider acts as an intelligent 'think tank' in preparing, building and utilising the information platform. The main purpose is to assist clients in their decision-making process. The web has improved the process of gathering information but it has resulted in information overload (Evans & Volery, 2000) making it difficult for the client to determine good web sites and good information. The opportunity exists for service providers to provide quality information (Fink, 2002a) and to ensure that clients are able to access, understand and use the information effectively.

Consulting. This refers to the customisation of information to meet specific client needs. While this service has been provided on a face-to-face basis, recent developments reveal that online consulting services are operational (Fink, 2002a) but as noted by Evans and Volery (2000) still in their infancy.

Counselling. This is where the service provider (counsellor) guides and assists the client to unearth solutions to problems. As noted by (Fink, 2001), various strategies exist which include restructuring, identifying and recommending appropriate problem-solving approaches, and/or acting as a mentor.

Relationship networking. This involves establishment of a relationship between the service provider and clients where ideas and information are exchanged. An example of a networking site is 'first Tuesday' (www.firstuesday.com)

Education and training. Interaction and collaboration associated with the interaction of skills and motivation aimed at discovering new opportunities such as business venture launching. As noted by Evans and Volery (2000), online education and training has been enabled by the internet although the reliance on technology and

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self-learning underpins the process, partly explaining why it is not highly regarded so far.

As online offering is considered, the question to pose is what is required for a service firm to be effective? Some key success factors for an online service business include effective management of web sites, and establishment and maintenance of personal contact between the service provider and clients (Evans & Volery, 2000). Expounding this further, Fink (2001) explains that effective web sites management can be interpreted in a number of ways. Firstly, the site should utilise both synchronous (e-mail) and asynchronous technology where practical or possible. The use of 'contact us' facility was found to be popular in West Australian web sites of large, medium and small professional firms (Fink, 2002a). While large firms tended to provide office addresses only, the medium and small provided office addresses as well as names of individuals who could be contacted directly.

The second factor is 'friendly' to use. This is determined by the ease with which web site users can find their way round the site and download material conveniently and smoothly. Fink (2002a) found that information was provided via menus which gave details about the firm, service offered, people and publications. A positive aspect of the web site design in the study was that details were obtained at the second or third level. The third dimension involves situations where the service provider may have multiple office locations or service sources. In such situations, links should be provided to assist the client to get access to the appropriate office or service sources in their locality.

While the strength of the internet can be exploited, its effective use and the ultimate success of online service offerings can be affected by the quality of web sites. Unlike products which can be returned if the customer is not satisfied, services once offered cannot be 'returned'. This poses a challenge to both the service provider and the client to get it 'right' at the first attempt. Service providers are at a risk of 'public broadcasting exposure' through the web if clients have a bad experience or poor service.

On the other hand, the client may have a 'fluid' relationship with the service provider due to the availability of a variety of services and service providers. Service

providers therefore have a responsibility of ensuring that the web site is of high quality to assist clients in decision-making regarding type and source of service. In the service industry, 'cheap' may be 'expensive'; hence cost may be considered secondary and other factors such as building client trust, satisfaction, minimising risk and promotion of loyalty are vital in establishing a long term relationship with the client.

2.6 Theoretical Framework of the Study

This study deals with the evaluation of the perceived web site quality by web site users. While the study draws from WebQual, the theories applicable include those related to information systems use. This is because use of web site necessitates the need for computer hardware and software focused on information manipulation which may involve storage, retrieval, processing, display and transfer. This implies that web site use is a subset of the study of information system. Secondly, use of a web site can be seen as a marketing interaction where a customer's queries are addressed, purchases are made (or initiated) and product and service information accessed. Thirdly, reaction to web site quality information extends web usability by providing feedback to satisfy the supplier point of view.

As the web is part of the information system, its purpose within an organisation can include improving the effectiveness and efficiency of that organisation. Some of the factors determining the achievement of this purpose include capabilities of the information systems and characteristics of the organisation, work systems and people Hevner et al., (2004). Information system researchers have a challenge of not only furthering the existing knowledge on the application, management and use of information technology but also communicating the results for improved managerial and organisational usage (Hevner et al., 2004; Zmud, 1997). The proposed study not only evaluates web sites (information systems) but also communicates the outcome to the owners of the systems (web sites).

The study makes use of the WebQual instrument and design science paradigm in evaluating PA web sites. As noted earlier, WebQual is a method for assessing the quality of web sites across and within organisations. Design research is presented

here as a "lens", or set of analytical techniques and perspectives, for performing research in this respect (see figure 2).
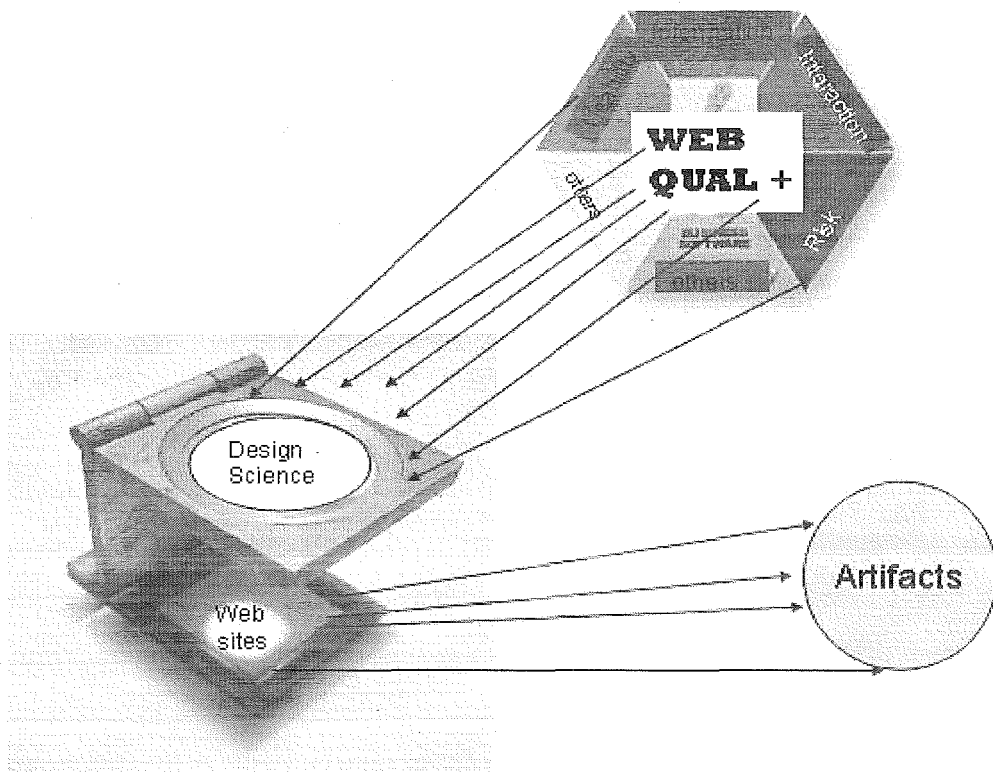
Figure 2.2: Design Science as a Lens

2.7 Design Science

Design research involves the analysis of the use and performance of designed artefacts in order to understand, explain and very frequently to improve on the behaviour aspects of IS. Design researchers can be found in many disciplines and fields, notably Engineering and Computer Science, using a variety of approaches, methods and techniques (McKay & Marshall, 2005). March and Smith (1995) argue that four activities are involved in research as shown in the table 2.2. For this research emphasise is placed on two basic activities or processes, namely building and evaluating.

Table 2.2: Main Research Activities

Research Activity	Description
Building of Artefact	This is where an artefact is built based on a perceived need or void in existing technologies.
Evaluation of Artefacts	Usually done in tandem with the building of artefacts, but could be done for existing artefacts.
Theory Building	To explain why one approach to solving a technological problem is superior to another or approach ranking.
Theory Testing	To verify theories those have been developed mostly empirically.

Design science approach is a problem solving process which "seeks to create innovations that define the ideals, practices, technical capabilities and products through which the analysis, design, implementation management and use of information systems can be effectively and efficiently accomplished" (Hevner et al., 2004 p 76). In a widely cited paper contrasting design research with natural science research, March & Smith (1995) proposes four general outputs or artifacts for design research. They consist of constructs, models, methods, and instantiations. In addition Ross and Sein (2003) and Purao (2002) proposes a fifth output - better theories. Table 2.3 summarizes the outputs that can be obtained from a design science research effort.

Table 2.3: The Outputs of Design Research

	Output	Description
1	Constructs	The conceptual vocabulary of a domain
2	Models	A set of propositions or statements expressing relationships between constructs
3	Methods	A set of steps used to perform a task – how-to knowledge
4	Instantiations	The operationalization of constructs, models and methods.
5	Better theories	Artefact construction as analogous to experimental natural science

Source: (Vaishnavi & Kuechler, 2004)

To arrive at these artifacts, Hevner et al., (2004) proposes a framework, consisting of seven guidelines, which guides IS researchers and practitioners on how to conduct, evaluate and present design science research. The seven guidelines are design as an artefact, problem relevance, design evaluation, research contributions, research rigor, design as a search process, and communication of research. Below is an outline of how the various components of the study relate to the guidelines

I.   Design as artefact. The artefact was created in form of a model or instrument to address the important problem of evaluating web sites in a unique sector (PA).

II. Problem relevance. As stated in the earlier section, the problem of diagnosing and prognosing web sites quality is extremely relevant in the era of e-commerce. The cases to be presented in this study illustrate the importance. It is also in line with the call for more rigorous and relevant research (Applegate, 1999).

III. Design Evaluation. To carry out the evaluation, the study utilised some of the methods proposed by (Hevner et al., 2004) namely observation, analytical, experimental and descriptive.

a.   Observation. This could involve a situation where PA web sites were to be used and 'customers' observed as they try to use the web site to access the services. Ease of use or difficulties in relation to

navigation, selection of the required services and time taken would form some of the important observational aspects. In this study observation was not carried out.

b. Analytical. This where web sites are analysed to determine the static quality such as complexity, home page design, use of animations, information content etc. Web site static qualities for the PA firms should be analysed by experts because experts are more competent and confident in evaluating the web site and in suggesting further aspects of quality factors to be considered. However, this activity is beyond the scope of the current study.

c. Experimental. This was done in this research using PA 'clients' in a controlled environment where qualities like usability and interactivity were determined. Participants were instructed to assess the quality dimensions for each of the PA web sites as outlined in the remainder of this thesis.

d. Descriptive. Existing instruments for evaluating web site quality are analysed by referencing existing literature (and research) to form a knowledge base for determining relevant web site quality dimensions for PA firms. This is where WebQual fits in.

IV. Research contributions. The main contribution is the development of an instrument to evaluate PA web sites and to establish the perceived quality of six top PA firms.

V. Research rigor. The study combined previous tested dimensions of WebQual, domain specific characteristics of the PA sector, and a well formulated design science methodology. The study was organised in two stages, namely instrument development and instrument application. The main aim was to determine how well PA web sites support online clients.

VI. Design as a search process. The proposed methodology is iterative in that each stage establishes existing and potential requirements and ways of addressing

them. In addition the instrument for evaluating PA web site quality can be applied to the same sector in longitudinal research or in other service sectors.

VII. Communication of research. The study was based on a rigorous step-by-step approach. The resulting outcomes, in the form of recommendations, will be relevant to the professional service sector in general and the PA sector in particular. The results of evaluating web site quality will not only be presented to academia (immediately) but also to the PA firms for feedback (see future research)

The foregoing reveals that IS research under the design science paradigm builds and evaluates constructs, models, methods, and instantiations. This study was concerned with the building of web site quality constructs relevant to PA sector online business as well as applying these constructs. Web site quality evaluation is an emerging field for both practitioners and researchers. Practitioners endeavor to create and implement technologies that shape online offering while researchers endeavor to understand and seek improved methods of online offerings. Design science therefore can offer practitioners and researchers a valuable approach to evaluating online business. Figure 2.3 below reflects the relationships between activities/processes, artifacts/outputs and the research guidelines as discussed above.
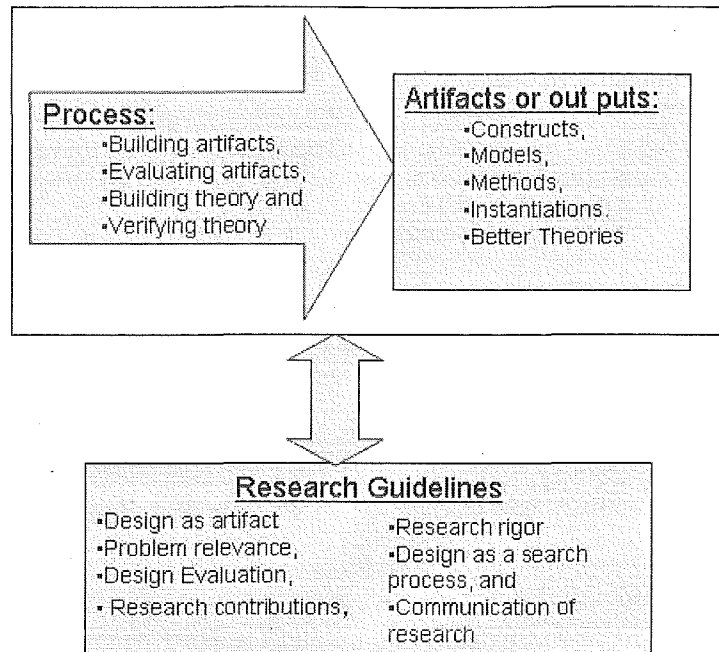
Figure 2.3: Research Framework Based on Design Science

The development of methods for building web site applications, (not addressed in this research) may rely more on theory building and verification while web site quality evaluation (addressed in this research) may rely on artifact building and evaluation. Theory represents the vertical dimension in figure 2.4 while the horizontal dimension shows the research concentration. The researcher who focuses more on building of artifacts (either for implementation or research) relies less on building and verification of theories and vice versa. Considering the horizontal line, as the researcher move toward the left (i.e. more toward the building of artifacts for PA implementation), the research is both grounded in and focused on the needs of practitioners. The opposite direction (i.e. moving towards the building artifacts to aid research) the focus shifts towards the need to study web site quality and the research is focused on and grounded in the problems faced by the researcher.
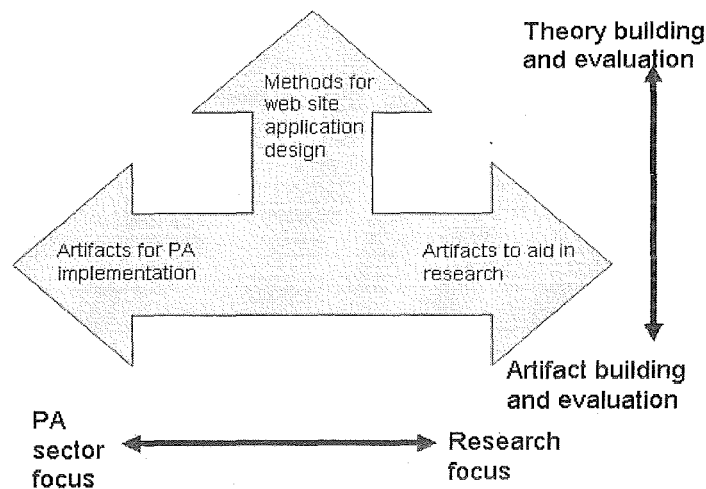
Figure 2.4: The Impact of Design Science on PA Sector

As shown in figure 2.4, this study focuses on building and evaluation of artefacts in relation to PA sector.

2.8 PA Web Site Quality Dimensions

As pointed out earlier in this chapter, this study utilises the WebQual instrument as a basis for developing WebQual/PA, an instrument to evaluate web site quality for PA firms. Previous application of WebQual includes UK business school web sites (Barnes & Vidgen, 2000) internet bookshops (Barnes & Vidgen, 2001c), small companies (Barnes & Vidgen, 2001a), online auction houses (Barnes & Vidgen, 2001b), and the airline industry (Shchiglik & Barnes, 2003). An important feature of the WebQual approach is that it allows comparison to be made between organisations in the same industry or for the same organisation over time (Barnes & Vidgen, 2002). This study aims at extending the generic instruments by focusing on the Public Accounting sector.

As the WebQual/PA was developed, a number of issues needed to be put in perspective. The previous WebQual instruments have been developed in sectors where either the customer is a specialist in the services or product sought or the customer knows in advance the particular service or product being sourced. Looking at the air travel companies (Shchiglik & Barnes, 2003), the customer base are

travellers whose interest is to travel from point A to B where both A and B are known. You need not have travelled to B to offer details of the routing, price and other travel details. Likewise, a firm or company offering library services (Fink, 2002b), or auction service (Barnes & Vidgen, 2001b), need not be a specialist in the area, hence most of the required information for customer to base their decision on may be standardised.

This shows that WebQual has been applied to measure quality of web sites whose 'owners' are not professional and the customer has the power to determine his/her requirement independent of the supplier. The PA sector is unique in that the suppliers (referred to as service providers) to a large extent (and through interaction) determine the needs of the customers (generally referred to as clients in accounting sector). Due to this unique characteristic of the sector and the growth of online services, there is need for a domain-specific instrument for evaluating PA web sites.

While the three dimensions of WebQual 4.0 (usability, information and interactivity) may be relevant for the professional service sector and the areas they have been applied to, it's important to note that a service provider is expected to provide solutions or guide the client into solution finding. This may imply that the clients may not be certain of their requirements before 'contacting' the service provider. Further-more, professionals are expected to be 'ahead' of the client to anticipant new areas of concern. In addition, some of the professional services may not be concluded over the web due to the nature of services (as discussed earlier), inability of the service provider to quote a price online, additional information required to establish the nature and magnitude of service requirements, and the need for 'personal' contact. Furthermore, the production and consumption of services is simultaneous which makes it difficult to eliminate poor service offerings before consumption, hence experience (either direct or determined from other clients) is vital.

As a result, both the service provider and the client assume a certain degree of perceived risk, which needs assessment. Customer behaviour in relation to risk has been a subject of study over a period of time (Bauer, 1960; McCorkle, 1990; Mitchell, 1999). Different risk dimensions have been identified including money loss, ego loss and time loss (Roelius, 1971), uncertainty and seriousness of the consequences of purchase (Bauer, 1960), social and performance risk (Jacoby &

Kaplan, 1972), financial, social, performance, time loss (McCorkle, 1990), uncertainty, hazard and opportunity (Adams, 1995; IFAC, 1999). According to Bauer (1960) perceived risk is largely a function of uncertainty and seriousness of the consequences of the purchase. Cases (2002) pointed out that the two components are related.

Cases (2002) aimed at determining whether the internet created new forms of risk. Four potential risk sources were identified: "risk associated with the product, risk ensuing from a remote transaction, risk associated with the use of the internet as a mode of purchase and risk associated with the site on which the transaction takes place" (p378). Eight risk dimensions were established namely performance risk, time risk, financial risk, delivery, social risk, privacy risk, payment risk and source risk. These dimensions closely link with those identified by Peter and Tarpey (1975) and Jacopy and Kaplan (1972), namely financial risk, performance risk, physical risk, psychological risk, social risk, convenience risk and overall risk.

As observed by Cases (2002) "the internet has revived the debate on the perception of risk" (p376). Fink (1999), while surveying final year university students, found that these future business leaders believed that the capacity of e-commerce (hence online services) is hampered by perceived concerns and risks. However, a further observation was that although e-commerce was perceived a risky undertaking, its future prospects were good (Fink, 1999). Conversely, firms engaged in online business need ways to reduce risk perceived by customers (Burke, 1997). While suppliers may not eliminate all the risk, effort to minimize or reduce risk should be put in place to allow customers cope with the perceived risk (Murray, 1991). There are various ways of addressing perceived risk which include assurance from previous clients and the inclusion of statements to give assurance of the task completion as promised.

To cater for these additional concerns the study utilises four dimensions namely usability, interactivity, information quality and riskiness to develop an instrument to evaluate the web site quality for the PA sector. The specific questions contained in the instrument are shown in chapter 4. The following section gives a brief explanation of the each dimension.

2.8.1   Usability

Usability refers to the ability of the web site to meet the user's needs. Usability is concerned with how clients perceive and interact with a web site, the suitability of the content for the user's task (Barnes & Vidgen, 2004a) and how effectively users can navigate the site. Usability deals with aspect of design of the site, i.e. appropriateness of appearance (format and style) and ease of navigation. Since accounting sites are informational, this includes finding the right information quickly, easily and without error. As observed by Nielson (2000) "users experience usability of a site before they have committed to using it and before they have spent any money on potential purchases" (p11). The initial perception of a web site is crucial as it determines the next action which may include continuing searching the site, or go to competitors sites. In essence usability may be enhanced by focusing on such qualities as appearance, ease of use, navigation and the image conveyed to the user (Barnes & Vidgen, 2004a).

2.8.2   Interactivity

Interactivity can be defined as the extent to which the web site communicates with the users and responds to the user's communication needs. This measures the quality of the interaction experienced by users as they delve into the site. It includes such aspects as personalisation and communication with the service provider (Barnes & Vidgen, 2004a). On the other hand, interactivity deals with the degree to which users of a web site can communicate, have control over, and exchange roles in their mutual discourse (Williams, Rice, & Rogers, 1988). One way of promoting user control and therefore interactivity, is by allowing users to choose between alternative courses of 'action' or 'decision'. For instance the use of a search engine or facility to find the required information or service accomplished by the presence of a search engine, working links and well labeled captions. The study utilises three variables in relation to interactivity namely: user control, responsiveness and reputation. The faster the response the greater the perception of interactivity and the more likely is the client's revisit (Dholakia et al., 2004).

2.8.3 Information Quality

The issue of information quality has a rich history in IS and has been addressed in different ways (see Alexander & Tate, 1999; Beck, 1997; Klein, 2002; Naumann & Rolker, 2000; Wang & Strong, 1996). It includes such aspects as accuracy, currency, relevancy, ease of understanding, timeliness and level of detail (uniqueness and depth of material coverage). Information quality is an important aspect to the users of the web site because, as noted by Jakob Nielsen, and quoted by Gullikson et al., (2000) "people do not come to the Web for an 'experience,' they come for information".

Information quality may imply the quality of the content of the site which can be measured by the suitability of the information for the user's purposes (Barnes & Vidgen, 2004b) and referred to as information 'fit-to-use'. This includes such aspects as accuracy, appropriate format, relevancy, currency and timeliness. To a client or seeker of information, presence of these aspects would imply a higher web site quality. As observed by Loiacono et al., (2004), a web site would be more useful where it provides exact information needed as opposed to general information. Aspects of information quality are enhanced by interactivity functions such as search facilities which help in accessing relevant information. This study utilises three variables of information quality, namely accuracy, relevancy/timeliness and completeness (Klein, 2002).

2.8.4 Riskiness

As explained in an earlier section, perceived risk is generally viewed as a concern to clients dealing with an electronic transaction or activity (Cooper, 1997). The perceived risk increases with online services due to the nature of services and the 'impersonal' characteristics of online services. Some of the factors which reduce riskiness include a security guaranteeing logo, presence of privacy statement and clues on reputation. These factors support improved level of task completion, online communication and information provision. The perceived degree of risk by a PA client determines the level of participation in the online services. This study utilises three variables namely task completion, secure communication and information privacy risk.

2.9 Summary

The literature review offered an overview of different dimensions which have been used to determine the quality of web sites in different industrial and organisational settings. In addition, the chapter highlights the different approaches used to evaluate web sites which included the machine approach, the expert as a judge, and customer judgement. The chapter further shows that different methods can be utilised while evaluating web sites which included competitive analysis, scenario, inspection, log analysis and online questionnaire. The possible evaluators and methods were discussed in order to determine the most suitable evaluators and method to be used by the study. Previous studies suggest that customers' perspectives have great impact on online business. As a result, this study uses clients as the evaluators for PA web sites under the scenario and competitive methods.

The need for a reliable and valid evaluation instrument was dealt with. To lay a foundation for the development of an instrument, WebQual versions 1 to 4 were highlighted. WebQual 4.0 forms the basis for development of a domain specific instrument. The instrument, WebQual/PA, has four dimensions namely usability, interactivity, information quality and riskiness. The chapter gives a brief explanation of each of the dimensions showing how they fit the PA sector. To understand the PA sector deeper, the importance and unique nature of online business was revealed, showing the differences between services and products. To further expound on online services, the nature of accounting services was examined where major services were determined as intelligence, consulting, counselling, relationship networks, education and training.

Previous research suggest that IS should focus on relevant and rigorous research aimed at providing solutions to organisational problems. To achieve this, the theory of design science was applied as a 'lens' and to act as a guideline to this study. The theoretical framework was therefore based on the processes, guidelines and artefacts as they relate to this research.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The study evaluates the web site quality for PA firms from a client perspective. The study was undertaken in two stages where the evaluation instrument was developed and tested respectively. The quality of PA web site did not appear to have been evaluated before, hence the study was exploratory, seeks to understand the customer's perception. This chapter explains the research approach and how the research was carried out including the development of the instrument (questionnaire), participants and web site selection and conducting the laboratory experimentation. Ethical consideration and data collection and analysis procedures are also discussed.

3.2 Perspectives of Research

Generally all research is based on some underlying assumptions in relation to 'valid' and appropriate research methods. Different schools of thought or paradigms provide various philosophical perspectives to the researcher. The word paradigm, which has been used widely by business and social researchers, reflects a fundamental set of philosophical beliefs about the nature of the world (Ticehurst & Veal, 1999). It provides guidelines and principles to the researcher on how to conduct research including which methods and techniques to apply. There are different ways of classifying research paradigms. The two major traditional paradigms guiding business research are positivist and interpretivist (Williamson, 2000) although other researchers (Cavana et al., 2001; Myers, 1997; Orlikowski & Baroudi, 1991) classify the approaches into three categories namely positivist, interpretive and the critical approach. This classification is adopted by this study.

3.2.1 Positivist Research

Positivists generally assume that a set of reality is objectively given or exists (Cavana et al., 2001; Myers, 1997; Williamson, 2000; 2002) and can be described by measurable properties, and is independent of the observer (researcher) and his or her instrument (Myers, 1997). More often than not positivist research is associated with quantitative methods. As observed by Orlikowski and Baroudi (1991) and referenced by Klein and Myers (1999) "IS research can be classified as positivist if there is evidence of formal propositions, quantifiable measures of variables, hypothesis testing, and the drawing of inferences about a phenomenon from a representative sample to a stated population" p69. Positivist research attempt to test theories using hypothesis which helps in predictive understanding of a phenomena (Cavana et al., 2001; Myers, 1997). This means positivist research is based on deductive reasoning beginning with a theory and models which is generalised using empirical evidence (Cavana et al., 2001; Williamson, 2000).

Positivism eventually emphasises quantifiable observations which are analysed using statistical methods (Remenyi, Williams, Money, & Swartz, 1998; Williamson, 2000). A major merit of positivist research is the replicability aspect where another researcher can conduct the same research in the same setting and the results are comparable (Cavana et al., 2001). However positivist research has some criticism- i) researchers have argued that quantification of all aspect of human endeavours is superficial ii) statistical samples are not able to express all specific social groups hence limit generalisability and understanding of individual cases and iii) failure of interpreting the meaning of people and the way they feel and think in addition to the researchers involvement (Cavana et al., 2001).

3.2.2 Critical Research

A major assumption associated with critical research is that peoples' potential is unrealised and they (people) can adapt and transform themselves against various conditions (Myers, 1997). Critical researchers assume that social reality is historically constituted and that it is produced and reproduced by people. Although people can consciously act to change their social and economic conditions, critical researchers recognise that their ability to do so is constrained by such factors as social, cultural and political dominations in addition to resource limitations and

natural laws. The main task of critical research is seen as being one of social critique. As observed by Klein and Myers (1999 p69), "IS research can be classified as critical if the main task is seen as being one of social critique, whereby the restrictive and alienating conditions of the status quo are brought to light". In this way, critical research helps to eliminate the causes of unwarranted alienation and domination and thereby enhance the opportunities for realising human potential (Alvesson & Willmott, 1992; Hirschheim & Klein, 1994).

This implies that the restrictive and alienating conditions of the status quo can be brought to light and analysed and understood. Critical research focuses on oppositions, conflicts and contradictions in contemporary society, and seeks to be emancipatory, i.e. it should help to eliminate the causes of alienation and domination where opportunities for realizing human potential are enhanced (Klein & Myers, 1999; Myers, 1997). As noted by Cavana et al., (2001), people can be empowered via critical research which eventually assists them to uncover myths and hidden meanings and hence change the world positively. However, critical research has a number of criticisms which include: i) people may be forced to change when they are not ready or prepared for it, ii) elimination of current social circumstances does not necessary provide a process for creating a new reality (Cavana et al., 2001).

3.2.3 Interpretive Research

As opposed to positivism (with the assumption that reality exist or is objectively determined in both the physical and social world as reflected by causal laws) or critical (where people can adapt and transform themselves), interpretive researchers start out with the assumption that reality (given or socially constructed) exists through social constructions such as language, consciousness and shared meanings (Cavana et al., 2001; Myers, 1997). Williamson (2000) observed that the social world is different from the world of nature and the former can be interpreted or constructed by people. Therefore "IS research can be classified as interpretive if it is assumed that our knowledge of reality is gained only through social constructions such a language, consciousness, shared meanings, documents, tools, and other artefacts. Interpretive research does not predefine dependent and independent variables, but focuses on the complexity of human sense making as the situation emerges" (Kaplan and Maxwell 1994 as referenced by (Klein & Myers, 1999)).

There are number of characteristics which help distinguish interpretive research. They include: i) lack of predefined dependent and independent variables ii) focus on complexity of human sense making as the situation emerges (Kaplan and Maxwell 1994 as referenced by (Klein & Myers, 1999), iii) understanding of phenomena through meanings that people assign to them (Boland, 1985; Deetz, 1996; Orlikowski & Baroudi, 1991) and iv) "aimed at producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context" (Walsham 1993 p4-5 as referenced by (Klein & Myers, 1999 p69). However, some criticisms against interpretive research include: i) focus mainly on specific events may limit generalisation, ii) does not create change (Cavana et al., 2001).

3.2.4 Study Approach

Although the three paradigms are philosophically distinct, in practice it is acknowledged that the distinctions themselves are often contentious and not clearly separable (Myers, 1997). The argument as to whether these paradigms are opposed or can be accommodated within one study continues. A summary of the key characteristics distinguishing these paradigms is shown in table 3.1. The study has characteristics which favour the adoption of an interpretive paradigm. Some of these characteristics include:

- The dependent and independent variables were unnecessary for the study. In addition no theories were tested hence no need for hypothesis. This weakens the use of positivism approach.

- The study focused on how PA web site users evaluate the quality of the site. This was analysed using the web site quality dimensions for the PA profession.

- The finding of the study was based on the understanding and evaluation of potential web site users. Although guidelines were given to the participants, the freedom of "how deep they could browse" in every site provided an individualised understanding of the "phenomena" within the context of a user.

Table 3.1: Comparison of Research Paradigms

	Positivist	Interpretivist	Critical
Assumptions	Objective world which science can measure and mirror with privileged knowledge.	Intersubjective world which science can represent with concepts; social construction of reality	Material world, structured contradictions and/or exploitation which can be objectively known only by removing ideological biases
Aim	To discover universal laws that can be used to predict human activity	To uncover the socially constructed meaning of reality as understood by an individual or group	To uncover surface illusions so that people will be empowered to change their world
Stance of researcher	Stands aloof and apart from research subjects so that decisions can be made objectively	Becomes fully involved with research subjects to achieve a full understanding of subjects' world	Involved with research so that surface illusions can be identified, but urges subjects to change their world
Values	Values free, their influence is denied	Values included and made explicit	Values included and made explicit
Type of reasoning	Deductive	Inductive	Deductive and inductive
Research plan	Rigorous, linear and rigid, based on research hypothesis	Flexible, and follows the information provided by the research subject	The imperative for change guides the actions of the researcher
Research methods and type(s) of analysis	Experiments; questionnaires; secondary data analysis; quantitatively coded; documents; statistical analysis	Ethnography; participant observation; interviews; focus groups; conversation analysis; case studies	Field research, historical analysis/ dialectical analysis
Goodness or quality of criteria	Conventional benchmarks of 'rigour'; internal and external validity; reliability and objectivity	Trustworthiness and authenticity	Historical situatedness; erosion of ignorance and misapprehensions; action stimulus

Source: (Lincoln & Guba, 2000)

3.3 Research Approach

In addition to the above classification, research approaches can also be categorised as qualitative and quantitative. Quantitative research has its origin in the natural sciences with its application to study natural phenomena. Over time it has been accepted in social sciences in the form of survey methods and laboratory experiments. On the other hand, the qualitative method has it origin in the social sciences where it facilitates the study of social and cultural phenomena.

Qualitative research has preference for (i) qualitative data (i.e. analysis of words and images), (ii) naturally occurring data (i.e. observation, unstructured interviews), (iii) meaning other than behaviour (i.e. "why"), (iv) a reject of natural science as a model (e.g. talk to a few people and draw conclusions), and (v) preference for hypothesis generating rather than hypothesis testing. Areas of application include action research, case study research, and ethnography.

The study adopts interpretative paradigm (see section 3.2.4) in a quantitative approach (experiment using questionnaire). In addition, the study was organised in two stages namely: instrument development (chapter 4) and instrument application. The purposes and the expected results of each stage are summarised in table 3.2. The output of stage one becomes the input of stage two as shown in figure 3.1 and a detailed analysis given in later chapters.

Table 3.2: Study Stages

Stage	Purpose	Expected results
Stage I: Instrument development (literature review)	To determine and develop "WebQual" requirements for the Public Accounting sector. The process will be based on an extensive literature review and the application of design science.	Domain specific WebQual instrument (WebQual / PA)
Stage II: Instrument application (experiment)	To apply the instrument to Public Accounting web sites to determine the most significant quality factors for online service offering.	Perceived quality of the PA web sites-sector and individual firms

Stage I dealt with the development of the instrument for evaluating PA web site quality. A systematic and thorough review of the literature was undertaken in order to ensure all the critical issues pertaining to the research had been identified. To

accomplish this, inductive methods (Bossert, 1991; Malhotra & Grover, 1998) and the design science approach was used. In line with the design science approach, Henver et al., (2004) recommended the use of a descriptive approach where informed argument "use information from the knowledge base (e.g. relevant research) to build a convincing argument for the artefact's utility" (p86). This study used the descriptive approach in which instruments for evaluating web site quality were analysed using existing literature (and research) to form a knowledge base for determining the relevant web site quality constructs or dimensions for PA firms.

This approach achieves content validity (see discussion on validity in chapter 5) and has been adopted by similar studies in this area (Barnes & Vidgen, 2001b; 2002; Shchiglik & Barnes, 2003). The conceptual research framework presented in chapter 2 was used to identify constructs or dimensions relevant to the PA sector, and for developing the instrument that guided subsequent stages of evaluation. As these were essentially confirmatory in nature, validation of the instrument prior to its application to ensure it reflects validity was essential. Figure 3.1 shows the outcome of stage one where quality constructs and evaluation instruments were developed (see chapter4)
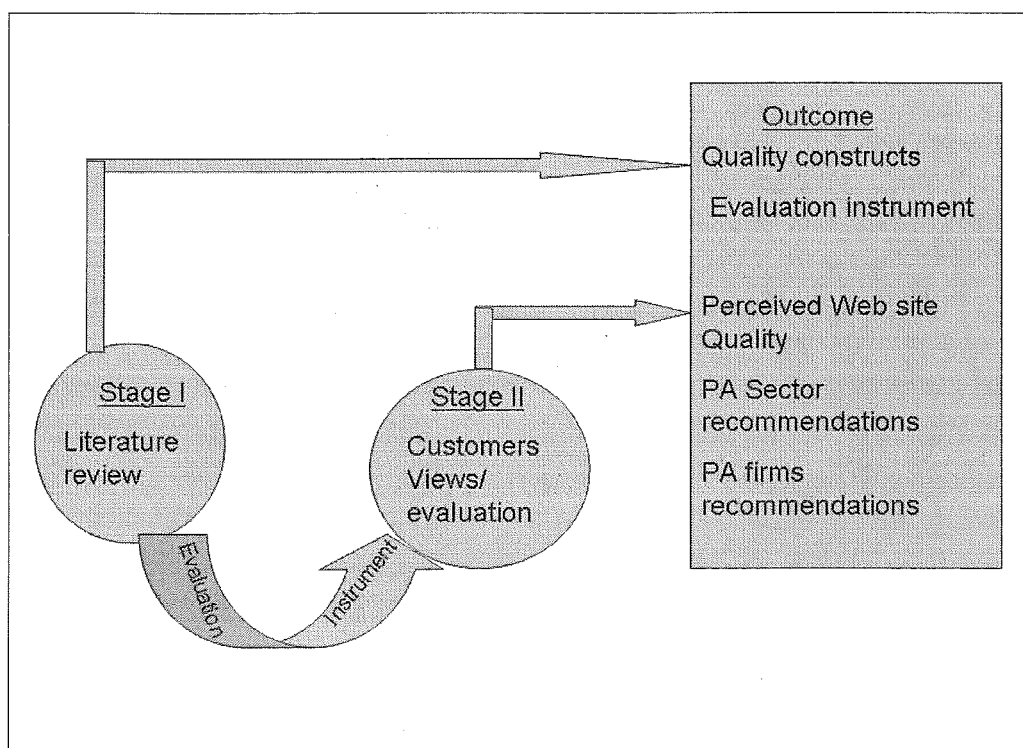
Figure 3.1: Research Stages and Outcome

Stage II of the research design was concerned with the application of the instrument, WebQual/PA, developed from the review of the literature. The instrument was used to evaluate web sites of PA firms by surrogate clients. Figure 3.1, further demonstrates the outcome of stage II which are discussed and presented in later chapters.

A potential stage III is possible in the postdoctoral period. It is planned that the results of stage II will be presented to the 'owners' of the web sites for feedback. This future research is discussed in more detail in chapter 7.

3.4 Research Design

While chapter 4 deals with the development of the research instrument, this section gives a detailed analysis of the steps and underlying theory in the research design and procedures. This section therefore outlines the laboratory design, sample design, pilot testing of the instrument and conduct of the study. A summary of the design is provided in figure 3.3 below, followed by a discussion.
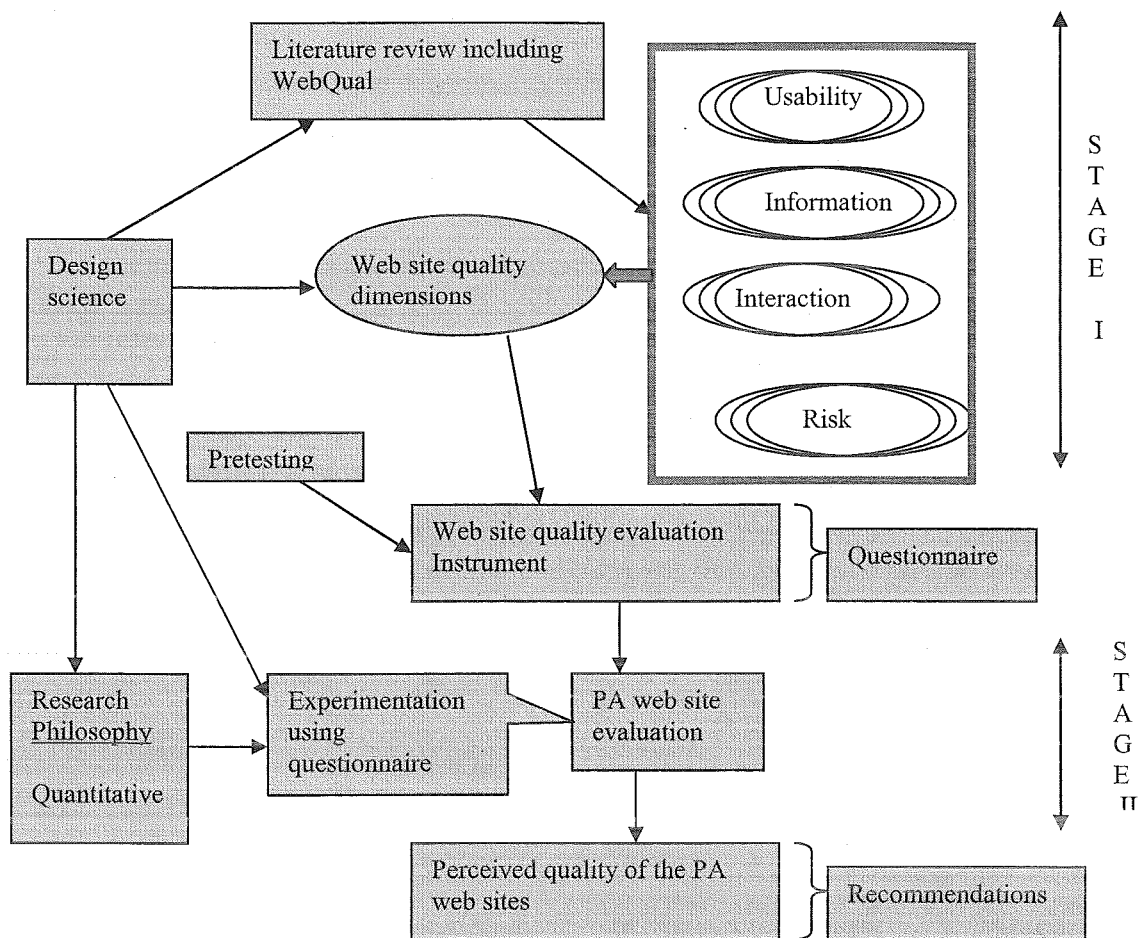
Figure 3.2: Research design of the study

3.4.1 Laboratory Experimentation Design

William (2000) noted that some 'why' and 'how' questions in more technical fields may require the high level of control afforded by experiments and Shank, Rouse, Arnot (1993) believe this to be the case in information systems (p34). While experimentation is not widely used in business and management (Remenyi et al., 1998) it is one of the quantitative method well accepted in social sciences (Myers, 1997). In stage II of the study a structured questionnaire was administered in a controlled environment i.e. as a laboratory experiment, in which the researcher had control over the procedures. The approach was chosen to maintain control over the sites that the participants were required to evaluate (six PA web sites) and the form of evaluation. This method enables a problem to be studied where the variables

involved (the web site quality dimensions developed in stage I) are known but behaviour (perceptions of clients) is unknown (Shanks et al., 1993).

The laboratory approach has advantages which include (Cooper & Emory, 1995; Remenyi et al., 1998):

- Minimises the effect of extraneous influences and variables (i.e. ensuring that the participating students are post-graduate Business students).

- Improved convenience and low cost of conducting research when compared to other methods.

- The replication or repeating an experiment with different groups of participants (i.e. using different student groups and times).

Cooper and Emory (1995) observed that a controlled experiment has disadvantages also. They include:

- Artificiality of the laboratory setting compared to the business environment.

- Due to non-probabilistic sampling, generalisation is limited.

- The method tends to focus on current and immediate future problems.

- Because of ethnics, the manipulation and control are limited.

To minimise the disadvantages of too much control participants were given the freedom to determine the site to start and to follow the links which were most helpful in locating services, interacting with the site and undertaking tasks within the site. Further details on the conduct of this study are provided in following sections.

3.4.2 Sample Design

A sample is a part of the population. Sampling is the process of selecting part of the population from which conclusions may be obtained about the entire population (Alreck & Settle, 1995; Cooper & Emory, 1995; Remenyi et al., 1998; Sekaran, 1984). This implies that sufficient individuals are selected from the population and that information about population characteristics or properties can be generalised. The main aim of sampling is to estimate some unknown characteristic of the population (Zikmund, 2003). There are several reasons why sampling is done.

According to Deming (1990) the quality of a study is better with sampling than with the population. Deming observed that:

> "Sampling possesses the possibility of better interviewing (testing), more thorough investigation of missing, wrong, or suspicious information, better supervision, and better processing than is possible with complete coverage". (p 26)

This has been substantiated by various research findings (e.g. Cooper & Emory, 1995) and it has been shown that there is greater accuracy of results associated with sampling (Cooper & Schindler, 2001). Other compelling reasons for sampling include: quicker results, economical or lower costs, greater speed of data collection and reduced burden of response (Alreck & Settle, 1995; Cooper & Schindler, 2001; Deming, 1990). However, Deming (1990) warns that economy by itself, without improved quality of information, is a poor argument and savings cannot be traded for reliability. The ingredients of quality are the same whether dealing with a complete coverage or a sample.

This study concentrated on PA web sites which were evaluated by business students who acted as surrogate for clients with feedback given by the PA managers (owners) as part of future research. This involved the selection of appropriate samples of web sites and participants. Figure 3.4 shows decision in this respect.

```
            ┌─────────────────────────────────┐
            │          Population             │
            │ Clients of Public Accounting (PA) websites │
            └─────────────────────────────────┘
                            │
                            ▼
              ┌─────────────────────────┐
              │         Clients         │
              └─────────────────────────┘
                            │
                            ▼
            ┌─────────────────────────────────┐
            │        Sampling Method:         │
            │  Random sampling to post-graduates │
            │  students in Faculty of Business and │
            │   Law, Edith Cowan University    │
            └─────────────────────────────────┘
                            │
                            ▼
            ┌─────────────────────────────────┐
            │        Sample Size:             │
            │        100 participants         │
            └─────────────────────────────────┘
                            │
                            ▼
Covered in  ┌─────────────────────────────────┐
chapter 4   │        Pre-Testing:             │
            │   Five post-graduate students   │
            └─────────────────────────────────┘
                            │
                            ▼
Analysis of ┌─────────────────────────────────┐
findings    │      Experimentation:           │
covered in  │ 612 Questionnaires administered in a │
chapter 5   │       laboratory setting.       │
            └─────────────────────────────────┘
```

Figure 3.3: Sample Design Flow Chart

3.4.3   Sample of Web Sites

Six web sites were selected because this number could be evaluated in the time allowed (about 1 hour) for the experiment. The specific firms included in the study were the 'big four' and two second-tier ones namely PricewaterhouseCoopers (PwC), Ernst & Young (E&Y), Klynveld, Peat, Marwick and Goerdeler (KPMG), Deloitte, Investor Group, Pannell Keoo Forster (PKF) Australia, (Business Weekly Review, 2004c). The selection of web sites was done after the following consideration:

- Public Accounting firms with web presence in Western Australia (Business Weekly Review, 2004a; 2004b; 2004c),

- Likelihood of offering online service, and

- Ongoing level of comparative size as known as Big and Medium size firms.

This supported the choice of six PA firms which were selected using judgement (also referred to as purposive) sampling method. As observed by Remenyi et al. (1998), the web sites were selected with a specific purpose in mind, i.e. likelihood of representing the best practise in public accounting.

45

3.4.4 Sample of Participants

As mentioned earlier, post-graduate students in Faculty of Business and Law at Edith Cowan University (ECU) were used as surrogate for PA clients. The study used the convenience sampling method to 'select' at least 100 participants. A convenience sample means that post-graduate students that are selected were "conveniently" available to participate in the study (Mason & Lind, 1990; Remenyi et al., 1998; Zikmund, 2003). Every post-graduate student in the Faculty of Business and Law at ECU had a chance of being included in the sample. The participants were recruited in various ways. Some classes and tutorials were visited to invite the students to participate. In addition, word of month by researcher (and in few cases by some lecturers) was a mode used for smaller groups and for those visited in various post-graduate computer laboratories. The study was also promoted through use of flyers. Flyers notifying the research purpose and an invitation to participate in this study were put on various notice boards at the Joondalup and Churchlands campuses of ECU. To improve the response rate, experiment sessions were organised so that they aligned with lecture sessions. In addition, e-mail messages were sent to students to remind them of the participation, venue and the preferred time (if applicable).

As observed by Alreck & Settle (1995) respondents qualify on the basis of two criteria i) have to possess the information and ii) they may need to have certain attributes or characteristics to make their responses meaningful. The PA web sites were evaluated by students as client surrogates. The students were used as they are in a position to evaluate web sites based on their understanding of professional services. Post-graduate students make good subjects given that they may have prior business experience (which may include professional services) and their advanced stage of academic study. Furthermore, post-graduate students may be more competent and confident in evaluating web sites and in suggesting quality aspects for improvement than current non-academic clients. In addition, business students have been found to be potential users of professional accounting services now and in future (Fink, 1999).

3.5 Ethics Permission

Both the researcher and the participant have to comply with ethical practices, i.e. do what is 'right' and avoid what is 'wrong' to promote and enhance the credibility of

the results. An ethics clearance has the intention of ensuring that this purpose is met. In accordance with ECU guidelines, ethics clearance was obtained before the commencement of the study. Since the experiment involved human subjects, practices acceptable to the University were followed. In this context the following was done:

- Respondents were informed of the aims and nature of study in the introductory information letter which was attached to the questionnaire, a copy of which is shown in the appendix 1.

- Participants were informed that they had the right to choose whether or not to participant in the research.

- Anonymity of the respondents was ensured and an option given for the supply of respondent's name for the purpose of receiving a copy of the results. Where this was the case, the name and address was obtained separately from the questionnaire.

- Confidentiality of data was observed and only aggregated data was to be published.

- The questionnaire went through several revisions before the final submission and acceptance by the ethics committee.

3.6 Conduct of the Study

As the study focused on evaluating PA web sites that offered online accounting services, respondents had to access computer and internet facilities. The participants were invited to a specific computer laboratory at ECU. Each session was started with a short welcoming speech. The participants were required to read the introductory information ("information letter to the participants", "participants consent form" and questionnaire instructions) thoroughly before commencing. The introductory information described the invitation to participate in the study, an explanation of the nature, significance and benefit of the study, and the confidentiality of each respondent's data.

The laboratory experimentation continued until the cases were 'enough', i.e. until 100 students had participated. This was deemed for sufficient responses for a reliable statistical analysis to be performed. A 2 dollar "scratch" ticket was offered as an incentive to participate.

Participants were instructed to evaluate each of the web sites as they examined the various features which indicated the quality of the web site. The study followed the advice by Kritou, (1998) supported and referenced by Cunliffe (2000)

> "While user scenarios are important tools, it is important that these reflect the actual activities that users will conduct. One interesting observation made during a direct observation using scenarios with proxy users was that a number of the proxy users started the tasks by general browsing around the site. It may be that this activity is an important part of user behaviour on the Web and that strict adherence to tasks places an artificial restriction on their interactions". (p302)

The participants were given a scenario "to imagine you are looking for accounting service. You may scroll up and down or open new pages starting with the specified home page. Follow the links and instructions up to the 'final' stage of the transaction". Although most users scroll beyond the information that is visible on the screen when a page comes up, to improve usability, critical content and navigation options should be on the home page and visible without scrolling on the monitors (Nielsen, 2004). In addition, since some sites may be complex, it's important to find out how easily users can locate materials within the site without giving up.

To ensure a deeper level of commitment and interaction with the site, the participants were asked to identify accounting services from each of the web sites. These are 'facts' which the participants were asked to determine and hence made it more likely that they engage in searching the site. Each participant evaluated six web sites. In order to ease the evaluation, each URL of the six PA web sites was bookmarked.

3.7 Summary

The chapter discussed the research philosophy, methodology, research approach, research design, and ethic's permission. The chapter provides comprehensive information on how the research approach was developed and how the experiment was designed to collect data from 100 post graduate business students in the Faculty

of Business and Law at Edith Cowan University. The selection of the students was based on convenience sampling. Students evaluated six public accounting web sites which were selected on the basis of their web presence using a judgement or purposive sampling approach.

CHAPTER FOUR

INSTRUMENT DEVELOPMENT

4.1 Introduction

As highlighted in the earlier chapters the need to develop a web site quality evaluation instrument for the PA sector is significant. This study's key aim is to develop such an instrument and apply it to the sector. This chapter provides a discussion of the process of developing the instrument used to evaluate the quality of PA web sites, namely WebQual/PA. The instrument development process was completed in four phases. Phase 1 deals with the refinement of the web site quality constructs or dimensions while phase 2 develops variables for each construct. Phase 3 deals with questionnaire design and phase 4 outlines the research instrument and its 24 questions. The final section deals with pre-testing and refining the instrument and sets out the procedure used during the conduct of the experimentation.

4.2 WebQual/PA: the Instrument

The review of literature in chapter 2 dealt with, among other topics, the three dimensions of WebQual 4.0 (usability, information and interactivity), the areas in which they have been applied and their relevance for the professional service sector. Looking at the nature of services likely to be offered (or being offered) by the PA and the characteristics of the sector, risk was included as a fourth dimension. The study utilised WebQual 4.0 as a basis for the development of WebQual /PA and developed 24 questions to cover the four dimensions.

4.3 Instrument Development Process

The goal was to utilise a valid measure of web site quality that could be applied to evaluate PA web site. As the study aimed at extending existing WebQual instruments (see chapter 2), the dimensions of WebQual 4.0 were adopted and modified with

extensions and refinements. As shown in figure 4.1, web site quality dimensions applicable to PA web sites are reviewed and variables and questions developed appropriately as shown in steps 1 to 3. Step 4 involved pre-testing of the instrument. The refined, final instrument is presented in appendix 1.
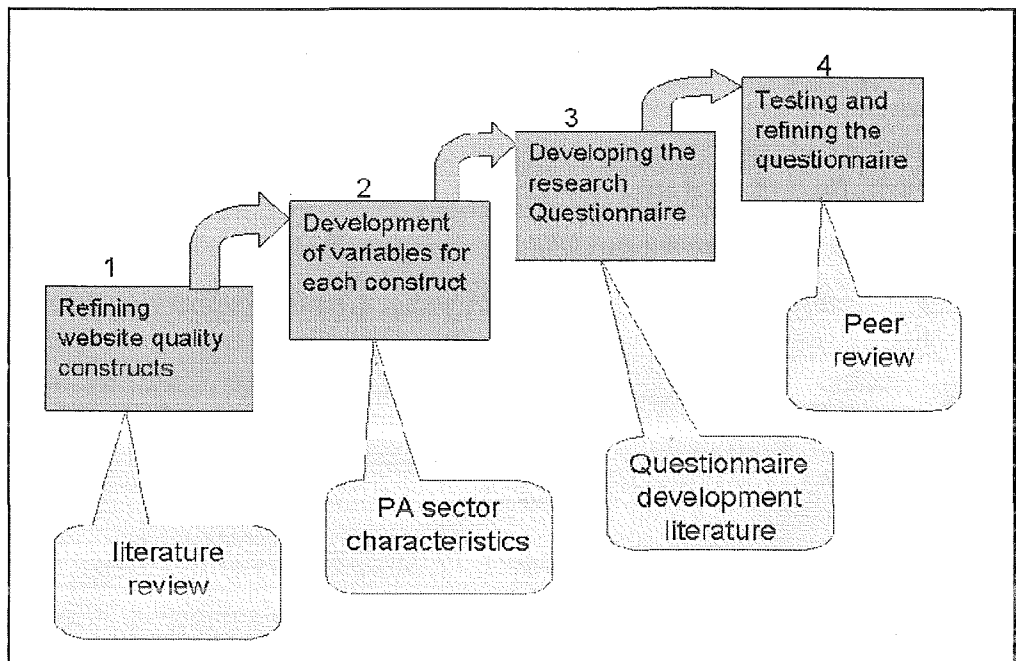
Figure 4.1: Instrument Development Process

4.3.1 Refining Web site Quality Constructs

According to March and Smith (1995) "Constructs or concepts form the vocabulary of the domain. They constitute a conceptualization used to describe problems within the domain and to specify their solutions. They form the specialised language and shared knowledge of a discipline or sub-discipline". (p256) Constructs arise during the conceptualisation of the problem and are refined throughout the design cycle. Constructs is essentially based on utility because a construct or definition "can be neither true nor false i.e., it is not a factual proposition. A definition is simply an explicit statement or resolution; it is a contention or an agreement that a given term will refer to a specific object" (Lastrucci, 1963, p77). This means that a definition is writer-specific and construct utility is tested over time. New constructs may be introduced and the more useful constructs persist while less useful ones languish.

Constructs deal with the problem/solution domain and provide the language in which problems and solutions are defined and communicated.

This first phase of the study involved delimiting the domain of the construct and specifying dimensions to be used to evaluate PA web sites. It is important to understand the web site quality dimensions with a view to measuring them. In this study, four constructs (usability, interactivity, information and riskiness) were identified to describe, evaluate and determine the quality of the PA web site. As mentioned earlier this study aims at evaluating PA web sites from a client perspective. Since for online service delivery, quality can be evaluated best by the consumers of services i.e. clients. As observed by Loiacono, et al., (2004) web sites users (clients) may engage in two major tasks namely gathering information (e.g. about a service) and carrying out transaction (e.g. receiving the service).

The instrument development process begins with a framework of four constructs established in chapter 2 and summarised in figure 4.2 namely usability, interactivity, information quality, and riskiness. Each of these dimensions is further analysed with the main aim of developing specific variables and questions.
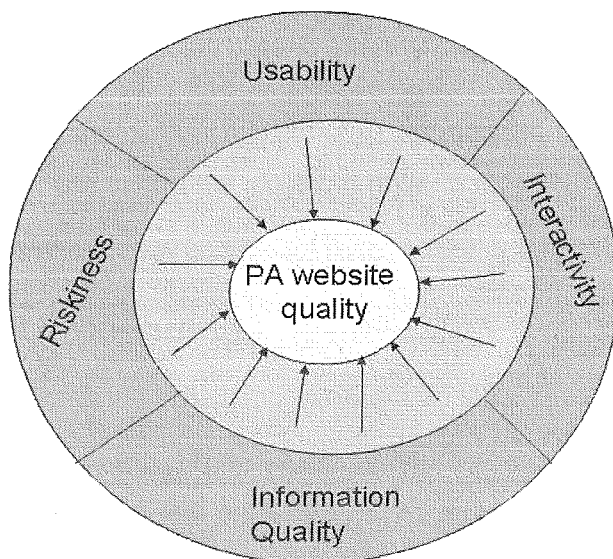
Figure 4.2: Framework of Quality Dimensions

4.3.2 Development of Variables for Each Construct

As observed by Williamson (2000) "a variable is an element or factor which is under investigation in the experiment" (p127). In this study various variables relevant to each construct are identified and discussed which are then used to develop the web site quality questions relevant to each construct (see later sections).

4.3.2.1 Usability

The first task was to clarify the term usability in the context of PA web site and the specific aspects which would determine 'usability' for a PA web site. This was done in chapter 2 where three variables were identified. The three usability variables are easy to read, easy to understand and easy to navigate.

Easy to read. A good page layout facilitates easy location of components which can be enhanced by use of graphics and textual organisation. For enhanced usability, the graphical symbols should portray the type of site including the nature of services offered.

Easy to understand. This implies the consistent location of page components within and across pages, which may include textual descriptions, labels, prompts, colour and messages. Design consistency promotes ease of use as the client can apply common look and feel to each page. Consistency, which is one of the most powerful usability principles, helps the user to feel in control of the system (Nielsen, 2004).

Easy to navigate. This refers to the breadth and depth of search paths, navigation within and across the page and links. It may also refer to how the pages and links are displayed.

4.3.2.2 Interactivity

Chapter 2 identified the various variables associated with interactivity. The study utilises three variables in relation to interactivity, namely, user control, responsiveness and reputation.

User control. One way of promoting user control is by allowing users to choose between alternative courses of 'action 'or 'decision'. For instance, the presence and use of a search engine to find the required information or service. Steuer (1992)

examines interactivity as the extent to which users can modify the form and content of a mediated environment in real-time hence enhancing user control. This may also entail situations where the user gains control in terms of seeking and gaining access to information or services on an on-demand basis (search) where the content, timing and sequence of the communication is under the users control (Fortin, 1997). A further enhancement of user control is when the site has the ability of providing a sense of personalised experience. This refers to the extent to which the site either (i) provides information tailored to meet the client's needs or (ii) the ability of the web site system to take information provided by the client or service user and offer tailored web experience.

Reputation. As noted by Rafaeli & Sudweeks (1997)), one aspect of interactivity deals with the extent to which messages in a sequence relate to each other, especially the extent to which the last message relates to an earlier message. In other words, previous happenings may influence the current decision either positively or negatively. Ways in which reputation can be acquired include (i) when clients have a positive experience with a service and transfer that experience to other clients (current or potential), (ii) from positive historical performance of a firm, (iii) from a firms management (or partners) who are perceived to have a personal reputation, (iv) the competency portrayed by the web appearance, and (v) the type and reputation of clients. To enhance web reputation, web site owners may assume that visitors have limited or no perception of the site's reputation.

Responsiveness. The faster the response, the greater the perception of interactivity, hence the better is the web site quality and the more likely is the client's revisits (Dholakia et al., 2004). Ha & James (1998) explain interactivity further and include the extent to which the communicator and the audience respond to each other's communication needs. This deals with ability to address the user's specific needs in given responses and may be enhanced by the presence of email and/or suggestion facilities including a way of providing feedback on the quality of the web site and/for recent changes.

4.3.2.3 Information Quality

Quality information is generally defined in literature as information that is 'fit-to-use'. The issue of information quality has been addressed extensively in the IS

literature as discussed in chapter 2. The variables for this study are accuracy, timeliness/relevance, and completeness.

Accuracy. Accuracy refers to the extent to which information is reliable and free from error (Alexander & Tate, 1999). Factors which contribute to information accuracy quality include format, layout, source, reputation and links that can verify the service provider's claims.

Completeness. This includes the coverage of the topics, service description, etc. and the depth to which they have been addressed. In other words, completeness indicates the extent to which clients are able to get the necessary information to make a decision or process a task or complete a transaction. The web has the capability of information overload and, for high information quality, this should be avoided. On the other hand, inadequate information may result in sub-optimal action. Information quality can be addressed through good web content management (Barnes & Vidgen, 2004a), covering the uniqueness and depth of material coverage.

Timeliness and relevance. This refers to the extent to which information meets the needs of the user within a time limit considered reasonable by the user. In other words, information will be considered relevant in relation to the purpose of use. This can be determined by such clues as when the web page was revised (or frequency of update), search response in relation to the task at hand, and whether or not the information retrieved meets the expectations of the client. Relevance variable cuts across all the other information dimensions

4.3.2.4 Riskiness

The issue of risk as associated with online services was discussed in depth in chapter 2. Risk implies uncertainty as regards to task completion (delivery/performance, timing and/or quality), secure communication (source) and privacy as they relate online services.

Task completion. This is the possibility of the client being disappointed if his/her expectations differ with the services delivered by the firm. In relation to accounting services it may involve the possibility of failure to perform a service or sub-standard level of performance, or service delivery taking more time than planned/expected. Disappointment can be mitigated by disclosing the names of some of the major

clients, the inclusion of statements giving assurance of task completion as promised, and promising quality of services. Clients should develop an expectation that they are dealing with a reliable firm and mechanism of minimising risk should be clear and visible to clients.

Secure communication. This is risk associated with the credibility and reliability of the web site as a means of online transaction processing. This includes risk associated with release of such information as credit card details (payment details), organisational details, contact person details and the nature of service required. To minimize the risk associated with secure communication, the firm may provide a security logo advising clients of the site's security. As observed by Fink (2000), high quality of web security provides assurance that the parties doing business are being protected.

Privacy risk. This may involve the possibility of the client's details being accessed or used by unauthorised users or for unauthorised purpose. In addition, clients require the assurance that the information they release will be used in confidence and for the intended purpose. As noted by Alexander &Tate (1999)

"It is important that users have confidence that the information they are providing to the site will be kept confidential unless the customer indicates it may be made public. Therefore, it is important that the sites make clear its policy regarding the confidentiality of information collected, both while it is in transit to the site, and also once it has arrived at the site. This can be done not only by stating the site's policy on these issues, but also by indicating what technical measures the site has in place to ensure such privacy" (p49).

Firms should clearly define and publicise their policy regarding the privacy rights of their internet users (Fink, 2000). Lack of privacy security results in increased risk perceived by the client and may affect not only the current but future dealings with the site. This implies that online service sourcing will not be used unless clients consider it safe and secure to do so.

4.4 Developing the Research Questionnaire

This section deals with the designing and development of the questions that operationalise the constructs and variables discussed above. The questionnaire consists of 6 questions per construct, giving a total of 24 questions.

4.4.1 Questionnaire Design

The questionnaire that was developed has several functions and objectives (Alreck & Settle, 1995)

- It gives introductory information to the respondents as shown in the 'information letter to the participants' and 'participants consent form' (see appendix1). This being the first contact of study participants with the study, it was designed carefully bearing in mind that if introduction is done properly, there is a likelihood of increasing response rate and enhanced reliability and validity.

- It contains the questions as developed in the next section (also shown in appendix 1). While respondents were expected to undertake an internet related activity, their experiences or perception was to be reflected in the answers provided to the questions.

- The responses form the basis of data analysis, hence certain characteristic were taken into consideration to ensure that that questionnaire and the responses met the objective of the study within the planned time frame. This included categorisation of the questionnaire, use of already validated questions, keeping the number of questions reasonable and the use of an attractive layout.

The main purpose of phase II of the study was to evaluate the web site quality of PA firms where respondents had the task of sourcing for an accounting service online. Due to this, the activity and usage questions approach was adopted (Remenyi et al., 1998). The approach provides information on the extent of involvement in an activity. Questions were grouped by the major web site quality dimensions i.e. usability, information quality, interactivity and riskiness. This is further supported by the observation made by Zikmund (2003):

"The use of headings or subtitles to identify groups of questions can help the respondent grasp the scope or nature of the questions to be asked. The respondent can follow the logic of the questionnaire at a glance, because the headings indicate groups of similar questions" (p351).

The approach was used by similar studies (e.g. Barnes & Vidgen, 2002; Loiacono et al., 2004) as a convenient format for the participant to follow.

Remenyi et al. (1998 p151) observed that "the use of existing questionnaire or questions is permissible". While questions for WebQual 4.0 were adopted, the wordings and order were changed for most of the question to cater for the PA sector requirements (see table 4.1).

A Likert scaling approach was used to determine how the respondents perceived the quality of the PA web sites. In this study, a seven-point scale was preferred to a five or three-point scale for the following reasons: a seven-scale is more sensitive (i.e. has an ability to accurately measure responses) and it has been used in previous similar studies. On the scale, 1 indicated that the participant would "strongly disagree" while 7 indicated the participant would "strongly agree" with the statement as it relates to web site quality. Questions were highly structured, predominantly close-ended, and as far as possible clearly stated, unambiguous and easily understood. In addition, one open ended question was included to ensure that responses were not forced. Respondents were given a chance to give their own views or comments where applicable.

To maximize reliability and clarity of the questionnaire the following aspects were incorporated in the study:

- Working definition of accounting services and quality dimensions.

- The questionnaire was peer reviewed (see later discussion).

- Respondents were given 'additional comment' options for each of the six PA firms.

4.4.2 The Questions

Figure 4.5 gives a summary of the constructs and variable while table 4.1 gives further details of the questions and the major literature sources. The instrument has four constructs and 24 questions.
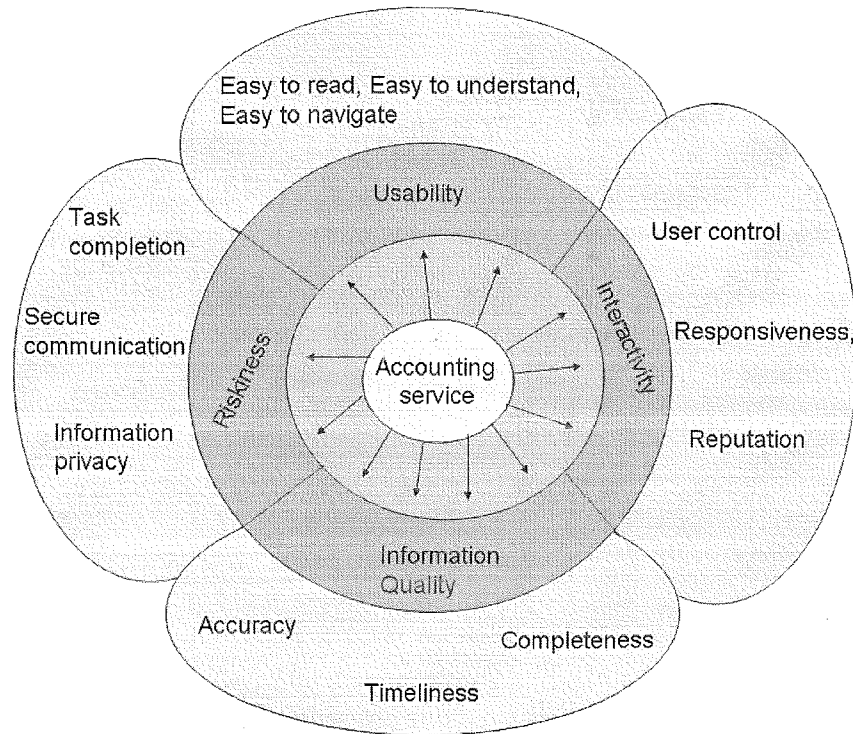
Figure 4.5: PA Web Site Quality Constructs and Variables

Table 4.1: WebQual/PA Instrument Generalisation

Construct Variables	WebQual/PA questions	Major support for the questions
Usability • Easy to read • Easy to understand • Easy to navigate	1. Learning to operate the site is easy	(Bailey & Pearson, 1983; Barnes & Vidgen, 2004a; Benbunam-Fich, 2001; Davis, 1989; 1993; Moschella, 1998; Venkatesh & Davis, 2000)
	2. Locating the service was clear and understandable	(Davis, 1989; 1993; Davis, Bagozzi, & Warshaw, 1989; Schneiderman, 1998; Venkatesh & Davis, 2000)
	3. The site was easy to use	(Barnes & Vidgen, 2004a; Parasuraman et al., 1988)
	4. The design is appropriate to a professional service site	(Barnes & Vidgen, 2004a; Zeithaml, Berry, & Parasuraman, 1990)
	5. The site conveys a sense of competency	(Eighmey, 1997; James & Alman, 1996; Moon & Kim, 2001; Nielsen, 2000; Nielsen Net Rating, September, 2000; Watson, Zinkhan, & Pitt, 2000)
	6. The display pages within the site have an attractive appearance	(Aladwani & Palvia, 2002; Barnes & Vidgen, 2004a; Davis, 1989; 1993; Davis et al., 1989; Schneiderman, 1998; Venkatesh & Davis, 2000)

Construct/ Variables	Webqual/e-qual questions	Major support for the questions
Interactivity • User control • Reputation • Response time	7. The site created a sense of personalisation to meet my needs	(Aladwani & Palvia, 2002; Barnes & Vidgen, 2002; 2004a; Parasuraman, Zeithaml, & Berry, 1991; Parasuraman et al., 1988; Pitt et al., 1995; Schubert & selz, 1997; Zeithaml, Berry, & Parasuraman, 1988; Zeithaml et al., 1990; Zeithaml, Berry, & Parasuraman, 1993)
	8. I am encouraged by the web appearance to seek services from this firm	(Nielsen, 2000; Parasuraman et al., 1988; Pitt et al., 1995; Pitt, Watson, & Kavan, 1997)
	9. The site has a good reputation e.g. testimonials, goals, owners	(Aaker, 1991; Aaker & Joachimsthaler, 2000; Akshay & Monroe, 1957; Nielsen, 1999)
	10. The site makes it easy to communicate with the firm e.g. e-mail address, telephone	(Bitner, Brown, & Meuter, 2000; Hoffman, Novak, & Peralta, 1999; Jarvenpaa, Tractinsky, & Vitale, 2000; Nielsen, 2000)
	11. The site has adequate search facilities	(Aladwani & Palvia, 2002; Machlis, 1999)
	12. My efforts in interacting with the site were strenuous	(Davis, 1989; Harry, 1998; Ives, Olson, & Barouldi, 1983; Su, Chen, & Dong, 1998; Todd & Benbasat, 1992)

Construct/ Variables	Web-quality questions	Major support for the questions
Information • Completeness • Timeliness • Accuracy/Relev ant	13. The site provides information at the right level of detail	(Bailey & Pearson, 1983; Strong, lee, & Wang, 1997)
	14. The information on the site was accurate e.g. evidence of source, update	(Bailey & Pearson, 1983; Strong et al., 1997)
	15. The information was relevant to the task e.g. to my search	(Bailey & Pearson, 1983; Strong et al., 1997; Wand & Wang, 1996; Wang, Lee, & Wang, 1998; Wang & Strong, 1996)
	16. The information was believable	(Bailey & Pearson, 1983; Barnes & Vidgen, 2004a; Strong et al., 1997)
	17. The information was helpful in understanding the site	(Bailey & Pearson, 1983; Strong et al., 1997; Wang & Strong, 1996)
	18. The information format was appropriate e.g. layout, headings	(Bailey & Pearson, 1983; Barnes & Vidgen, 2004a; Chau, Au, & Tam, 2000; Delone & McLean, 1992)

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Construct/ Variables	Wording of questions	Major support for the questions
Riskiness • Task completion • Secure communication • Information privacy	19. My access to the site feels secure	(Hoffman et al., 1999; Parasuraman et al., 1991; Parasuraman et al., 1988; Pires et al., 2004; Pitt et al., 1995; Wang et al., 1998; Zeithaml et al., 1988; 1990; 1993)
	20. I feel communicating with the firm is secure	(Cranor, 1999; Grabner-Kraeuter, 2002; Gruman, 1999; Hoffman et al., 1999)
	21. I feel secure to complete transaction, if wanted to	(Hoffman et al., 1999; Wang et al., 1998)
	22. I feel the firm will deliver the service as promised	(Parasuraman et al., 1991; Parasuraman et al., 1988; Pires et al., 2004; Pitt et al., 1995; Zeithaml et al., 1988; 1990; 1993)
	23. I feel the firm will use the information as intended	(Bryant & Colledge, 2002; Hoffman et al., 1999; Wang et al., 1998)
	24. I feel the information privacy measures are adequate	(Cranor, 1999; Goodwin, 1991; Grabner-Kraeuter, 2002; Gruman, 1999; Hoffman et al., 1999)

4.4.3 Pre-testing the Instrument

Instrument testing as a preliminary trial of some or all aspects of an instrument was done to ensure that there were no unanticipated difficulties or problems (Alreck & Settle, 1995). Pre-testing of research instruments before final administration has been recommended by various authors (Cavana et al., 2001; Cooper & Emory, 1995; Fowler, 1984; Remenyi et al., 1998) with Fowler (1984) contending that pre-testing should be done regardless of the skills of the researcher. There are a number of reasons (or benefits) of pre-testing a research instrument:

• To detect possible shortcomings in the design and administration of the questionnaire (Cooper & Emory, 1995).

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- To strengthen the content validity of the instrument. Participants are usually requested to single out pointless questions and suggest new or revised questions (Cavana et al., 2001; Straub, 1989).

- To eliminate confusing or unclear questions in the questionnaire as noted by Remenyi et al., (1998).

  "pre-testing provides the opportunity to asses such things as the clarity of the instructions and questions, the covering letter, the comprehensiveness of the codes/categories chosen for pre-coded questions, the quality of evidence and the ability to perform meaningful analysis of the evidence obtained. The time taken to complete the questionnaire, the likely response rate, the cost of administering the questionnaire, which questions are irrelevant, which are relevant and whether questions on key issues have been overlooked can also be assessed at this time"(p151).

- To deal with reliability, associated with misunderstanding of the questions, attention is paid to possible discrepancies or variation in answers (Straub, 1989). This was done by visual scrutiny and not by statistical mean.

Different approaches to pre-testing may be applied which could be informal or formal. In this study, 5 post-graduate students in the Faculty of Business and Law, ECU, were approached to pre-test the questionnaire before the experiment began. The selection of the post-graduates was designed to get the maximum feedback due to their wide experiences in management position in which they utilised accounting services offered by public accounting firms or were familiar with the services offered by the PA firms. Among the participant, some had served in senior management positions before embarking on their studies.

A formal approach was taken to achieve the objectives of pre-testing in which participants were requested to respond to a short questionnaire shown in table 4.2.

Table 4.2: Peer Review Questionnaire

Question	Y/N	Comments
Was the information letter clear?		
Were the instructions clear?		
Was the Wording of questions clear?		
Was the session interesting?		
Is the design of the questionnaire attractive?		
Was the time allowed sufficient?		
Any suggestions?		

The review was carried out in a controlled environment where a short discussion with the participant at the end of the session gave a better idea about their feedback comments, understanding and views and what changes/additions were required. After the peer review, the responses were analysed and the feedback from was used by the researcher to modify the experiment settings, instructions and the questionnaire. The following areas were specifically addressed:

- The use of URL was preferred to static pages. It was observed that interactivity and usability qualities can be measured best when the user is exposed to non-static pages. Therefore, the participants were instructed to scroll up and down or open new pages starting with a specified home page.

- The questionnaire in terms of wording, layout, structure, instructions and improvement of the general appearance. This improved the participant's understanding and minimised the need to re-ask questions using alternative wording.

- The inclusion of a 'comment session' at the end of each session. In this session the researcher was able to 'debrief' participants.

- Reduction of the number of web sites to be evaluated. As observed by Straub (1989), there was high possibility that inaccurate measurement could result from evaluating too many sites as this taxes respondents' concentration. One of the participant commented that "by the end of the sixth web site motivation for evaluating carefully is not induced". As a result participants evaluated six web sites instead of eight.

4.5 Experiment Setting and Procedure

The experiment covered two weeks which provided a relatively short period to eliminate any possible changes on the web sites used in the study. A print out of each of the home page of the web site was done at the beginning and end of the experimentation period. A comparatively analysis revealed no changes.

Participants were invited to a computer laboratory designated for the purpose. While the 'flyer' specified Churchlands campus venue, the venues for Joondalup campus were organised on a convenience basis (in consultation with appropriate lecturers). To minimise or control interruption, a door sign was used to welcome those coming to participating in the study and thanking others for not interrupting the session-in-progress. The poster specified the expected time of completion.

Every session was started with welcome remarks by the researcher and a brief outline of what is to be done within the session. Participants were allowed to consult with the researcher, if necessary. Every session lasted for appropriately 1 hour. Table 4.3 shows the timing of the various tasks undertaken by the researcher and the participant.

Table 4.3: Timing of the Experiment

Timing	Task	Action by
2-5 minutes	Welcome and introductory remarks	Researcher
	Reading of information letter	Participant
	Signing Consent form	
60 minutes in total 10 minutes per site 5 minutes	Reading questionnaire instructions	Participant
	Exploring the site	Participant
5 minutes	Completing the questions	Participant
2-5 minutes	Closing remarks	Researcher

4.6 Summary

In this chapter a domain specific instrument for the PA sector (WebQual-PA) was developed for which WebQual 4.0 was used as a basis for the development with modification of questions and additional dimension. The process consisted of consideration of previous academic work, well designed research tools (e.g. WebQual 4.0) and methods for ensuring that outcome/results have academic rigour and validity. An analysis of the unique characteristics and the nature of accounting services indicated that there was a need to include additional dimension to WebQual, namely risk, which is an important factor to the evaluation of professional service web site. The chapter developed an instrument with four dimensions, twelve variables and 26 questions. The instrument was tested and the results of the study will be presented in chapter 5. The web site quality perceptions of the study participants were established using the questionnaire in a controlled experiment environment.

CHAPTER FIVE

DATA ANALYSIS

5.1 Introduction

The methodology and instrument used in this study were described and developed in chapters three and four respectively. This chapter examines the analysis of 612 usable questionnaires resulting from the laboratory experiment. In the data collection, each participant completed 6 sets of questionnaires (one per each PA web site). A total of 624 questionnaires were given to, and filled by the participants. Out of 624 questionnaires, 612 were deemed usable and consequently used for the analysis outlined in this chapter. The chapter uses statistical approaches to analyse the data in a well organised flow which follows the questionnaire groupings established in the prior chapters.

The chapter begins with a description of the demographics of the participants. This is followed by the examination of the validity and reliability of data to ensure the accuracy of the measurement instruments and usefulness of data. The distribution of data is investigated to see if it differs from a normal distribution prior to further statistical testing. The third section gives an analysis of the web site quality dimensions in relation to the six PA web sites. An overall view of the six web sites is also provided.

5.2 Information on the Participants

One hundred and two post-graduate students voluntarily participated in the controlled laboratory experiments. Each participant evaluated six PA web sites. Table 5.1 gives the details of the 102 respondents in terms of gender, area of specialisation and year of study.

Table 5.1: Demographic profile of respondents

Description	Number	Percentage
Gender		
Male	48	47.1
Female	54	52.9
Total	102	100.0
Study Area of specialisation		
Master of sport management	1	1.0
Master of Professional Accounting	20	19.6
Master of Business Administration	18	17.6
Master of International Business	18	17.6
Master of Professional Finance and Banking	1	1.0
Master of Human resource Management	7	6.9
Master of Management Information Systems	29	28.4
Master of Strategic Project Management	2	2.0
Master of Professional Marketing	1	1.0
PhD	3	2.9
DBA	2	2.0
Total	102	100.0
Year of study		
1	33	32.4
2	69	67.6
Total	102	100.0

In terms of gender, 54 from 102 or 52.9% of the respondents are female. Although it had been found in other research that most of managerial staff are males, the percentage of female managers has been on the increase over time (Wirth, 2002). The male participants accounted for 46 or 47.1 %.

The subjects in this study were restricted to post-graduate students in the Faculty of Business and Law, at ECU. This provided a 'client base' as close as possible to real clients of PA firms. They are the potential future clients of PA firms. As seen in table 5.1, nearly all the participants, 97 or 95.1%, are masters' students, with 4.9% of the participants being doctoral students. Of the total participants, 29 or 28.4%, specialised in the Master of Management Information Systems followed by the Master of Professional Accounting (20 or 19.6%). The third category was the Master of Business Administration and Master of International Business with equal

participants, 18 or 17.6%. These four categories formed the majority of participants, namely 85 or 82.2 %.

A small percentage of the participants, 32.4%, were in their first year students. On the other hand, over two thirds of the participants, 67.6%, were second year students i.e. in the final year of their masters' programmes. This implies that they have been exposed to business related courses and hence should be in a position to evaluate accounting services online. This is in line with the previous study of Fink (1999) which established that business students have the strong potential of being clients of professional accounting firms.

5.3 Information on the Web Sites

As the study focused on evaluating PA web sites as a means of offering online accounting services, it was necessary to ensure a deep level of commitment and interaction within the site by the participants. To deal with this situation, the participants were asked to identify accounting services from each of the web sites. This requirement ensured that they were more likely to engage in searching the site. Table 5.2 gives a summary of the services identified per site. While all the participants identified at least one service for each of the web site, a total of 48 services were identified with 13 or 27% of these services cutting across the six PA firms. The table shows the wide range of services offered by the PA firms. They include accounting, legal, insurance, health, and migrating services.

Table 5.2: Range of PA Services

Service Title	PWC Sum	PWC %	E&Y Sum	E&Y %	KPMG Sum	KPMG %	Deloitte Sum	Deloitte %	Investor Sum	Investor %	PKF Sum	PKF %
1. Taxation	98	96	96	94	100	98	87	85	15	15	92	91
2. Auditing	101	99	59	58	100	98	36	35	3	3	89	87
3. Consulting	59	58	65	64	64	63	91	89	56	55	91	90
4. Financial Planning	51	50	26	26	74	73	67	66	76	75	88	86
5. Risk Management	85	83	75	74	86	84	87	85	12	12	14	14
6. Performance improvement	76	75	17	17	51	50	53	52	35	34	25	25
7. Investment	20	20	47	46	13	13	19	19	86	84	52	51
8. Restructuring	13	13	57	56	87	85	36	53	6	6	60	59
9. E-Business	18	18	14	14	48	47	92	90	2	2	40	39
10. Corporate reorganisation	19	19	38	37	51	50	84	82	10	10	33	32
11. Business reconstruction	81	80	16	16	49	48	16	16	2	2	55	54
12. Forensic	59	58	61	60	87	85	81	79	10	10	74	73
13. Franchising	7	7	2	2	1	1	10	10	28	28	3	3
14. Other services												
15. Financial service					5	5	5	5				
16. Dispute analysis & Investigation	25	25										
17. Transaction services	18	18	30	29	15	15						
18. Actuarial	21	21					16	16				
19. Legal / Law	21	21	3	3								
20. Corporate Finance	13	13					6	6				
21. Project finance	12	12										
22. Assurance & Advisory			8	8							12	12
23. Valuation Advisory			15	15								
24. Entrepreneurial Growth			3	3								
25. Merger & Acquisitions			5	5								
26. Human Capital			8	8								
27. Health			3	3								
28. Online Services			5	5							3	3
29. Anti-money Laundering							14	14				
30. Sarbanes Oxley							7	7				
31. Corporate Governance Reform							5	5				
32. Growth Solution							8	8				
33. Migration services					9	9						
34. Family Business Advisory					4	4						
35. Middle Market Advisory					12	12						
36. Business Advisory					2	2						
37. Brokerage									28	27		
38. Insurance									38	37		
39. Mortgages									25	25		
40. Banking									19	19		
41. Estate Planning									6	6		
42. Daily Rates									7	7		
43. Retirement Planning									3	3		
44. Outsourcing											26	26
45. Superannuation											15	15
46. Professional Practice Network											2	2

Service Title	PWC		E&Y		KPMG		Deloitte		Investor		PKF	
	Sum	%	Sum	%	Sum	%	Sum	%	Sum	%	Sum	%
47. Insolvency Solution											1	1
48. Corporate secretarial											4	4
No. of services	19		22		19		20		20		20	

Figure 5.1 shows the number of services offered by each of the PA firms. Although some services were easily identified by the participants, for instance taxation was identified by more than 80% of the participant in all the firms except for the Investor Group (14.7%), the number of services range from 19 to 22. In total 48 different services were identified by the participants.

Figure 5.1: No of Services Offered by PA Firms

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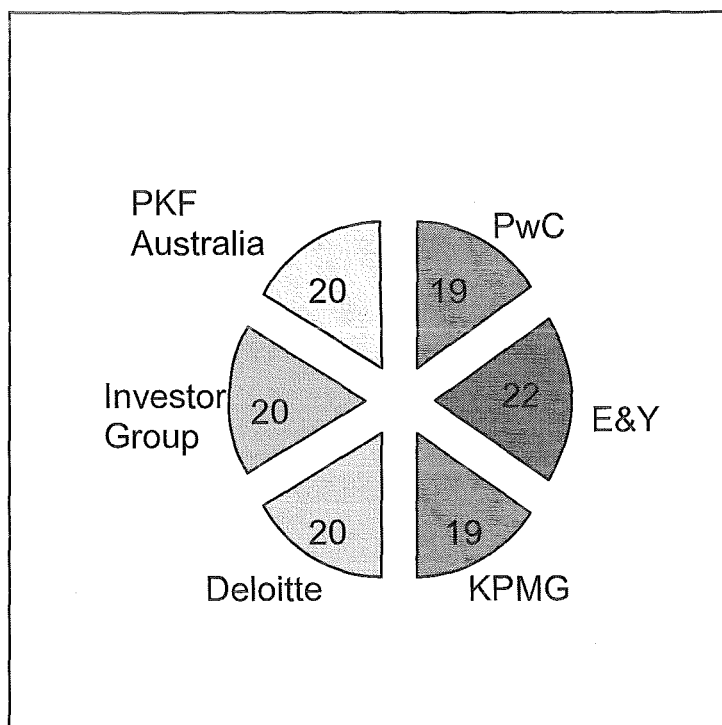
5.4 Validity and Reliability of Data

5.4.1 Theory

As with any research, it was critical that this study displayed reliable and valid measures of its data and procedures. Foe example, a qualitative study should respond to concerns that the researcher's natural subjectivity would influence the research thereby creating doubts over reliability and validity. In quantitative research careful transcribing and coding and verification are essential to achieve reliability and consistency during the analysis of data collected. To deal with these concerns, issues of validity and reliability had to be addressed.

Validity is "the degree to which what is observed or measured is the same as what was purported to be observed or measured" (Williamson 2000, p291). Reliability on the other hand is "the degree to which observations and measures are consistent or stable" (Williamson 2000 p289). Cooper & Schindler (2001) observe that "reliability is a necessary contributor to validity but it is not a sufficient condition for validity" (p215). Boudreau, Gefen and Straub (2001) suggested approaches for reinvigorating the quest for validation in IS research via content/construct validity, reliability, and manipulation validity. Content validity requires utilisation of a sample which is a representative of the whole set of items that could measure the concept (Cooper & Schindler, 2001; Sekaran, 1984). Construct validity refers to "the degree to which inferences can legitimately be made from the operationalisations in your study to the theoretical constructs on which those operationalisation were based" (Trochim, 1996 p1 as noted by fink & Laupase, 2000).

Reliability refers to accuracy problems of the measuring device. As observed by Ives et al., (1983) and Straub (1989) these can be reflected in the instrument (the questionnaire) where items are ambiguously phrased, lengthy instrument affecting the concentration of the respondents and low morale which may result in careless answers by the participants. These conditions need minimisation for the improvement of the reliability level of the results. Methods to ensure reliability and validity have been discussed by various authors (Anderson & Poole, 1994; Ives et al., 1983; Lincoln & Guba, 1985; Miles & Huberman, 1994; Straub, 1989) and are

summarised in table 5.3. The following section explains how these guidelines have been applied in this study.

Table 5.3: Study Validity and Reliability Guideline Checks

Dimension	Brief explanation/definition	Methods of execution	Application for this study
Content validity	Degree to which items in an instrument reflect the content universe to which the instrument will be generalised	Literature review, expert Judges or panel.	-Extensive literature review. -Opinion of business expert
Construct validity	The extent to which an operationalisation measures the concept that it purports to measure	Use of previous validated instrument, Pre-testing of instrument, pilot testing of instrument, multitrait-multimethod techniques, confirmatory or principal factor analysis	- Use of validated WebQual 4.0 instrument as a basis
Reliability	The degree to which a measurement is accurate i.e. the extent to which an instrument produces consistent or error-free results	Standard coefficient of internal consistency (Cronbach's alpha), test/retest, split halves, inter-coder tests	Internal consistency method i.e. Cronbach's alpha
Manipulation validity	The extent to which treatments have been perceived by the subjects	Statistics (t-test, chi-square, ANOVA, count, means, percentages)	Statistics

Source: Various (Boudreau et al., 2001; Straub, 1989)

5.4.2 The Study

In order to ensure content validity of the questionnaire, a comprehensive search of the literature (including previously validated questionnaires) was undertaken. In addition expert opinions (MIS and accounting) had been sought. One issue is the use of negatively worded questions, there was only one (question 12) with negative wording. To ensure that negatively worded question was correctly used in the analysis, the question 12 was recoded. To achieve construct validity, the

questionnaire was pre-tested and modified as recommended by Straub (1989) and Davis & Consenza (1988). Pre-testing details are presented in chapter 4 section 4.4.3.

Reliability was examined by measuring internal consistency through the Cronbach alpha technique (Davis & Consenza, 1988). Using the emerging factor structure, Cronbach alpha (Cronbach, 1970) values were computed for the four constructs for each of the six PA firms. The values, as shown in table 5.4, were compared to the limits of 0.5 to 0.6 used in exploratory research, 0.8 used for basic research, and 0.9 or better applied for an important decision making with respect to specific test scores (Davis & Consenza, 1988). Other researchers (Nunnually, 1978) recommended an acceptable range of 0.6 - 0.8. The higher the value of the correlation between items, the better the instrument reliability in terms of internal consistency (Cooper & Emory, 1995). Table 5.4 shows the internal validity associated with this study.

Table 5.4: Cronbach Alpha Values for PA Web Sites

Professional Firms	Cronbach Alpha				
	Usability	Interactivity	Information	Riskiness	Overall
PWC	.791	.749	.807	.859	.911
Ernst & Young	.928	.745	.905	.939	.963
KPMG	.924	.846	.922	.932	.968
Deloitte	.906	.638	.923	.908	.949
Investor Group	.920	.779	.909	.922	.960
PKF Australia	.949	.791	.925	.935	.971
Total	.946	.836	.935	.939	.972

The results reflected in the table indicate that the Alpha coefficient of the factors determining the quality of PA web sites ranged from 0.638 – 0.968. All the Alpha values fall within the acceptable range. The overall Alpha values are above 0.8 which indicates good reliability (Sekaran, 2003).

5.4.3 Data Distribution

A measure of distribution of data was undertaken to determine if it differed from a normal distribution prior to conducting further statistical tests. This was necessary to establish basic characteristics of distribution which guides the choice of statistical methods to be applied. Visual representation of data distribution was provided as recommended by Cooper and Schindler (2001) where "Visual representations are ultimately superior to numerical ones for discovering a distribution's shape and should be used before selecting remedies to collect anomalies in the data" (p441). To accomplish this, sector histograms for the combined web sites are reproduced in appendix 2. The visual representation shows the distributions are approximation of a normal distribution. As a further test, the skewness measure of distribution was compiled. Table 5.5 indicates that all the items fall within the acceptable range of distribution (Cavana et al., 2001).

In addition a skewness measure of distribution for individual web sites was compiled and is shown in appendix 3. The data indicates that PWC and Investor Group had all the values within the acceptable range. KPMG and PKF had each one item, search facility (1.156) and ease of use (1.032) out of range respectively. The other two web sites, E&Y and Deloitte, each had two items out of range. These deviations were few.

Table 5.5: Skewness of the Variables

Constructs/variables	Description	mean	Skewness
Usability			
Learning	Learning to operate the site is easy	5.00	-.781
Locating services	Locating the service was clear and understandable	4.90	-.754
Ease of use	The site was easy to use	4.90	-.785
Design appropriateness	The design is appropriate to professional service site	4.88	-.534
Competency	The site conveys a sense of competency	4.89	-.489
Attractive appearance	The display pages within the site have an attractive appearance	4.71	-.407
Interactivity			
Sense of personalisation	The site created a sense of personalisation to meet my needs	4.36	-.083
Seeking services	I am encouraged by the web appearance to seek services from this firm	4.55	-.371
Reputation	The site has a good reputation e.g. testimonials, goals, owners	4.12	-.199
Search facilities	The site has adequate Search facilities	4.80	-.925
Ease of communication	The site makes it easy to communicate with the firm e.g. e-mail address, telephone	4.95	-.617
Site interaction efforts	My efforts in interacting with the site were strenuous	4.50	-.113
Information			
Level of detail	The site provides information at the right level of detail	4.78	-.318
Accuracy	The information on the site was accurate e.g. evidence of source, update	4.75	-.207
Relevancy	The information was relevant to the task e.g. to my search	4.78	-.428
Believable	The information was believable	4.93	-.431
Helpful in understanding	The information was helpful in understanding the site.	4.79	-.539
Format appropriateness	The information format was appropriate for the task e.g. layout, headings	4.67	-.531
Riskiness			
Access security	My access to the site feels secure	4.66	-.450
Communication Security	I feel communicating with the firm is secure and promising	4.61	-.421
Transactions security	I feels secure to complete transactions, if wanted	4.47	-.392
Service delivery security	I feel the firm will deliver the service as promised	4.79	-.374
Information usage security	I feel the firm will use the information as intended	4.76	-.426
Privacy measures	I feel the information privacy measures are adequate	4.58	-.358
Overall view	**What is your overall view of the site**	**4.80**	**-.518**

Based on the above observations, parametric statistical tests were applied to the data in accordance with the observation by Burns (1997) where normal or close to normal data distribution should be the basis of parametric tests. In addition, parametric tests are more powerful than the 'distribution-free-non-parametric test' (Burns, 1997).

Parametric tests were used for all the questions except question 25, which required a narrative approach. The comments compiled from this question are summarised in a later section of this chapter and detailed discussion are presented in chapter 6.

The rest of this chapter deals with the analysis of quality characteristics for the PA sector as well as individual PA firms. An attempt is made to evaluate the quality of the PA web sites relative to each other and the impact of some moderating factors.

5.5 Quality Assessment for PA Sector Web Sites

This section provides descriptive statistics of the combined data obtained by evaluating the quality of top six PA web sites, namely PwC, E&Y, KPMG, Deloitte, Investor Group and PKF. A measure of central tendency, the mean, was used to describe the data collected during the controlled experiment. The scale used to capture the responses was 1 to 7 where 1 indicated "strongly disagree" or "very poor" and 7 indicated "strongly agree" or "excellent". Table 5.6 shows the descriptive statistics for all 6 firms, the PA sector, for the quantitative variables. It indicates the minimum, maximum, mean and standard deviation of each constructs (usability, interactivity, information quality and riskiness) for the 24 questions. The table shows the ranking in means of the constructs as follows: usability (4.88), information quality (4.78), riskiness (4.64) and interactivity (4.55), respectively.

Table 5.6: The Mean and Standard Deviation for the Constructs

Construct/ variable	Description	Min.	Max.	Mean	Std. Deviation
Usability				**4.88**	**1.294**
Learning	Learning to operate the site is easy	1	7	5.00	1.081
Locating services	Locating the service was clear and understandable	1	7	4.90	1.335
Ease of use	The site was easy to use	1	7	4.90	1.270
Design appropriateness	The design is appropriate to professional service site	1	7	4.88	1.287
Competency	The site conveys a sense of competency	1	7	4.89	1.287
Attractive appearance	The display pages within the site have an attractive appearance	1	7	4.71	1.463
Interactivity				**4.55**	**1.414**
Sense of personalisation	The site created a sense of personalisation to meet my needs	1	7	4.36	1.354
Seeking services	I am encouraged by the web appearance to seek services from this firm	1	7	4.55	1.297
Reputation	The site has a good reputation e.g. testimonials, goals, owners	1	7	4.12	1.383
Search facilities	The site has adequate Search facilities	1	7	4.80	1.412
Ease of communication	The site makes it easy to communicate with the firm e.g. e-mail address, telephone	1	7	4.95	1.358
Site interaction efforts	My efforts in interacting with the site were acceptable	1	7	4.50	1.519
Information Quality				**4.78**	**1.211**
Level of detail	The site provides information at the right level of detail	1	7	4.78	1.227
Accuracy	The information on the site was accurate e.g. evidence of source, update	2	7	4.75	1.079
Relevancy	The information was relevant to the task e.g. to my search	1	7	4.78	1.169
Believable	The information was believable	2	7	4.93	1.087
Helpful in understanding	The information was helpful in understanding the site.	1	7	4.79	1.231
Format appropriateness	The information format was appropriate for the task e.g. layout, headings	1	7	4.67	1.429
Riskiness				**4.64**	**1.188**
Access security	My access to the site feels secure	1	7	4.66	1.160
Communication Security	I feel communicating with the firm is secure and promising	1	7	4.61	1.206
Transactions security	I feels secure to complete transactions, if wanted	1	7	4.47	1.272
Service delivery security	I feel the firm will deliver the service as promised	1	7	4.79	1.118
Information usage security	I feel the firm will use the information as intended	1	7	4.76	1.103
Privacy measures	I feel the information privacy measures are adequate	1	7	4.58	1.235
overall view	What is your overall view of the site	1	7	**4.80**	**1.244**

As shown by the standard deviation, the distance of each of the mean scores ranged between 1.414 and 1.188 for the constructs, and between 1.519 and 1.079 for the variables within the constructs. This shows a general view of perceptions of web site quality for the PA sector. The next section provides an analysis of whether or not the mean scores between constructs differ.

5.5.1 Differences between Individual Constructs

A t-test was conducted to assess whether the mean scores of any two constructs that determined the web site quality of the PA sector were statistically different from each other. Table 5.7 shows the results.

Table 5.7: Differences between Individual Constructs- PA Sector

	Usability (mean 4.88)	Interactivity (Mean 4.55)	Information (mean 4.78)	Riskiness (mean 4.64)
Usability	-			
Interactivity	4.674* (.005)	-		
Information	1.457 (.205)	-10.977* (.000)	-	
Riskiness	2.580* (.049)	-1.470 .202	1.731 (.144)	-

*P<.05   () Significance

The table above shows that there was a statistically significant difference between 'usability' and two other constructs ('interactivity' and 'riskiness') and also between 'interactivity' and 'information quality'. There was no statistically significant difference between 'usability' and 'information' and also between the second and third construct, 'interactivity' and 'information' and the fourth, 'riskiness'. This categorises the constructs determining the web site quality of PA sector into two levels, each comprising two constructs.

Level 1:
- Usability
- Information

Level II
- Riskiness
- Interactivity

A further t-test for each of the constructs was used to determine whether there were any differences between the variables within each construct.

5.5.2 Differences between Usability Variables

Table 5.8 shows the mean scores and differences of mean scores between variables in 'usability'.

Table 5.8: Differences between Usability Variables- PA Sector

	Learning (mean 5.00)	Locating services (mean 4.90)	Ease of use (4.90)	Design appropriateness (mean 4.88)	Competency (mean 4.89)	Attractive appearance (mean 4.71)
Learning	-					
Locating services	2.954* (.003)	-				
Ease of use	3.182* (.002)	.102 (.919)	-			
Design appropriateness	3.127* (.002)	.788 (.431)	.708 (.479)	-		
Competency	2.825* (.005)	.421 (.674)	.316 (.752)	-.396 (.692)	-	
Attractive appearance	6.287* (.000)	4.515* (.000)	4.413* (.000)	4.248* (.000)	5.048* (.000)	-

*P<.05   () Significance

Within the 'usability' construct, 'Learning; the ease of learning to operate the site' had the highest mean (5.0), followed by both 'Locating services; clarity and understandability of Locating the service' (4.90), and 'Ease of use; ease of using the site' (4.90). The other variables within usability were ranked as follows: 'Competency; competency conveyed by the site' (4.89), 'Design appropriateness; design appropriate to professional service site' (4.88), and 'Attractive appearance; appearance of the display pages within the site' (4.71). There was a statistically significant difference between the 'Learning; the ease of learning to operate the site' variable and all the other variables.

There was no statistically significant difference between, 'Locating services', 'Ease of use' and 'Design appropriateness' and 'Competency'. However there was a statistically significant difference between these four variables and 'Attractive appearance' variable. The analysis resulted to three level categories as shown below.

Level 1:   • Learning

Level II   • Locating services
            • Ease of use
            • Design appropriateness
            • Competency

Level III   • Attractive appearance

5.5.3 Differences between Interactivity Variables

The mean scores and differences of mean scores between variables in the interactivity construct are shown in table 5.9.

Table 5.9: Differences between Interactivity Variables- PA Sector

	Sense of personalisation (mean 4.36)	Seeking services (mean 4.55)	Reputation (mean 4.12)	Search facilities (mean 4.80)	Ease of communication (mean 4.95)	Site interaction efforts (mean 4.50)
Sense of personalisation	-					
Seeking services	-5.230* (.000)	-				
Reputation	4.295* (.000)	7.757* (.000)	-			
Search facilities	-7.575* (.000)	-4.755* (.000)	-11.518* (.000)	-		
Ease of communication	-11.913* (.000)	-8.258* (.000)	-13.064* (.000)	-2.680* (.008)	-	
Site interaction efforts	-2.167* (.031	.709 (.479)	-5.063* (.000)	4.472* (.000)	7.436* (.000)	-

*P<.05   () Significance

The table shows that 'Ease of communication; how the site makes it easy to communicate with the firm' was determined as having the highest quality with a mean of 4.95 followed by 'Search facilities; the adequacy of search facilities in the site (4.80). Next was 'Seeking services; how the web appearance encourages the seeking of services from a particular firm' (4.55), followed by 'Site interaction efforts; efforts in interacting with the site was considered acceptable' (4.50), 'Sense of personalisation; how the site created a sense of personalisation to meet clients needs' (4.36) and 'Reputation; the site has a good reputation' (4.12).

The table above shows that there was a statistically significant difference between all the variables except the 'Seeking services' and 'Effort' variables. This categorises the interactivity constructs variables into five levels.

Level 1:   • Ease of communication

Level II   • Search facilities

Level III   • Seeking services
                 • Site interaction efforts

Level IV   • Sense of personalisation

Level V   • Reputation

5.5.4 Differences between Information Variables

Analysis to establish any significant differences of mean scores between variables in information quality construct was carried out. The results are shown in the table below.

Table 5.10: Differences between Information Variables- PA Sector

	Level of detail (mean 4.78)	Accuracy (mean 4.75)	Relevancy (mean 4.78)	Believable (mean 4.93)	Helpful in understanding (mean 4.79)	Format appropriate-ness (mean 4.67)
Level of detail	-					
Accuracy	.702 (.483)	-				
Relevancy	.000 (1.000)	-.659 (.510)	-			
Believable	-4.380* (.000)	-5.637* (.000)	-4.860* (.000)	-		
Helpful in understanding	-.351 (.726)	-.931 (.352)	-.348 (.728)	4.687* (.000)	-	
Format appropriateness	2.355* (.019)	1.885 (.060)	2.279* (.023)	6.157* (.000)	3.069* (.002)	-

*P<.05   () Significance

The above table indicates the variable 'Believable; believable the information was' had the highest mean (4.93) while 'Format appropriateness; appropriateness of information format for the task' had the lowest mean (4.67). The other variables were ranked as follows: 'Helpful in understanding; helpfulness of information in

understanding the site' (4.79), 'Level of detail; whether right level of information detail is provided by the site' (4.78), 'Relevancy; whether the information was relevant to the task' (4.78) and 'Accuracy; whether the information on the site was accurate' (4.75).

There was no statistically significant difference between the 'Level of detail', 'Accuracy', 'Relevancy' and 'Helpful in understanding'. However, a difference occurred between the highest and the lowest rated quality variables, 'Believable' and 'Format appropriateness'. In addition, a difference occurred between these two variables and all the other variables. This categorises the information quality constructs variables into three levels.

Level 1:
- Believable

Level II
- Level of detail
- Accuracy
- Relevancy
- Helpful in understanding

Level III
- Format appropriateness

5.5.5 Differences between Riskiness Variables

Table 5.11 shows the mean scores of the riskiness construct where 'Service delivery security; the feeling that the firm delivers service as promised' had the highest mean (4.79), closely followed by 'Information usage security; the feeling that the firm will use the information as intended' (4.76). 'Access security; feeling of secure in relation to accessing the site' was third with a mean of 4.66 followed by 'Communication security; feeling that communicating with the firm is secure and promising' (4.61) and 'Privacy measures; feeling that the information privacy measures are adequate' (4.58). 'Transactions security; feeling of secure to complete transactions, if wanted' had the lowest mean (4.47).

Table 5.11: Differences between Riskiness Variables- PA Sector

	Access security (mean 4.66)	Communication Security (mean 4.61)	Transactions security (mean 4.47)	Service delivery security (mean 4.79)	Information usage security (mean 4.76)	Privacy measures (mean 4.58)
Access security	-					
Communication Security	1.285 (.199)	-				
Transactions security	5.324* (.000)	5.119* (.000)	-			
Service delivery security	-3.417* (.001)	-5.005* (.000)	-9.126* (.000)	-		
Information usage security	-2.677* (.008)	-3.678* (.000)	-7.3218* (.000)	1.098 (.273)	-	
Privacy measures	1.891 (.059)	.811 (.418)	-3.274* (.001)	5.752* (.000)	4.553* (.000)	-

*P<.05   () Significance

There was no statistically significant difference between 'Access security', 'Communication Security' and 'Privacy measures'. In addition, there was no statistically significant difference between the two highest rated variables, 'Service delivery security' and 'Information usage security' but the two variables had a statistically significant difference with all the other variables. This analysis resulted in three levels as shown below.

Level 1:
- Service delivery security
- Information usage security

Level II
- Access security
- Communication Security
- Privacy measures

Level III
- Transactions security

The following section provides an analysis of whether the mean scores of any two constructs or variables that determined the web site quality of the individual firms were statistically different from each other. The analysis is presented for each PA firm.

5.6 Quality Assessment for PricewaterhouseCoopers Web Site

5.6.1 Differences between Individual Constructs

The t-test was conducted to assess whether the means scores of any two constructs that determined the web site quality of the PricewaterhouseCoopers (PwC) were statistically different from each other. The results are shown in the table 5.12.

Table 5.12: Differences between individual constructs - PwC

	Usability (mean 5.18)	Interactivity (Mean 4.92)	Information (mean 5.12)	Riskiness (mean 4.88)
Usability	-			
Interactivity	1.449 (.207)	-		
Information	.707 (.511)	-1.197 (.285)	-	
Riskiness	5.781* (.002)	.246 (.815)	2.619* (.047)	-

*P<.05   () Significance

The table shows the rating of the constructs as follows: usability (5.18), information quality (5.12), interactivity (4.92), and riskiness (4.88). A further analysis shows that there was no statistically significant difference between 'Usability' and two other constructs 'Interactivity' and 'Information' and also between 'Interactivity' and 'Information quality'. However, there was a statistically significant difference between 'Usability' and 'Riskiness' and between 'Information' and 'Riskiness'. This categorises the constructs determining the web site quality of PwC firm into two levels.

Level 1:
- Usability
- Interactivity
- Information

Level II
- Riskiness

Further t-test were conducted to determine whether any two mean scores for variables used to determine PwC web site quality were significantly different. The analyses of the result follow.

5.6.2 Differences between Usability Variables

As shown in table 5.13, 'Design appropriateness; design appropriateness to professional service site' had the highest mean (5.32) followed by 'Locating services; clarity and understandability of locating the service' (5.29). The other variables within usability were ranked as follows: 'Competency; competency conveyed by the site' (5.22), 'Learning; the ease of learning to operate the site' (5.17), and 'Ease of use; ease of using the site' (5.13). 'Attractive appearance; appearance of the display pages within the site' had the lowest mean (4.94). Overall all the variables in relation to usability had a mean of over 5.0 except the lowest one.

Table 5.13: Differences between Usability variables - PwC

	Learning (mean 5.17)	Locating services (mean 5.29)	Ease of use (5.13)	Design appropriateness (mean 5.32)	Competency (mean 5.22)	Attractive appearance (mean 4.94)
Learning	-					
Locating services	-1.679 (.096)	-				
Ease of use	.553 (.582)	2.020* (.046)	-			
Design appropriateness	-1.647 (.103)	-.360 (.720)	-2.252* (.026)	-		
Competency	-.506 (.614)	.929 (.355)	-.988 (.326)	1.370 (.174)	-	
Attractive appearance	1.870 (.064)	3.126* (.002)	1.624 (.107)	3.879* (.000)	2.629* (.010)	-

*$P<.05$ () Significance

There was no statistically significance difference between the variable 'Learning' and all the other variables. There was also no statistically significant difference between, 'Design appropriateness', 'Locating services' and 'Competency'. However there was a statistically significant difference between these three variables and 'Attractive appearance'. This categorises the usability constructs variables into two levels.

Level I
- Locating services
- Design appropriateness
- Competency

Level II
- Learning
- Ease of use
- Attractive appearance

5.6.3 Differences between Interactivity Variables

Table 5.14 shows that 'Ease of communication; how the site makes it easy to communicate with the firm' was rated highest with a mean score of 5.51 followed by 'Search facilities; the adequacy of search facilities in the site (5.27). Next was 'Site interaction efforts; efforts in interacting with the site' (5.09). The other variables were ranked as follows: 'Seeking services; how the web appearance encourages the seeking of services from PWC site' (4.64), 'Sense of personalisation; how the site created a sense of personalisation to meet clients needs' (4.51) and 'Reputation; the site has a good reputation' (4.48).

Table 5.14: Differences between Interactivity Variable - PwC

	Sense of personalisation (mean 4.51)	Seeking services (mean 4.64)	Reputation (mean 4.48)	Search facilities (mean 5.27)	Ease of communication (mean 5.51)	Site interaction efforts (mean 5.09)
Sense of personalisation	-					
Seeking services	-1.325 (.188)	-				
Reputation	.206 (.838)	1.133 (.260)	-			
Search facilities	-6.460* (.000)	-6.179* (.000)	-6.134* (.000)	-		
Ease of communication	-6.782* (.000)	-5.926* (.000)	-6.906* (.000)	-2.433* (.017)	-	
Site interaction efforts	-3.915* (.000)	-3.327* (.001)	-4.496* (.000)	1.637 (.105)	3.992* (.000)	-

*P<.05   () Significance

The table further shows that there was no statistically significant difference between 'Sense of personalisation' and 'Seeking services' and 'Reputation'. However, there was a statistically significant difference between the top two variables, ('Ease of communication' and 'Search facilities') and all the other variables. In addition, there was a no statistically significant difference between 'Search facilities' and 'Site interaction efforts'. This categorises the interactivity constructs variables into three levels.

Level 1: • Ease of communication

Level II • Search facilities
          • Site interaction efforts

Level III • Seeking services
          • Sense of personalisation
          • Reputation

5.6.4 Differences between Information Variables

Table 5.15 indicates that variable 'Relevancy; whether the information was relevant to the task' had the highest mean (5.31) and 'Accuracy; whether the information on the site was accurate' had the lowest mean (4.93).The other variables were ranked as follows: 'Believable; how believable the information was' (5.60) was rated second while 'Helpful in understanding; helpfulness of information in understanding the site' (5.16) was third. The forth and fifth variables were 'Format appropriateness; Appropriateness of information format for the task' (5.03) and 'Level of detail; whether right level of information detail is provided by the sites' (5.01) respectively. Except for 'Accuracy' all the other variables had a mean above 5.00.

Table 5.15: Differences between Information Variables - PwC

	Level of detail (mean 5.01)	Accuracy (mean 4.93)	Relevancy (mean 5.31)	Believable (mean 5.30)	Helpful in understanding (mean 5.16)	Format appropriateness (mean 5.03)
Level of detail						
Accuracy	1.133 (.260)	-				
Relevancy	-4.065* (.000)	-5.006* (.000)	-			
Believable	-3.642* (.000)	-3.903* 9.000)	.137 (.892)	-		
Helpful in understanding	-1.661 (.100)	-2.127 .036	1.938 (.055)	1.914 (.058)	-	
Format appropriateness	-.192 (.848)	-.990 .325	2.584* (.011)	2.260* (.016)	1.129 (.262)	

*P<.05   () Significance

There was no statistically significant difference between the, 'Level of detail', 'Accuracy' and 'Format appropriateness'. On the other hand, differences occurred between these three variables and 'Relevancy', 'Believable' and 'Helpful in

understanding'. The top three variables had no statistically significant differences between themselves. This categorises the information quality constructs variables into two levels.

Level 1:
- Believable
- Relevancy
- Helpful in understanding

Level II
- Level of detail
- Accuracy
- Format appropriateness

5.6.5 Differences between Riskiness Variables

As shown in table 5.16, 'Service delivery security; the feeling that the firm delivers service as promised' had the highest mean (5.04), closely followed by 'Communication security; feeling that communicating with the firm is secure and promising' (5.01). 'Information usage security; the feeling that the firm will use the information as intended' (4.94) was third, while 'Privacy measures; feeling that the information privacy measures are adequate' (4.85) and 'Access security; feeling of secure in relation to accessing the site' (4.66) were forth and fifth respectively. 'Transactions security; feeling of secure to complete transactions, if wanted' had the lowest mean score of 4.68.

Table 5.16: Differences between Riskiness Variables - PwC

	Access security (mean 4.76)	Communication Security (mean 5.01)	Transactions security (mean 4.68)	Service delivery security (mean 5.04)	Information usage security (mean 4.94)	Privacy measures (mean 4.85)
Access security	-					
Communication Security	-3.089* (.003)	-				
Transactions security	.923 (.358)	4.953* (.000)	-			
Service delivery security	-2.386* (.019)	-.389 (.698)	-3.766* (.000)	-		
Information usage security	-1.686 (.095)	.807 (.422)	-2.611* (.010)	2.253 (.213)	-	
Privacy measures	-.988 (.326)	2.100* (.038)	-1.901 (.060)	1.915 (.058)	1.054 (.294)	-

*P<.05   () Significance

There was no statistically significant difference between the three highest rated quality variables 'Communication security', 'Service delivery security' and 'Information usage security' which form the first level of quality dimensions. In addition, there was no statistically significance difference between, 'Access security', and, 'Transactions security' and 'Privacy measures'. This categorises the riskiness quality constructs variables into two levels.

Level 1:
- Service delivery security
- Information usage security
- Communication security

Level II
- Access security
- Privacy measures
- Transactions security

5.7   Quality Assessment for Ernst & Young Web Site

Table 5.17 shows the rating of the constructs evaluating the quality of the Ernst and Young (E&Y) web site. The observation indicate that usability (4.96) was rated highest followed by riskiness (4.85). Information quality (4.79) was third while interactivity (4.63) was the least rated. The next section gives an analysis of the statistical differences between the constructs and variables.

5.7.1 Differences between Individual Constructs

To assess whether the means scores between any two constructs were statistically different from each other, the t-test was conducted. The results are shown in table 5.17 and explained thereafter.

Table 5.17: Differences between Individual Constructs – E&Y

	Usability (mean 4.96)	Interactivity (Mean 4.63)	Information (mean 4.79)	Riskiness (mean 4.85)
Usability	-			
Interactivity	1.667 (.156)	-		
Information	1.415 (.216)	-2.000 (.102)	-	
Riskiness	1.770 (.137)	-1.326 (.242)	-.602 (.574)	-

*P<.05   () Significance

The table above shows that there were differences in the mean scores of the constructs. However, no statistically significance difference occurred between all the constructs. This indicates that they reflect same level of quality.

Level 1:
- Usability
- Interactivity
- Information
- Riskiness

The following section shows the t-test results for each of the above construct to determine whether any two mean score for variables used to determine E&Y web site quality were significantly different.

5.7.2 Differences between Usability Variables

Table 5.18 shows that 'Learning; the ease of learning to operate the site' had the highest mean (5.20) followed by 'Competency; competency conveyed by the site' (5.10). The lowest rated variable was 'Design appropriateness; design appropriateness to professional service site' with a mean of 4.82. This closely followed 'Attractive appearance; appearance of the display pages within the site'

with a mean of 4.84. 'Ease of use; ease of using the site' (4.95), was third while 'Locating services; clarity and understandability of Locating the service' (4.86) was fourth. Except for two variables ('Learning' and 'Competency'), all the other variables in relation to usability had a mean score less than 5.0.

Table 5.18: Differences between Usability Variables – E&Y

	Learning (mean 5.20)	Locating services (mean 4.86)	Ease of use (4.95)	Design appropriateness (mean 4.82)	Competency (mean 5.10)	Attractive appearance (mean 4.84)
Learning	-					
Locating services	4.417* (.000)	-				
Ease of use	2.453* (.016)	-.923 (.358)	-			
Design appropriateness	3.268* (.001)	.430 (.668)	1.226 (.223)	-		
Competency	.990 (.325)	-2.889* (.005)	-1.502 (.136)	-3.649* (.000)	-	
Attractive appearance	2.577* (.011)	.169 (.866)	.799 (.426)	-.177 (.860)	2.430* (.017)	-

*$P<.05$ () Significance

The table shows there was a statistically significant difference between 'Learning' and all the other variables except 'Competency'. While there was no statistically significant difference between the, 'Locating services', and 'Ease of use' and 'Design appropriateness'. There was a significant difference between three variables ('Locating services', 'Design appropriateness' and 'Attractive appearance') and 'Competency'. The analysis categorises the usability variables into two levels.

Level I
- Learning
- Competency

Level II
- Attractive appearance
- Ease of use
- Locating services
- Design appropriateness

5.7.3   Differences between Interactivity Variables

Table 5.19 shows that 'Search facilities; the adequacy of search facilities in the site' was determined as having the highest quality with a mean of 5.34 followed by 'Seeking services; how the web appearance encourages the seeking of services from

E&Y firm' (4.66). Third was 'Site interaction efforts; efforts in interacting with the site' (4.60) and 'Ease of communication; how the site makes it easy to communicate with the firm' (4.51) was fourth followed by 'Sense of personalisation; how the site created a sense of personalisation to meet individual needs' (4.35). 'Reputation; the site has a good reputation' (4.34) was the least rated variable.

Table 5.19: Differences between Interactivity Variables – E&Y

	Sense of personalisation (mean 4.35)	Seeking services (mean 4.66)	Reputation (mean 4.34)	Search facilities (mean 5.34)	Ease of communication (mean 4.51)	Site interaction efforts (mean 4.60)
Sense of personalisation	-					
Seeking services	-3.596* (.001)	-				
Reputation	.053 (.958)	1.903 (.060)	-			
Search facilities	-7.235* (.000)	-5.407* (.000)	-7.072* (.000)	-		
Ease of communication	-1.910 (.059)	1.566 (.120)	-.852 (.396)	5.675* (.000)	-	
Site interaction efforts	-1.773 (.079)	.392 (.696)	-1.187 (.238)	5.038* (.000)	-564 (.574)	-

*P<.05   () Significance

The table shows that there was a statistically significant difference between 'Sense of personalisation' and 'Seeking services' and 'Search facilities' but no difference with the other variables. There was also a statistically significant difference between 'Seeking services' and 'Search facilities'. A difference also occurred between 'Reputation' and 'Search facilities' but no statistically significant difference between this variable and 'Ease of communication' and 'Site interaction efforts'. This categorises the interactivity constructs variables into three levels.

Level 1:   • Search facilities

Level II   • Seeking services

Level III   • Sense of personalisation
              • Ease of communication
              • Site interaction efforts
              • Reputation

5.7.4 Differences between Information Variables

As table 5.20 indicates, 'Believable; how believable the information was' had the highest mean (5.13). The second rated variable was 'Accuracy; whether the information on the site was accurate' (4.82) followed by 'Helpful in understanding; helpfulness of information in understanding the site' (4.79). The other variables were rated as follows 'Format appropriateness; appropriateness of information format for the task' (4.75), 'Level of detail; whether right level of information detail is provided by the site' (4.66) and the least rated variable was 'Relevancy; whether the information was relevant to the task' (4.58). Except for 'Believable' all the other variables had a mean score less than 5.00

Table 5.20: Differences between Information variables – E&Y

	Level of detail (mean 4.66)	Accuracy (mean 4.82)	Relevancy (mean 4.58)	Believable (mean 5.13)	Helpful in understanding (mean 4.79)	Format appropriateness (mean 4.75)
Level of detail	-					
Accuracy	-2.112* (.037)	-				
Relevancy	.852 (.396)	2.837* (.005)	-			
Believable	-5168* (.000)	-3.869* (.000)	-6.340* (.000)	-		
Helpful in understanding	-1.421 (.158)	.297 (.767)	-1.972 (.051)	4.025* (.000)	-	
Format appropriateness	-.877 9.382)	.647 (.519)	-1.275 (.205)	3.699* (.000)	.609 (.544)	-

*P<.05   () Significance

The analysis further shows that there was no statistically significant difference between the 'Level of detail' and 'Relevancy', 'Helpful in understanding' and 'Format appropriateness. However there was a significant difference between 'Level of detail' and 'Accuracy' and 'Believable'. On the other hand, a difference occurred between 'Accuracy' and the next two variables, 'Relevancy' and 'Believable'. This categorises the information quality constructs variables into three levels.

Level 1: • Believable

Level II • Accuracy
          • Format appropriateness
          • Helpful in understanding

Level III • Relevancy
          • Level of detail

5.7.5 Differences between Riskiness Variables

Table 5.21 shows that 'Access security; feeling of secure in relation to accessing the site' had the highest mean (5.11) followed by 'Information usage security; the feeling that the firm will use the information as intended' (5.0) and the third was 'Service delivery security; the feeling that the firm delivers service as promised' (4.99). The fourth variable was 'Privacy measures; feeling that the information privacy measures are adequate' (4.69) which was closely followed by 'Transactions security; feeling of secure to complete transactions, if wanted' (4.68). 'Communication security; feeling that communicating with the firm is secure and promising' (4.62) was ranked lowest.

Table 5.21: Differences between Riskiness Variables – E&Y

	Access security (mean 5.11)	Communication Security (mean 4.62)	Transactions security (mean 4.68)	Service delivery security (mean 4.99)	Information usage security (mean 5.00)	Privacy measures (mean 4.69)
Access security	-					
Communication Security	5.381* (.000)	-				
Transactions security	4.400* (.000)	-.815 (.417)	-			
Service delivery security	1.587 (.116)	-4.461* (.000)	-3.475* (.001)	-		
Information usage security	1.415 (.160)	-3.699* (.000)	-3.019* (.003)	-.179 (.858)	-	
Privacy measures	4.393* (.000)	-1.000 (.320)	-.107 (.915)	4.214* (.000)	3.251* (.002)	-

*P<.05   () Significance

There was no statistically significant difference between the three highest rated quality variables, 'Access security', 'Information usage security' and 'Service delivery security'. In addition, there was no statistically significant difference

between the three lowest ranked variables, ('Privacy measures', 'Transactions security' and 'Communication security'). This categorises the riskiness quality constructs variables into two levels.

Level 1:
- Access security
- Service delivery security
- Information usage security

Level II
- Privacy measures
- Transactions security
- Communication security

5.8 Quality Assessment for Klynveld Peat Marwick Goerdeler Web Site

5.8.1 Differences between Individual Constructs

The t-test was conducted to assess whether the means scores between variables of any two constructs that determined the web site quality of the KPMG were statistically different from each other. The results are shown in the table 5.22.

Table 5.22: Differences between Individual Constructs – KPMG

	Usability (mean 5.60)	Interactivity (Mean 5.03)	Information (mean 5.34)	Riskiness (mean 5.01)
Usability	-			
Interactivity	3.534* (.017)	-		
Information	3.319* (.021)	-1.997 (.102)	-	
Riskiness	6.278* (.002)	.165 (.876)	3.804* (.013)	-

*P<.05   () Significance

Table 5.22 shows the ranking of the constructs as follows: 'Usability' (5.60), 'Information quality' (5.34), 'Riskiness' (5.01) and 'Interactivity' (5.03). Further analysis shows that there was a statistically significant difference between 'Usability' and the other three constructs 'Interactivity', 'Information' and 'Riskiness'. On the other hand, there was no difference between 'Interactivity' and the other two variables, 'Information' and 'Riskiness'. However, a difference occurred between

'Information quality' and 'Riskiness'. This categorises the constructs determining the web site quality of KPMG firm into three levels.

Level 1:   • Usability

Level II   • Information Quality

Level III   • Interactivity
                • Riskiness

To determine whether any two mean score for variables associated with the above construct were significantly different, a t-test was conducted for each of the above construct. The analysis is presented next.

5.8.2   Differences between Usability Variables

Table 5.23 shows that 'Locating services; clarity and understandability of Locating the service' had the highest mean (5.82) followed by 'Ease of use; ease of using the site' (5.63). The other variables within usability were ranked as follows: 'Learning; the ease of learning to operate the site' (5.60), 'Design appropriateness; design appropriateness to professional service site' (5.58), 'Competency; competency conveyed by the site' (5.57), and 'Attractive appearance; appearance of the display pages within the site' (5.37). Overall all the variables which determined the usability quality of the KPMG web site had a mean score of over 5.0.

Table 5.23: Differences between Usability Variables – KPMG

	Learning (mean 5.60)	Locating services (mean 5.82)	Ease of use (5.63)	Design appropriateness (mean 5.58)	Competency (mean 5.57)	Attractive appearance (mean 5.37)
Learning	-					
Locating services	-4.340* (.000)	-				
Ease of use	-.555 (.580)	3.409* (.001)	-			
Design appropriateness	.287 (.774)	3.559* (.001)	.799 (.426)	-		
Competency	.382 (.703)	3.682* (.000)	.815 (.417)	.145 (.885)	-	
Attractive appearance	2.500* (.014)	5.078* (.000)	2.833* (.006)	2.356* (.020)	2.344* (.021)	-

*P<.05   () Significance

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There was a statistically significant difference between the highest ranked variable, 'Locating services' and all the other variables. A difference also occurred between the lowest ranked variable, 'Attractive appearance' and all the other variables. However, there was no statistically significant difference between the four variables 'Ease of use', 'Learning', 'Design appropriateness' and 'Competency'. This categorises the usability constructs variables into three levels.

Level I	• Locating services
Level II	• Ease of use
	• Learning
	• Design Appropriateness
	• Competency
Level III	• Attractive appearance

5.8.3 Differences between Interactivity Variables

As shown in table 5.24, 'Ease of communication; how the site makes it easy to communicate with the firm' was determined as having the highest quality with a mean of 5.43 followed by 'Site interaction efforts; efforts in interacting with the site' (5.20). 'Search facilities; the adequacy of search facilities in the site' (5.17) was ranked fourth while 'Seeking services; how the web appearance encourages the seeking of services from KPMG firm' (5.08) and 'Sense of personalisation; how the site created a sense of personalisation to meet individual needs' (4.77) were ranked fourth and fifth respectively. Lowest ranked variable was 'Reputation; the site has a good reputation' with a mean score of 4.50. Three out of the six variables had a mean score above 5.0.

Table 5.24: Differences between Interactivity Variable – KPMG

	Sense of personalisation (mean 4.77)	Seeking services (mean 5.08)	Reputation (mean 4.50)	Search facilities (mean 5.17)	Ease of communication (mean 5.43)	Site interaction efforts (mean 5.20)
Sense of personalisation	-					
Seeking services	-4.138* (.000)	-				
Reputation	2.702* (.008)	5.627* (.000)	-			
Search facilities	-3.225* (.002)	-.767 (.445)	-4.684* (.000)	-		
Ease of communication	-5.159* (.000)	-3.200* (.002)	-6922* (.000)	-2.395* (.018)	-	
Site interaction efforts	-2.345* (.021)	-.751 (.454)	-3.779* (.000)	-.179 (.858)	1.631 (.106)	-

*P<.05   () Significance

There was a statistically significant difference between 'Sense of personalisation' and all the other variables. In addition, a difference occurred between 'Seeking services' and 'Reputation' and 'Ease of communication' but no difference between this variable and 'Search facilities' and 'Site interaction efforts'. A difference occurred between 'Reputation' and all the other variables. In addition, a difference occurred between 'Search facilities' and 'Ease of communication' but no difference between this variable and 'Site interaction efforts'. This categorises the interactivity constructs variables into four levels.

Level 1:   • Ease of communication

Level II   • Search facilities
             • Site interaction efforts
             • Seeking services

Level III   • Sense of personalisation

Level IV   • Reputation

5.8.4   Differences between Information Variables

Table 5.25 indicates that 'Level of detail; whether right level of information detail is provided by the sites' (5.51) had the highest quality while 'Accuracy; whether the

information on the site was accurate' (5.26) was determined as having the lowest quality. The other variables were ranked as follows: 'Relevancy; whether the information was relevant to the task' (5.36) came second closely followed by 'Format appropriateness; appropriateness of information format for the task' (5.34). 'Helpful in understanding; helpfulness of information in understanding the site' (5.30) and 'Believable; how believable the information was' (5.30) ranked fourth and fifth respectively. The mean for all variables was more than 5.0.

Table 5.25: Differences between Information Variables – KPMG

	Level of detail (mean 5.51)	Accuracy (mean 5.26)	Relevancy (mean 5.36)	Believable (mean 5.29)	Helpful in understanding (mean 5.30)	Format appropriateness (mean 5.34)
Level of detail	-					
Accuracy	2.837* (.005)	-				
Relevancy	1.749 (.083)	-1.517 (.132)	-			
Believable	2.459* (.016)	-.418 (.677)	.927 (.356)	-		
Helpful in understanding	2.062* (.042)	-.476 (.635)	.669 (.505)	-.139 (.889)	-	
Format appropriateness	1.657 (.101)	-.894 (.374)	.212 (.832)	-.609 (.544)	-.491 (.625)	-

*P<.05   () Significance

There was no statistically significant difference between all the variables except the highest ranked variable, 'Level of detail'. This categorises the information quality constructs variables into two levels.

Level 1:   • Level of detail

Level II   • Believable
              • Relevancy
              • Helpful in understanding
              • Accuracy
              • Format appropriateness

5.8.5   Differences between Riskiness Variables

Table 5.26 shows the rating of the riskiness variables. 'Service delivery security; the feeling that the firm delivers service as promised' had the highest mean score of 5.25, followed by 'Information usage security; the feeling that the firm will use the

information as intended' (5.17) while 'Privacy measures; feeling that the information privacy measures are adequate' (4.92) and 'Transactions security; feeling of secure to complete transactions' (4.92) were equally ranked. 'Communication security; feeling that communicating with the firm is secure and promising' (4.90) was fifth and the lowest ranked variable was 'Access security; feeling of secure in relation to accessing the site' (4.88).

Table 5.26: Differences between Riskiness Variables – KPMG

	Access security (mean 4.88)	Communication Security (mean 4.90)	Transactions security (mean 4.92)	Service delivery security (mean 5.25)	Information usage security (mean 5.17)	Privacy measures (mean 4.92)
Access security	-					
Communication Security	-.352 (.726)	-				
Transactions security	-.506 (.614)	-.276 (.783)	-			
Service delivery security	-4.035* (.000)	-4.243* (.000)	-3.864* (.000)	-		
Information usage security	-3.098* (.003)	-3.045* (.003)	-2.528* (.013)	1.347 (.181)	-	
Privacy measures	-.440 (.661)	-.245 (.807)	.000 (1.000)	3.969* (.000)	3.242* (.002)	-

*P<.05   () Significance

Examining the differences between the variables, the analysis show that there was no statistically significant difference between the two highest rated quality variables, 'Service delivery security' and 'Information usage security', but a difference occurred between these two variables and all the other variables. In addition, no differences occurred between the other variables, 'Access security', 'Communication security', 'Transactions security' and 'Privacy measures'. This categorises the riskiness variables into two levels.

Level 1:
- Service delivery security
- Information usage security

Level II
- Access security
- Communication Security
- Privacy measures
- Transactions security

5.9 Quality Assessment for Deloitte Web Site

5.9.1 Differences between Individual Constructs – Deloitte

The results for the t-test are shown in table 5.27. The Table indicates that 'Usability' (5.35) and 'Information quality' (5.35) had highest and same quality level followed by 'Interactivity' (5.08) and the lowest was 'Riskiness' with a mean score of 5.03. All the constructs were rated above 5.0.

Table 5.27: Differences between Individual Constructs- Deloitte

	Usability (mean 5.35)	Interactivity (Mean5.08)	Information Quality (mean 5.35)	Riskiness (mean 5.03)
Usability	-			
Interactivity	1.744 (.142)	-		
Information Quality	.132 (.900)	-2.672* (.044)	-	
Riskiness	2.823* (.037)	.623 (.560)	4.534* (.006)	-

*P<.05   () Significance

An analysis of the mean scores revealed that a statistically significant difference occurred between 'Usability' and 'Riskiness', also between 'Interactivity' and 'Information Quality', but no difference occurred between 'Usability' and both 'Interactivity' and 'Information'. However, a difference occurred between 'Information' and 'Riskiness'. The gives three levels of quality categories as follows:

Level I   • Information Quality

Level II   • Usability

Level II   • Interactivity
              • Riskiness

A further t-test was conducted for each of the above construct to determine whether any two mean score for variables were significantly different. The analysis of the same is presented in the following sections.

5.9.2 Differences between Usability Variables

Table 5.28 shows that 'Ease of use; ease of using the site' (5.56) had the highest quality followed by 'Locating services; clarity and understandability of locating the service' (5.49). The other variables within usability were ranked as follows: 'Learning; the ease of learning to operate the site' (5.44) was third and 'Design appropriateness; design appropriateness to professional service site' (5.27) was fourth. 'Competency; competency conveyed by the site' (5.25) and 'Attractive appearance; appearance of the display pages within the site' were ranked fifth and sixth respectively. Overall all the variables in relation to usability had a mean in excess 5.0.

Table 5.28: Differences between Usability Variables – Deloitte

	Learning (mean 5.44)	Locating services (mean 5.49)	Ease of use (5.56)	Design appropriateness (mean 5.27)	Competency (mean 5.25)	Attractive appearance (mean 5.11)
Learning	-					
Locating services	-.744 (.459)	-				
Ease of use	-2.316* (.023)	-.980 (.329)	-			
Design appropriateness	2.181* (.032)	2.797* (.006)	4.051* (.000)	-		
Competency	2.868* (.005)	3.239* (.002)	3.931* (.000)	.287 (.774)	-	
Attractive appearance	3.915* (.000)	3.633* (.000)	4.642* (.000)	1.762 (.081)	2.054* (.043)	-

*P<.05   () Significance

The table indicates that there was a statistically significant difference between the variable, 'Learning' and all the other variables except 'Locating services'. There was also a difference between 'Locating services' and the other variables except 'Ease of use'. In addition, a difference occurred between 'Ease of use' and 'Design appearance', 'Competency' and 'Attractive appearance'. However, there was no difference between 'Design appearance' and 'Competency' and 'Attractive appearance'. A statistically significant difference occurred between 'Competency' and 'Attractive appearance'. This categorises the usability constructs variables into five levels.

Level I   • Ease of use

Level II   • Learning
                 • Locating services

Level III   • Design appropriateness
                 • Competency

Level IV   • Attractive appearance

5.9.3   Differences between Interactivity Variables

As shown by table 5.29, 'Ease of communication; how the site makes it easy to communicate with the firm' was determined as having the highest quality with a mean of 5.52 followed by 'Search facilities; the adequacy of search facilities in the site' (5.25). Next was 'Seeking services; how the web appearance encourages the seeking of services from a Deloitte' (5.12). The other variables were ranked as follows: 'Sense of personalisation; how the site created a sense of personalisation to meet clients needs' (5.07) and 'Site interaction efforts; efforts in interacting with the site' (4.83). 'Reputation; the site has a good reputation' (4.68) was determined has having the lowest quality. Four out of six variables had mean score above 5.0.

Table 5.29: Differences between Interactivity Variable – Deloitte

	Sense of personalisation (mean 5.07)	Seeking services (mean 5.12)	Reputation (mean 4.68)	Search facilities (mean 5.25)	Ease of communication (mean 5.52)	Site interaction efforts (mean 4.83)
Sense of personalisation	-					
Seeking services	-.672 (.503)	-				
Reputation	2.719* (.008)	3.364* (.001)	-			
Search facilities	-1.557 (.123)	-1.328 (.187)	-3.707* (.000)	-		
Ease of communication	-3.995* (.000)	-3.748* (.000)	-6.217* (.000)	-2.305* (.023)	-	
Site interaction efforts	1.351 (.180)	1.710 (.090)	-.770 (.443)	2.459* (.016)	4.091* (.000)	-

*P<.05   () Significance

There was no statistically significant difference between 'Sense of personalisation' and 'Seeking services', 'Search facilities' and 'Site interaction efforts' but a difference occurred between 'Sense of personalisation' and 'Reputation' and 'Ease

of communication'. There was also a difference between top ranked variable, 'Ease of communication' and all the other variables. In addition there was a statistically significant difference between the lowest ranked variable, 'Reputation' and all the other variables except 'Site interaction efforts'. This categorises the interactivity constructs variables into three levels.

Level 1:   • Ease of communication

Level II   • Search facilities

                • Seeking services

                • Sense of personalisation

Level III   • Reputation

                • Site interaction efforts

5.9.4   Differences between Information Variables

As indicated by table 5.30, 'Accuracy; whether the information on the site was accurate' (5.45) had the highest quality followed closely by 'Level of detail; whether right level of information detail is provided by the site' (5.43), 'Believability; how believable the information was' (5.42) and 'Helpful in understanding; helpfulness of information in understanding the site' (5.38). The fourth ranked variable was 'Relevancy; whether the information was relevant to the task' (5.28) while 'Format appropriateness; appropriateness of information format for the task' (5.11) had the lowest quality. Like the usability construct, all the mean scores in relation to Information quality variables were in excess of 5.0

Table 5.30: Differences between Information Variables – Deloitte

	Level of detail (mean 5.43	Accuracy (mean 5.45)	Relevancy (mean 5.28)	Believable (mean 5.42)	Helpful in understanding (mean 5.38)	Format appropriateness (mean 5.11)
Level of detail	-					
Accuracy	-.332 (.741)	-				
Relevancy	2.054* (.043)	2.298* (.024)	-			
Believable	.137 (.892)	.445 (.657)	-2.258* (.026)	-		
Helpful in understanding	.561 (.576)	.881 (.380)	-1.274 (.206)	.553 (.582)	-	
Format appropriateness	3.155* (.002)	3.969* (.000)	1.879 (.063)	3.317 (.001)	3.148* (.002)	-

*P<.05   () Significance

As shown in the table above there was no statistically significant difference between the 'Level of detail', 'Accuracy' 'Believability' and 'Helpful in understanding' which were ranked as the top four variables. However, a difference occurred between, 'Relevancy' and 'Format appropriateness'. This means that the top four variables have an equal perceived quality different from the other two variables. This categorises the information quality constructs variables into two levels.

Level 1:
- Level of detail
- Believable
- Accuracy
- Helpful in understanding

Level II
- Relevancy
- format appropriateness

5.9.5 Differences between Riskiness Variables

Table 5.31 shows that the highest ranked variable, 'Information usage security; the feeling that the firm will use the information as intended' (5.20), was followed by 'Service delivery security; the feeling that the firm delivers service as promised' (5.15). The third variable in quality ranking was 'Communication security; feeling that communicating with the firm is secure and promising' (5.09) while 'Privacy measures; feeling that the information privacy measures are adequate' (5.02) was fourth. The lowest two variables were 'Access security; feeling of secure in relation to accessing the site' (4.88) and 'Transactions security; feeling of secure to complete transactions, if wanted' (4.83) respectively. Riskiness was ranked lowest of the constructs and had two out of the 6 variables with mean less than 5.0.

Table 5.31: Differences between Riskiness Variables – Deloitte

	Access security (mean 4.88)	Communication Security (mean 5.09)	Transactions security (mean 4.83)	Service delivery security (mean 5.15)	Information usage security (mean 5.20)	Privacy measures (mean 5.02)
Access security	-					
Communication Security	-2.598* (.011)	-				
Transactions security	.672 (.503)	3.477* (.001)	-			
Service delivery security	-3.085* (.003)	-.705 (.482)	-3.982* (.000)	-		
Information usage security	-3.434* (.001)	-1.196 (.235)	-4.292* (.000)	-.618 (.538)	-	
Privacy measures	-1.597 (.113)	.579 (.564)	-2.095* (.039)	1.417 (.160)	1.784 (.077)	-

*P<.05   () Significance

There was no statistically significant difference between the three highest rated quality variables, 'Communication Security', 'Service delivery security' and 'Information usage security' which form the first level of quality. In addition, there was no statistically significant difference between 'Access security' and 'Transactions security' and 'Privacy measures'. This categorises the riskiness quality constructs variables into two levels.

Level 1:
- Service delivery security
- Information usage security'
- Communication Security

Level II
- Access security
- Privacy measures
- Transactions security

5.10 Quality Assessment for Investor Group Web site

5.10.1   Differences between Individual Constructs

To determine whether the mean scores of the constructs were statistically different from each other, a t-test was conducted. The results are shown in table 5.32 and analysed thereafter.

Table 5.32: Differences between Individual Constructs – Investor Group

	Usability (mean 3.52)	Interactivity (Mean 3.44)	Information (mean 3.68)	Riskiness (mean 3.57)
Usability	-			
Interactivity	.438 (.679)	-		
Information	-1.636 (.163)	-1.844 (.124)	-	
Riskiness	-.664 (.536)	-1.154 (.301)	1.468 (.202)	-

*P<.05   () Significance

Table 5.32 shows the ranking of the constructs as follows: 'Information quality' (3.68), Riskiness' (3.57), 'Usability' (3.52), and 'Interactivity' (3.44). All the mean scores were below 4.0. The ratings ranged from 3.68 to 3.44 which reflect a relatively narrow gap. In addition, there was no statistically significant difference between all the constructs hence they reflected the same level of quality and categorised in the same level.

Level I
- Usability
- Information
- Interactivity
- Riskiness

A further t-test was conducted for each of the above construct to determine whether any two mean score for variables were significantly different. The analyses of the result follow.

5.10.2 Differences between Usability Variables

Table 5.33 shows that 'Learning; the ease of learning to operate the site' (3.89) had the highest quality followed by 'Ease of use; ease of using the site' (3.53). 'Competency; competency conveyed by the site' (3.51) was ranked third while the fourth variable was 'Attractive appearance; appearance of the display pages within the site' (3.45). 'Design appropriateness; design appropriateness to professional service site' (3.43) was fifth and 'Locating services; clarity and understandability of

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Locating the service' (3.29) had the lowest mean. Overall all the variables in relation to usability had a mean sore less than 4.0.

Table 5.33: Differences between Usability Variables – Investor Group

	Learning (mean 3.89)	Locating services (mean 3.29)	Ease of use (3.53)	Design appropriateness (mean 3.43)	Competency (mean 3.51)	Attractive appearance (mean 3.45)
Learning	-					
Locating services	6.311* (.000)	-				
Ease of use	4.352* (.000)	-2.570* (.012)	-			
Design appropriateness	4.790* (.000)	-1.282 (.203)	1.165 (.247)	-		
Competency	3.804* (.000)	-2.094* (.039)	.223 (.824)	-.929 (.355)	-	
Attractive appearance	4.068* (.000)	-1.580 (.117)	.833 (.407)	-.228 (.820)	.815 (.417)	-

*P<.05   () Significance

There was a statistically significant difference between the highest rated variable 'Learning' and all the other variables. A difference also occurred between 'Locating services' and 'Ease of use' and 'Competency'. However there was no statistically significant difference between 'Locating' and 'Design appropriateness' and 'Attractive appearance'. In addition, no difference occurred between 'Design appropriateness', 'Competency' and 'Attractive appearance'. This categorises the usability constructs variables into three levels.

Level I
- Learning

Level II
- Design appropriateness
- Competency
- Attractive appearance
- Ease of use

Level III
- Locating service

5.10.3 Differences between Interactivity Variables

Table 5.34: Differences between Interactivity Variable – Investor Group

	Sense of personalisation (mean 3.42)	Seeking services (mean 3.40)	Reputation (mean 3.02)	Search facilities (mean 3.81)	Ease of communication (mean 3.9)	Site interaction efforts (mean 3.10)
Sense of personalisation	-					
Seeking services	.266 (.791)	-				
Reputation	3.748* (.000)	3.768* (.000)	-			
Search facilities	-3.291* (.001)	-3.109* (.002)	-6.399* (.000)	-		
Ease of communication	-4129* (.000)	-3.853* (.000)	-6387* (.000)	-.667 (.506)	-	
Site interaction efforts	2.487* (.015)	2.018* (.046)	-.512 (.609)	4.980* (.000)	5.379* (.000)	-

*P<.05   () Significance

There was a statistically significant difference between 'Sense of personalisation' and 'Seeking services' and all the other variables but no difference occurred between the two variables. There was a statistically significant difference between 'Reputation' and 'Ease of communication' and 'Search facilities' but no difference between 'Reputation' and 'Site interaction efforts'. In addition there was a statistically significant difference between 'Search facilities' and 'Site interaction efforts'. No difference occurred between 'Search facility' and 'Ease of communication'. This categorises the interactivity constructs variables into three levels.

Level 1:
- Seeking services
- Sense of personalisation

Level II
- Ease of communication
- Search facilities

Level III
- Site interaction efforts
- Reputation

5.10.4 Differences between Information Variables

Table 5.35 shows 'Level of detail; whether right level of information detail is provided by the site'(3.80) had the highest quality closely followed by 'Accuracy; whether the information on the site was accurate' (3.79) and 'Believable; how believable the information was' (3.78) respectively. 'Helpful in understanding; helpfulness of information in understanding the site' (3.69) was fourth followed by 'Relevancy; whether the information was relevant to the task' (3.68) while 'Format appropriateness; appropriateness of information format for the task' had the lowest quality level with a mean score of 3.33.

Table 5.35: Differences between Information Variables – Investor Group

	Level of detail (mean 3.80)	Accuracy (mean 3.79)	Relevancy (mean 3.68)	Believable (mean 3.78)	Helpful in understanding (mean 3.69)	Format appropriateness (mean 3.33)
Level of detail	-					
Accuracy	.132 (.895)	-				
Relevancy	1.354 (.179)	1.463 (.146)	-			
Believable	.228 (.820)	.139 (.889)	-1.274 (.206)	-		
Helpful in understanding	1.647 (.103)	1.465 (.146)	-.103 (.918)	1.517 (.132)	-	
Format appropriateness	4.525* (.000)	4.144* (.000)	3.043* (.003)	3.965* (.000)	3.458* (.001)	-

*P<.05   () Significance

The table further shows that there was no statistically significant difference between all the variables except 'Format appropriateness'. This categorises the information quality constructs variables into two levels.

Level 1:
- Believable
- Relevancy
- Helpful in understanding
- Level of detail
- Accuracy

Level II
- Format appropriateness

5.10.5 Differences between Riskiness Variables

Table 5.36 shows that 'Access security; feeling of secure in relation to accessing the site' (3.75) had the highest quality closely followed by 'Information usage security; the feeling that the firm will use the information as intended' (3.68). 'Service delivery security; the feeling that the firm will deliver service as promised' (3.62) was third while the fourth variable was 'Communication security; feeling that communicating with the firm is secure and promising'. 'Privacy measures; feeling that the information privacy measures are adequate' (3.49) was ranked fifth and the lowest ranked variable was 'Transactions security; feeling of secure to complete transactions, if wanted' with mean score of 3.32.

Table 5.36: Differences between Riskiness Variables – Investor Group

	Access security (mean 3.75)	Communication Security (mean 3.55)	Transactions security (mean 3.32)	Service delivery security (mean 3.62)	Information usage security (mean 3.68)	Privacy measures (mean 3.49)
Access security	-					
Communication Security	2.706* (.008)	-				
Transactions security	4.645* (.000)	3.381* (.001)	-			
Service delivery security	1.384 (.169)	-.796 (.428)	-3.589* (.001)	-		
Information usage security	.881 (.380)	-1.434 (.155)	-3.559* (.001)	-.760 (.449)	-	
Privacy measures	3.020* (.003)	.678 (.500)	-2.049* (.043)	1.452 (.150)	1.807 (.074)	-

*P<.05   () Significance

There was a statistically significant difference between 'Access security' and 'Communication security', 'Transaction security' and 'Privacy security' but no difference occurred between 'Access security' and 'Service delivery' and 'Information usage security'. A Statistically significant difference occurred between 'Transaction security' and all the other variables. This categorises the riskiness quality constructs variables into three levels.

Level I
- Access security
- Information usage security
- Service delivery security

Level II
- Communication Security
- Privacy measures

Level III
- Transactions security

5.11 Quality Assessment for Pannel Keoo Forster Australia Web Site

5.11.1 Differences between Individual Constructs

Table 5.37 shows the results of a t-test conducted to assess whether the means scores of any two constructs that determined the web site quality of PKF were statistically different from each other. The constructs were ranked as follows 'Usability' (4.67) ranked highest followed by 'Riskiness' (4.54). 'Information quality' (4.42) was third while 'Interactivity' (4.19) was the lowest ranked construct.

Table 5.37: Differences between Individual Constructs – PKF Australia

	Usability (mean 4.67)	Interactivity (Mean 4.19)	Information (mean 4.42)	Riskiness (mean 4.54)
Usability	-			
Interactivity	2.826* (.037)	-		
Information	3.934* (.011)	-1.186 (.289)	-	
Riskiness	3.650* (.015)	-2.209 (.078)	-1.977 (.105)	-

*P<.05   () Significance

There was a statistically significance difference between 'Usability' and the other three constructs ('Interactivity', 'Information' and 'Riskiness'). However no difference occurred between 'Interactivity' and the other two constructs ('Information' and 'Riskiness'). This implies that usability construct stands out alone while the other three constructs are within the same level of quality hence two levels can be identified.

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Level 1:   • Usability

Level II   • Interactivity
                • Information
                • Riskiness

To determine whether any two mean score for variables were significantly different a t-test was conducted for each of the above construct. The analysis of the result is presented below.

5.11.2 Differences between Usability Variables

Table 5.38 shows 'Design appropriateness; design appropriateness to professional service site' (4.82) was rated highest followed by both 'Competency; competency conveyed by the site' (4.69) and 'Learning; the ease of learning to operate the site' (4.69). 'Locating services; clarity and understandability of Locating the service' (4.66) was ranked third while 'Ease of use; ease of using the site' (4.61) was fifth. 'Attractive appearance; appearance of the display pages within the site' (4.52) had the lowest mean score. Overall all the variables in relation to usability had a mean score range from 4.52 to 4.82 and relatively low compared to similar scores for the other PA firms.

Table 5.38: Differences between Usability Variables – PKF Australia

	Learning (mean 4.69)	Locating services (mean 4.66)	Ease of use (mean 4.61)	Design appropriateness (mean 4.82)	Competency (mean 4.69)	Attractive appearance (mean 4.52)
Learning	-					
Locating services	.479 (.633)	-				
Ease of use	1.182 (.240)	.844 (.401)	-			
Design appropriateness	-1.436 (.154)	-2.080* (.040)	-2.491* (.014)	-		
Competency	.000 (1.000)	-.336 (.738,)	-.799 (.426)	1.353 (.179)	-	
Attractive appearance	1.289 (.200)	1.261 (.210)	.817 (.416)	2.920* (.004)	1.844 (.068)	-

*P<.05   () Significance

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A further analysis shows that there was no statistically significant difference between 'Learning' and all the other variables. There was also no difference between 'Locating services' and 'Ease of use', 'Competency' and 'Attractive appearance'. However a difference occurred between 'Locating services' and 'Design appropriateness'. This categorises the usability constructs variables into three levels.

Level I	• Design appropriateness
Level II	• Learning
	• Competency
	• Locating services
Level III	• Attractive appearance
	• Ease of use

5.11.3 Differences between Interactivity Variables

Table 5.39 shows that 'Ease of communication; how the site makes it easy to communicate with the firm' (4.85) was determined as having the highest quality followed by 'Seeking services; how the web appearance encourages the seeking of services from a particular firm' (4.39). The other variables were ranked as follows: 'Site interaction efforts; efforts in interacting with the site' (4.21), 'Sense of personalisation; how the site created a sense of personalisation to meet individual needs' (4.05) and 'Search facilities; the adequacy of search facilities in the site' (3.94) were ranked third, fourth and fifth respectively. 'Reputation; the site has a good reputation' (3.72) was determined has having the lowest ranking.

Table 5.39: Differences between Interactivity Variable – PKF Australia

	Sense of personalisation (mean 4.05)	Seeking services (mean 4.39)	Reputation (mean 3.72)	Search facilities (mean 3.94)	Ease of communication (mean 4.85)	Site interaction efforts (mean 4.21)
Sense of personalisation	-					
Seeking services	-3.193* (.002)	-				
Reputation	2.720* (.008)	4.485* (.000)	-			
Search facilities	.563 (.575)	2.876* (.005)	-1.425 (.157)	-		
Ease of communication	-6.751* (.000)	-4.246* (.000)	-7.154* (.000)	-5.077* (.000)	-	
Site interaction efforts	-.977 (.331)	1.294 (.199)	-2.489* (.014)	-1.344 (.182)	4.455* (.000)	-

*P<.05   () Significance

The table further indicates that there was a statistically significant difference between 'Sense of personalisation' and 'Seeking services', 'Reputation' and 'Ease of communication'. However no difference occurred between 'Sense of personalisation' and 'Search facilities' and ' Site interaction efforts'. In addition there was no difference between 'Search facilities' and 'Site interaction efforts'. This categorises the interactivity constructs variables into three levels.

Level 1:   • Ease of communication

Level II   • Search facilities
              • Sense of personalisation
              • Site interaction efforts
              • Seeking services

Level III   • Reputation

5.11.4 Differences between Information Variables

Table 5.40 indicates that variable 'Believable; how believable the information was' (4.68) had the highest quality, followed by 'Format Appropriateness; appropriateness of information format for the task' (4.47). 'Relevancy; whether the information was relevant to the task' (4.44) was third while 'Helpful in understanding; helpfulness of information in understanding the site' (4.41) followed closely. 'Accuracy; whether the information on the site was accurate' (4.26) and 'Level of detail; whether right

level of information detail is provided by the sites' (4.25) were ranked fifth and sixth respectively.

Table 5.40: Differences between Information Variables – PKF Australia

	Level of detail (mean 4.25)	Accuracy (mean 4.26)	Relevancy (mean 4.44)	Believable (mean 4.68)	Helpful in understanding (mean 4.41)	Format appropriateness (mean 4.67)
Level of detail	-					
Accuracy	-.282 (.779)	-				
Relevancy	-1.914 (.058)	-2.335* (.022)	-			
Believable	-4.641* (.000)	-5.651* (.000)	-2.770* (.007)	-		
Helpful in understanding	-1.725 (.088)	-1.533 (.128)	.306 (.760)	3.126* (.002)	-	
Format appropriateness	-1.777 (.079)	-1.659 (.100)	-.238 (.812)	1.725 (.088)	-.645 (.520)	-

*P<.05   () Significance

The table indicates that there was no statistically significant difference between the 'Level of detail' and 'Accuracy', 'Relevancy', 'Helpful in understanding' and 'Format appropriateness'. However, a difference occurred between 'Level of detail' and 'Believable'. In addition, a difference occurred between the top ranked variable, 'Believable' and all the other variables. This categorises the information quality constructs variables into two levels.

Level 1:   • Believable

Level II   • Relevancy
               • Helpful in understanding
               • Level of detail
               • Accuracy
               • format appropriateness

5.11.5 Differences between Riskiness Variables

Table 5.41 shows that 'Service delivery security; the feeling that the firm delivers service as promised' (4.69) was rated highest followed by 'Information usage security; the feeling that the firm will use the information as intended' (4.56). 'Access security; feeling of secure in relation to accessing the site' (4.55) was third followed by 'Privacy measures; feeling that the information privacy measures are

adequate (4.54). 'Communication Security; feeling that communicating with the firm is secure and promising' (4.52) and 'Transactions security; feeling of secure to complete transactions, if wanted' (4.36) ranked fifth and sixth respectively.

Table 5.41: Differences between Riskiness Variables – PKF Australia

	Access security (mean 4.55)	Communication Security (mean 4.52)	Transactions security (mean 4.36)	Service delivery security (mean 4.69)	Information usage security (mean 4.56)	Privacy measures (mean 4.54)
Access security	-					
Communication Security	.479 (.633)	-				
Transactions security	2.452* (.016)	2.263* (.026)	-			
Service delivery security	-1.340 (.183)	-1.743 (.084)	-3.664* (.000)	-		
Information usage security	-.094 (.925)	-.367 (,715)	-2.074* (.041)	1.625 (.107)	-	
Privacy measures	.109 (.913)	-.205 (.838)	-2.191* (.031)	1.661 (.100)	.212 (.832)	-

*P<.05   () Significance

From the table, the only statistically significant difference was between the lowest ranked variable, 'Transactions security' and all the other variables. This categorises the riskiness quality constructs variables into two levels.

Level 1:
- Service delivery security
- Information usage security'
- Communication Security
- Access security
- Privacy measures

Level II
- Transactions security

5.12 Factors Moderating Web Site Quality

To determine the effect of moderating factors which may help to explain variations in the quality of web sites, the respondents were classified into various groups based on gender, year of study and the area of specialisation. The following sections show the Analysis of Variance (ANOVA) test in respect to these factors.

5.12.1 Gender

The ANOVA test was conducted to investigate mean differences between males and female students. The table 5.43 shows the result.

Table 5.43: ANOVA: Differences in Mean Score by Gender

		Sum of Squares	df	Mean Square	F	Sig.
Usability	Between Groups	.918	1	.918	.698	.404
	Within Groups	802.439	610	1.315		
	Total	803.357	611			
Interactivity	Between Groups	1.748	1	1.748	1.649	.200
	Within Groups	646.557	610	1.060		
	Total	648.305	611			
Information	Between Groups	1.873	1	1.873	1.700	.193
	Within Groups	672.130	610	1.102		
	Total	674.003	611			
Riskiness	Between Groups	.194	1	.194	.180	.671
	Within Groups	656.508	610	1.076		
	Total	656.702	611			

*P<.05   () Significance

The table indicates that there was no statistically significant difference between the two gender groups. However for the purpose of completeness, table 5.44 provides the mean scores for the two groups.

Table 5.44: Mean Score by Gender

Construct	Male (N=48)	Female (N=54)
Usability	4.92	4.86
Interactivity	4.60	4.51
Information Quality	4.84	4.75
Riskiness	4.66	4.66

5.12.2 Year of Study

The two different years of study groups (year 1 and year 2) were used to investigate significance differences. Table 5.45 shows the results of an ANOVA test conducted to investigate the differences in mean scores. The table indicates that with the exception of 'Interactivity' the mean score were significantly difference among the two groups of 'year of study'. The mean scores of these constructs are shown in table 5.46.

Table 5.45: ANOVA: Differences in Mean Score by Year of Study

		Sum of Squares	df	Mean Square	F	Sig.
Usability	Between Groups	6.090	1	6.090	4.660	.031*
	Within Groups	797.267	610	1.307		
	Total	803.357	611			
Interactivity	Between Groups	2.978	1	2.978	2.815	.094
	Within Groups	645.328	610	1.058		
	Total	648.305	611			
Information	Between Groups	5.177	1	5.177	4.721	.030*
	Within Groups	668.826	610	1.096		
	Total	674.003	611			
Riskiness	Between Groups	6.358	1	6.358	5.964	.015*
	Within Groups	650.344	610	1.066		
	Total	656.702	611			

*$P<.05$ () Significance

It can be seen that the greater the years of study of the respondents, the lower the constructs 'Usability', 'Information' and 'Riskiness'. Perceived web site quality as determined by 'Interactivity' was not affected. These results will be discussed in chapter 6.

Table 5.46: Mean Score by Year of Study

Construct	Year 1 (N=33)	Year 2 (N=69)
Usability	5.02	4.81
Information	4.92	4.72
Riskiness	4.79	4.57

5.12.3 Area of specialisation

The area the respondents specialised was classified into eleven categories as shown in table 5.1. Significance differences in mean scores for the various groups were established by the ANOVA test as shown in table 5.47.

Table 5.47: ANOVA: Differences in Mean Score by Area of Specialisation

		Sum of Squares	df	Mean Square	F	Sig.
Usability	Between Groups	13.529	10	1.353	1.029	.417
	Within Groups	789.828	601	1.314		
	Total	803.357	611			
Interactivity	Between Groups	12.136	10	1.214	1.146	.325
	Within Groups	636.170	601	1.059		
	Total	648.305	611			
Information	Between Groups	25.843	10	2.584	2.396	.009*
	Within Groups	648.160	601	1.078		
	Total	674.003	611			
Riskiness	Between Groups	33.795	10	3.380	3.261	.000*
	Within Groups	622.907	601	1.036		
	Total	656.702	611			

*$P < .05$　　　　　() Significance

The table indicates that there were statistically significant differences between the areas of specialisation for 'Information Quality' and 'Riskiness'. The mean scores of these constructs are shown in table 5.48 and discussed in chapter 6.

Table 5.48: Mean Score by Study Area of Specialisation

Description	N	Information Quality	Riskiness
Master of sport management	1	4.83	5.11
Master of Professional Accounting	20	4.89	4.79
Master of Business Administration	18	4.71	4.51
Master of International Business	18	4.73	4.46
Master of Professional Finance and Banking	1	5.19	5.14
Master of Human resource Management	7	4.52	4.49
Master of Management Information Systems	29	4.74	4.67
Master of Strategic Project Management	2	5.57	5.36
Master of Professional Marketing	1	6.06	6.14
PhD	3	5.01	4.64
DBA	2	4.47	4.22
Total	102		

5.13 Qualitative Analysis: Comments

The participants were asked to make a final comment on each of the six PA web sites. Table 5.49 shows the frequency distribution of the comments and/or observations per web site. Out of the total 612 questionnaires, 426 or 69.6% had comments in relation to specific web sites.

Table 5.49: Comments/Observations by Participants

Professional firm	Comments/Observation (No./%)		
	Comments	No comments	Total
PricewaterhouseCoopers (PWC)	81	21	102
	79.4%	20.6%	100.0%
Ernst & Young (E & Y)	78	24	102
	76.5%	23.5%	100.0%
KPMG	79	23	102
	77.5%	22.5%	100.0%
Deloitte	77	25	102
	75.5%	24.5%	100.0%
Investor Group	56	46	102
	54.9%	45.1%	100.0%
PKF Australia	55	47	102
	53.9%	46.1%	100.0%
Total	426	186	612
	69.6%	30.4%	100.0%

These comments were analysed and are discussed and presented in chapter 6.

5.14 Summary

In this chapter the demographic data for the participants were described and the responses were verified for reliability and validity. Tests indicated acceptable levels for statistical tests to be used. This enabled an assessment of the quality levels of the PA sector as well as the six PA web sites as determined by the quality constructs and the 24 variables. The statistical tests included descriptive ones (e.g. mean scores), t-test (to show differences) and ANOVAs (to indicate the effects of moderating factors). The findings will be discussed in the next chapter.

CHAPTER SIX

DISCUSSION OF FINDINGS

6.1 Introduction

The data analysis in the previous chapter provided assurance for the measurement of the constructs and variables in terms of validity and reliability. It also provided an analysis of the data. Based on the analysis, the WebQual/PA instrument used in this study was found to have strong measurement validity. The instrument has 24 items (variables) which provide valuable and accurate measures of 4 constructs of Web site quality that indicate the perceived quality of a PA web site. It was apparent that some constructs and variables ranked higher in terms of quality and different PA firms reflected these dimensions differently. This chapter discusses these findings in the context of Australian based PA firms.

The first section explains the characteristics of the respondents who provided data for this study. Discussions on the quality dimensions for the sector and individual firms are provided. Moderating factors are discussed to determine their impact on quality.

6.2 Characteristics of Participants

The participants of this study were post-graduate students in business. The majority (68%) were in their second of study which indicates a group which had successfully been exposed to business units irrespective of their undergraduate degree. In addition, the academic year for Edith Cowan University commences in February and ends in December. Considering this study was conducted in October 2005, the 32% first year students had completed one semester and were quite advanced in their second semester. This indicates that the respondent should have had adequate knowledge of business services which PA firms are likely to offer.

There were more female (53%) respondents than male (47%). A possible reason for this is that the timing of the laboratory session was conveniently scheduled to

coincide with the hour before or after a lecture. Maybe female students were more willing to come before the lecture or remain after the lecture. In addition, flyers were constantly distributed in the masters' computer laboratory, and students requested to voluntarily indicate alternative times. The results may indicate that more female students use the computer laboratories and/or were more agreeable to participate in the study.

More than a quarter of the participants (28.4%) specialized in the Master of Management Information Systems, while another 19.6% specialized in Professional Accounting. The Master of Business Administration and Master of International Business each had 17.6%. These four masters' programmes may be considered as core programmes for today's business environment. They are multi-dimensional, multi-discipline and multi-national. The four programmes accounted for over 83% of the participants. This means most of the respondents would have had sufficient knowledge of both services required to manage businesses as well as skills to interact and evaluate a web site. For example, the majority of the Master of Management Information students were drawn from a 'web-usability' class.

6.3   PA Web Site Quality Dimensions

This study determined the web site quality dimensions for PA firms to be Usability, Interactivity, Information Quality and Riskiness. Each construct or dimension consisted of six variables. The dimensions themselves were supported by 24 questions as shown in figure 6.1 below.
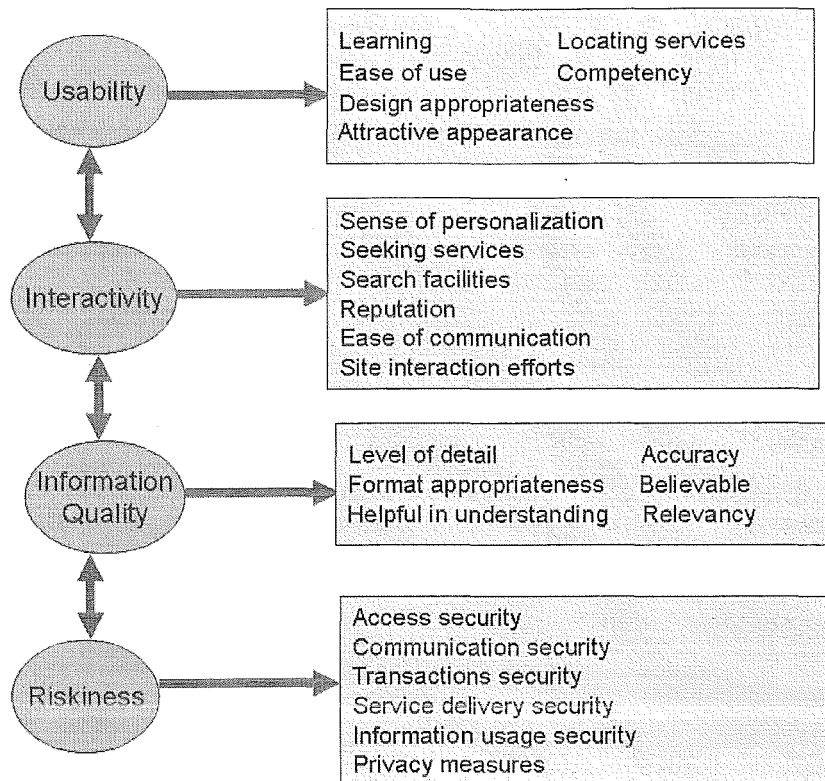
Figure 6.1: WebQual/PA Overview

6.4 Quality Assessment for the PA Sector Web Sites

As shown in the previous chapter, the evaluation of web sites revealed different quality levels across the PA sector. Figure 6.2 shows the four constructs ranked by their mean scores with the scale displaying the highest to the lowest quality levels. All the constructs were rated higher that the scale mid-point, which was 4.

The findings reflected in figure 6.2 highlights usability as the construct with the highest quality in the sector, as revealed by the mean score. The statistical analysis reviewed that the quality level of usability is not significantly different from information quality. The PA sector reflects riskiness and interactivity as the constructs with the lowest quality levels respectively. On average the mean score of all the constructs were above the mid-point. To understand the implication of these findings, the different constructs are discussed below and recommendations given later in chapter 7.

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Figure 6.2: Constructs Determining the Web Site Quality of PA Sector
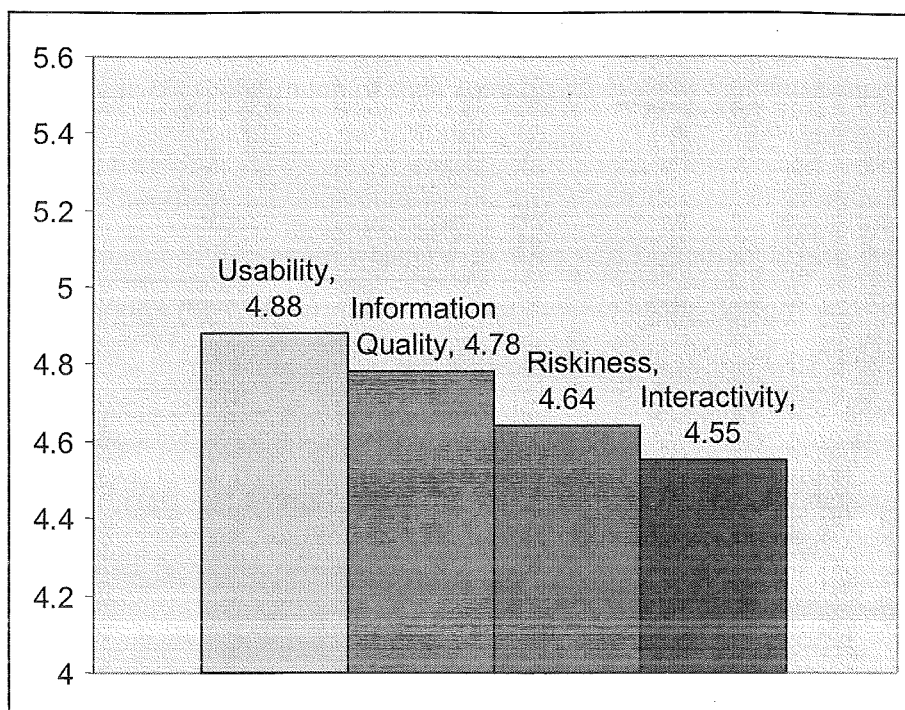
6.4.1 Usability

As indicated in the literature review in chapter 2, usability is concerned with the ability of the web site meeting the user's needs. On average the PA web sites have the ability to meet the needs of prospective clients as the mean score is above the mid-point. The variables within the usability were rated as follows:

- 'Learning' (5.0)

- 'Locating services' (4.90)

- 'Ease of use' (4.90)

- 'Competency (4.89)

- 'Design appropriateness' (4.88)

- 'Attractive appearance' (4.71).

PA web site portrayed a good page layout which facilitated easy location of the services. The participants were able to locate 48 different services (see table 5.2, chapter 5). As noted in chapter 1, PA firms are all-round advisers where they serve a wide range of customers and offering a variety services. Another aspect was the sites

appearance. The clients should not confuse a Professional Accounting site with other sites due to the type of graphical symbols and textual organisation. The appearance of the site should not only be appropriate but also attractive. As observed by Nielson (2004), web site users spend much of their time on other web sites and hence form an opinion of their expectations based on what is commonly done on most other sites. The PA firms, therefore, are expected to portray some degree of commonality on their sites in respect of appearance otherwise sites will be harder to use and clients will leave. Although the two variables 'appropriateness of the design' and 'attractive appearance' had a mean score above the mid-point, they had the least quality level. This implies that they have room for improvement.

Usability also deals with the location of page components including textual descriptions, label prompts, colour and messages. On average, the PA sector sites were easy to use and understand. A site easy to use implies good navigational links. Elements of navigation deal with the depth and breadth of paths for the PA firms. It also touches on how the pages and links are displayed. A site which is well designed, coupled with excellent navigation and a site index, has positive influence to user satisfaction. This is because it will make it easy for clients to locate desired services and/or information within a reasonable time. Clients of PA firms are business managers who are constantly experiencing time shortages, and are in need for urgent, accurate and timely information for decision making support. As noted by Nielsen (2004), the web is no longer an experiment for managers (PA clients) but a mainstream. On average, the PA sector portrayed a sense of competency and navigational possibilities, which are above average.

6.4.2   Interactivity

As noted in chapter 2 interactivity can be seen to include the extent to which the web site communicates with users and responds to the user's communication needs. The interactivity construct analysed in chapter six consisted of the following variables with the ratings as shown:

- 'Ease of communication' (4.95)

- 'Search facilities' (4.80)

- 'Seeking services' (4.55)

- 'Site interaction efforts' (4.50)

- 'Sense of personalisation' (4.36)

- 'Reputation' (4.12).

Within the interactivity constructs 'ease of communication' variable was rated highest. With the mean score being within the third quartile, the rating supports the presence of visible contact facilities such as e-mail, telephone, fax or 'real time chatting'. Clients will have a feeling of control when they are able to choose the timing, content and sequence of communicating with the site. On average, participants were able to personalise the interaction with the site by being able to customise the information regarding a service in order to help them understand it in their context. The PA sector services a variety of clients from different backgrounds hence user control is an important web site quality factor. BRW (2004 Feb. 26-march 3) gave a list of the sectors/organisations served by PA firm which ranged from the manufacturing sector to the financial sector to the health sector. Almost every sector was represented.

A further enhancement is the use of a search engine to find the required information together with options, alternatives or choices. With a high quality of user control, efforts required to be performed by clients to achieve tasks (i.e. either perform transactions or seek information or communicate with the firm) will be minimized (). The presence of 'search' and 'contact us' facilities, including email, enhances the quality of interactivity in terms of user control. However, as it will be noted in the later analysis, the presence of these facilities is not enough because the quality may be affected by the web page layout, which determines their ease of use and visibility.

As noted in BRW (2004, Feb 26 – March 3) "One reason small listed companies would want to have one of the Big Four firms audit their accounts is because the firms reputations are reassuring for companies' shareholders and creditors" (p85). The PA sector is a reputation sensitive sector because most of the operations of public accounting firms are publicly available through the clients published accounts or other public channels like the media. As revealed by the analysis, reputation was the lowest rated variable within interactivity. This may imply that the respondents, on the average, were able to locate only some of the reputation clues within the site.

The relatively low rating implies that the sector requires improvement in such areas as competency portrayed by the site and management/partners, positive historical performance and third party reputation. As the web provides a means of gathering information without personal contact previous happenings contributes positively to the quality of the site.

Overall interactivity is the lowest rated construct in the PA sector with a mean score of 4.55. The PA firms can enhance interactivity by providing feedback mechanism for clients to comment about the site including such aspect as the range of service, response time and expectation. Secondly, there is need for visible and convincing reputation clues.

6.4.3   Information Quality

PA firms are basically service providers hence information plays an important role in client support. Chapter 2 and 4 expounded on this and explained the six variables of information quality construct which consisted of:

- 'Believable' (4.93)
- 'Helpful in understanding' (4.79)
- 'Level of detail' (4.78)
- 'Relevancy' (4.78)
- 'Accuracy' (4.75)
- 'Format appropriateness' (4.67).

These variables had different quality levels reflected by the mean scores. The variable 'how believable the information was' had the highest quality level with a mean score of 4.93 while 'appropriateness of information format for the task' rated lowest with a mean score of 4.67. Four of the information quality variables were statistically not different. These were 'level of detail; the extent to which the right level of detail was provided', 'accuracy; whether the information on the site was accurate', 'relevancy; the extent to which the information is relevant to the task' and 'helpful in understanding the site'. Looking at the six variables of information quality, the inter-relatedness of these variables explains why their mean scores are

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clustered together. For example accurate information may imply believable information while right level of detail of information may enhance the site understandability.

The mean score indicate that information quality of the PA sector is above average, indicating that the format of the information presentation was appropriate for locating and /or seeking accounting services within the sites. In addition, the analysis shows that information was accurate enough to support the 'believable' variable. The fact that 'believable' information variable had the highest mean may also imply that the PA sector has links that provide relevant, accurate and useful information.

In this study, the participants were required to source a service and follow the links and instructions up to the 'final stage' of the transaction. On average, the web sites provided current information with reasonable levels. Participants were able to locate a wide range of services (see table 5.2, Chapter 5) is a support to the above average level of relevancy variable. As noted by Nielsen (2004), web sites need to have all the information (and services) required by users. Completeness does not necessarily imply quantity, which may result in information overload, but may require scannable, highlighted keywords and focused meaningful headings. As noted elsewhere, web site users spend time on competitors sites, hence they already have an expectation of the 'appropriate level' of completeness. In addition, users have limited trust on the availability of the same information at later date. Hence they usually print out (Nielsen 2004) and/or scan the pages as soon as they encounter them.

The foregoing discussion shows that the PA sector, on average, provides quality information. As regards the level of detail, they start with summarised information or conclusions on the home page and provide details on subsequent pages. In this way, PA firms can enhance client satisfaction by ensuring 'tailor made' information is available to clients at the right level of detail, presented via an appropriate format and relevant to their decision requirement.

6.4.4 Riskiness

Perceived risk is generally seen as a great concern to clients in an electronic activity (Cooper & Emory, 1995). This is partially because the conclusion of a transaction

depends on the degree of safety associated with the site. This is more so in an environment involving online services. As shown in figure 6.2 and explained in chapter 5, riskiness of PA web sites was evaluated and rated using six variables namely:

- 'Service delivery security' (4.79)

- 'Information usage security' (4.76)

- 'Access security' (4.66)

- 'Communication security' (4.61)

- 'Privacy measures' (4.58)

- 'Transactions security' (4.47).

The relatively low rating of the risk construct suggests that the PA sector requires measures to minimise perceived risk. The study therefore supports the findings of Fink (1999) where business students concluded that the capabilities of e-commerce will not be fully achieved unless concern about potential risk is overcome.

In respect to task completion, for the participants in this study 'transaction security' risk was of concern. It was the lowest quality rated risk variable. This means that the sites were not perceived strong enough to convince the participants that the firms have put in place adequate security measures to support the completion of transactions. On the other hand, 'service delivery' risk was rated highest. This means participants determined that the firms could deliver services as promised.

On a cautionary note - the process of online service transactions may have been a new concept to the participating business students and hence they may not have been clear how this can be implemented. In addition, some accounting services may not be concluded over the internet and the participants would favour more traditional methods to minimise the risk. However, as e-commerce expands to include more of online services, PA firms require measures to assure clients that it is possible and practical to transact online.

The participants rated 'communication security' above the mid-point which reflects the feeling of security while communicating with the firms but still has room for

improvement. Maybe this could be explained by the average rating of the other risk variables as they are inter-related. Security overall may be improved by making the site more attractive and appropriate for accounting services thereby minimising the risk associated with 'access security'. The home page layout plays an important role in capturing the attention of the client and determining the initial level of perceived risk.

In addition, as noted elsewhere in this study, reputation of the firm contributes positively to risk minimisation. PA clients deal with confidential information about the operations of the organisations they represent. Unauthorised disclosure of critical information may jeopardize the future operations and in some cases may open unwarranted competition. This means that for the clients to feel secure to release information online, the firms must clearly disclose their policy regarding a client's privacy rights. The participants in this study perceived a moderate level of risk associated with 'privacy measures: feeling that the information privacy measures are adequate' and 'information usage security; the feeling that the firm will use the information as intended'.

The sector can take measures to improve the 'riskiness' level of its sites. This may include provision of statements clearly indicating how any information provided by the clients will be used. This enhances information usage security and enables the client to be confident as they release organisational information. Secondly, for transactions, which may involve financial information interchange, there is need for the site to clearly indicate the security measures put in place. Thirdly, security measures should be visible to encourage clients to initiate and conclude important business transactions over the Web.

The foregoing section discussed web site quality for the PA sector which forms the basis for recommendations provided in chapter 7. The following sections give a brief discussion of the web site quality for each of the six PA firms. The structure followed in these sections is similar to the one adapted in the previous section, to better understand the perceived quality of the web sites the participants were provided with one qualitative question inviting them to make general comments regarding any aspect of the sites. This section takes accounts of the comments/observations specific to each firm.

6.5   Quality Assessment for PwC Web Site

The constructs were rated as shown in figure 6.3. The figure highlights usability as the construct with the highest quality on the PwC web site, as reflected by the mean score. The statistical analysis revealed that the quality level of usability is statistically not different from information quality and interactivity. The firm reflects riskiness as the constructs with the lowest quality level. The Summary of comments (table 5.49) shows that out of the 102 participant, 81 or 79.4% gave at least a comment about the PwC site. These comments have been incorporated into the following discussion and chosen on the basis of reflecting typical feedback that was received.

Figure 6.3: Constructs Determining the Web Site Quality of PwC
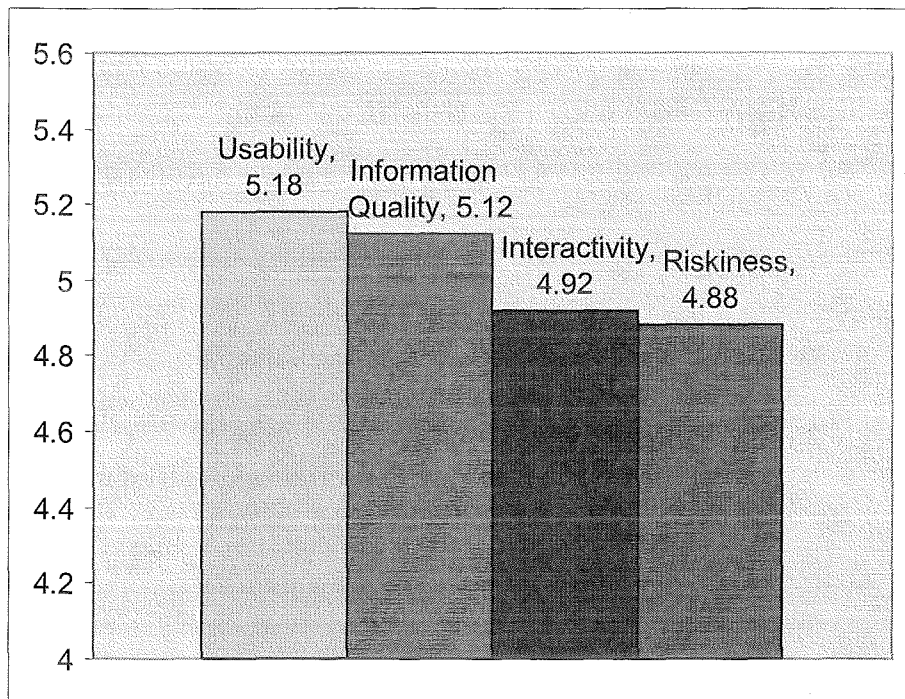
6.5.1   Usability

The rating of the variables for PwC was as follows:

- 'Design appropriateness' (5.32)

- 'Locating services' (5.29)

- 'Competency' (5.22)

- 'Learning' (5.17)

- 'Ease of use' (5.13)

- 'Attractive appearance' (4.94).

All the usability variables were rated above the mid-point. In addition, except for the 'attractive appearance' variable all the others had a mean score above 5.0. This shows that on the average PwC site has the ability to meet the needs of the clients. The variables portrayed two levels of quality where 'design appropriateness', 'locating services' and 'competency' formed the first level (they are statistically not different). Level two consisted of 'learning', 'ease of use' and 'attractive appearance'.

The PwC web site was easy to read since it portrayed a good page layout which facilitated easy location of the services. Participants were able to locate 19 different services (see table 5.2 & figure 5.1, chapter 5). Like other PA firms, PwC is all-round adviser serving a wide range of customers and offering a variety services.

While 'appropriateness of the design' had the highest rating, 'attractive appearance' had the least quality level. This means that the site portrayed a professional service design where the site identity and the content were easily located but the general appearance of the site was less attractive to the potential clients. Some of the frequent comments given by participants included:

More positive comments: 'Professional and attractive – Layout, colours, space used and pictures; Nice graphics effort; Well organized generally, attractive and displays lot of professionalism'.

Less positive comments: 'First impression- lots of information and links on the first page; Web pages contain too much information; Small font hence discouraging; Needs to scroll up and down to keep track of where I am e.g. Service page'.

These less positive comments accounted for the relative low rating of the appearance variable. This implies that the site's appearance can be improved - the study will provide suggestions in a later chapter.

The PwC site appeared to be easy to use and understand as supported by the two variables, 'easy to use' and 'locating services', which had the same level of quality because they were not statistically different from each other. The textual description within the site was coupled with well chosen colours and label prompts which explain why more than 79% of participants were able to locate services with ease. In addition they had positive comments such as:

'Well chosen – Layout, colours, space used and pictures', 'encouraging and nice graphics efforts', and 'Well organized professional site'.

However, some participants observed that the site was too sophisticated for small businesses as they commented that:

'It can be quite daunting if you are just a small business as the site appears to be quite sophisticated'.

PwC has a challenge to make the site more attractive to small and medium sized firms as they become the target market for the big four accounting firms. This will be in support of the current move as noted by BRW (Feb 28-March 3, 2004) that:

"the big four accounting firms see small and medium size listed companies as their big clients of the future and are desperate for their business. They have a strong presence in this market and are squeezing out the small and mid-tier firms". (p84)

Participants easily located the desired services and/or information within reasonable time as reflected in the high rating and the comments which included:

'Well structured site and provide easy navigation capabilities; and very good interface design'.

More than half of the participants who commented about the site had some positive statement about the navigation of the site. Thus the PwC site is 'easy to navigate' which means that the navigational links support the clients well by showing them where they are and where there are going, using consistent page layouts coupled with self-explanatory text links.

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On average, the PwC site portrayed a sense of competency, encouraging and supportive navigations, easy to use and understand. The overall perceived quality of the site was rated at 5.09. This indicates a high level of quality although there is still room for PwC to improve the site. Some of the improvements include the establishment and promotion of an appropriate layout for 'new' clients especially if the firm plans to target the small and medium organisations. Secondly, the site should support the time saving aspect of decision making process of clients by reducing the amount of information on each page especially the first page and minimising scrolling up and down as this may irritate them.

6.5.2   Interactivity

The rating of Interactivity construct in relation to PwC was analysed in chapter 6 and consisted of following variables and ratings:

- 'Ease of communication' (5.51)
- 'Search facilities' (5.27)
- 'Site interaction efforts' (5.09)
- 'Sense of personalization' (4.51)
- 'Seeking services' (4.64)
- 'Reputation' (4.48).

As noted earlier, clients will have a feeling of control when they are able to choose the timing, content and sequence of communicating with the site. On average, the participants were able to personalize the interaction with the PwC site by being able to customise the information regarding services which helped them understand these services in their context. A comment from the participant supports this:

'Staff information to contact and pictures give personalised site experience'

The site was able to use the information provided by participants and offer them (participants) tailored web experience as indicated by the 'site interaction efforts' and 'sense of personalization' variables. However it was further observed that:

> 'When you enter something for the web site to search on an Australian region, it should only display results in English. It displayed some results in Dutch although it is an Australian region site'.

With a high quality of user control, efforts required to be performed by clients to achieve tasks, i.e. either perform transactions or seek information or communicate with the firm, will be minimized (Heeter, 1989). The presence of 'contact us' facility such as email supported the quality of interactivity in terms of user control although some participants commented that the 'contacts us' site map was too small and hard to find.

The extent to which the firm communicates with clients is shown by the high rating of the 'ease of communication' variable which was the highest rated variable on the PwC site. It provided adequate means of responding to the participants. However, as revealed by the analysis, 'reputation' was among the lowest rated variables within interactivity. Others included 'sense of personalisation' and 'seeking services' variables. This may imply that, although the respondents were willing to seek services from the firm, reputation clues within the site were either missing or not convincing or inadequate.

The relatively low rating implies that the firm requires improvement in such areas as competency portrayed by the site and management/partners testimonials, visible and clear positive historical performance and third party reputation. PwC can enhance interactivity further by making clear and visible provisions for feedback mechanism for clients and site visitor to comment about the site.

6.5.3 Information Quality

PwC is a service provider and hence information plays an important role in client support. The six variables of Information quality construct consist of:

- 'Relevancy'(5.31)
- 'Believable'(5.30)
- 'Helpful in understanding' (5.16)

- 'Format appropriateness'(5.03)

- 'Level of detail'(5.01)

- 'Accuracy' (4.93).

As explained in chapter 5, the last three information quality variables were statistically not different. In addition, the mean scores of the six variables of information quality are clustered together which explains the inter-relatedness of these variables. For instance accurate information may imply believable information, and the right level of detail and appropriate format of information may enhance the site understandability.

Although accuracy was the lowest rated variable, the analysis shows that information was accurate enough to support the 'believable' variable. The high rating of 'believable' information variable implies that the PwC site has links that provide relevant, accurate and useful information. Some of the comments given by the participants include:

More positive comments: 'The site seems to provide lots of information to users'; 'Information is logical and clear'.

Less positive comments: 'The information provided is there but sometimes a bit difficult to find'; 'Site has information but difficult to unearth it'; 'overload of information hence may be hard to identify the specific information needed'.

The less positive comments may account for the relative low rating of accuracy since clients are not able to determine or to locate all accuracy clues due to information overload.

Timely and relevant information enables clients to make a decision faster, complete a process, conclude a transaction and/or make an evaluation of the site. In this study, participants were required to source a service and follow the links and instructions up to the 'final stage' of the transaction. The high rating of the 'relevancy' variable indicates that PwC web site provided current information with reasonable level of updates. This is supported by the ability of a large percentage of the participants being able to locate a wide range of services (see table 5.2, Chapter 5).

As noted by Nielsen (2004), clients expect to find all the information (and services) they require for certain categories since they would be used to this by accessing other firm's web site. Completeness is not necessarily synonymous to quantity as this may result in information overload but may imply scannable, highlighted keywords and focused meaningful headings. The high rating of 'level of detail' and 'format appropriateness' indicates that the information available to participants was able to help them understand the site including the services offered. While the site provided most of the services on the Australian home page, there was too much information which resulted to participants 'getting lost' in the site. As pointed out earlier, one participant noted that 'information provided is there but sometimes a bit difficult to find'. In addition, mean scores indicates that the format of the information presentation was appropriate for locating and/or seeking accounting services within the site. However, the site can be enhanced further by minimising or eliminating the scrolling especially on the first page. Secondly, the firm can reduce the level of detail on first page and ensure more details as clients 'delve' deeper in the site.

6.5.4   Riskiness

Of the four constructs, the riskiness construct had the lowest rating. Riskiness of PwC web sites was evaluated using six variables namely:

- 'Service delivery security' (5.04)
- 'Communication security' (5.01)
- 'Information usage security' (4.94)
- 'Privacy measures' (4.85)
- 'Access security' (4.76)
- 'Transactions security' (4.68).

How safe the participants perceived the 'service delivery' and 'transaction security' may determine the possibility of task completion. The two variables were rated highest and lowest respectively. This means that although the participants determined that the firm could deliver services as promised, they may not be keen to complete a transaction if required to. This requires the site to improve its security measures in support of completing transactions. However, participants rated 'communication

security' relatively high, i.e. way above the mid-point. This indicates that the participants felt secure while communicating with the firms. Yet 'access security' was rated relatively low. Clients appear to have felt less secure at the initial stages of site interaction and this is likely to discourage further communications.

The participants in this study perceived a low level of risk associated with 'privacy measures' and 'information usage security'. This implies that the participants would release confidential information if required to. They are aware that the information would be used for the specified purpose and no unauthorised use or users getting access to the information.

The firm has the opportunity to reduce the level of perceived risk by enhancing the quality of the site. This can be done by improving the 'first impression' on the site as far as security is concerned as this will encourage clients to continue with the communication, interaction and transacting with the site. Secondly, the firm should clearly disclose security measures on the site.

6.6   Quality Assessment for Ernst & Young

The participants rated the E&Y site and the results were analysis in chapter 5. Figure 6.4 shows the rating of the constructs with usability being rated highest and interactivity the lowest. Although the mean scores are different, a statistical analysis shown that the four constructs were statistically not different. They reflected the same level of quality. In addition, 78 out of 102 participants commented about the E&Y site (see table 5.49, chapter 5). These comments are taken into consideration.

Figure 6.4: Constructs Determining the Web Site Quality of E&Y
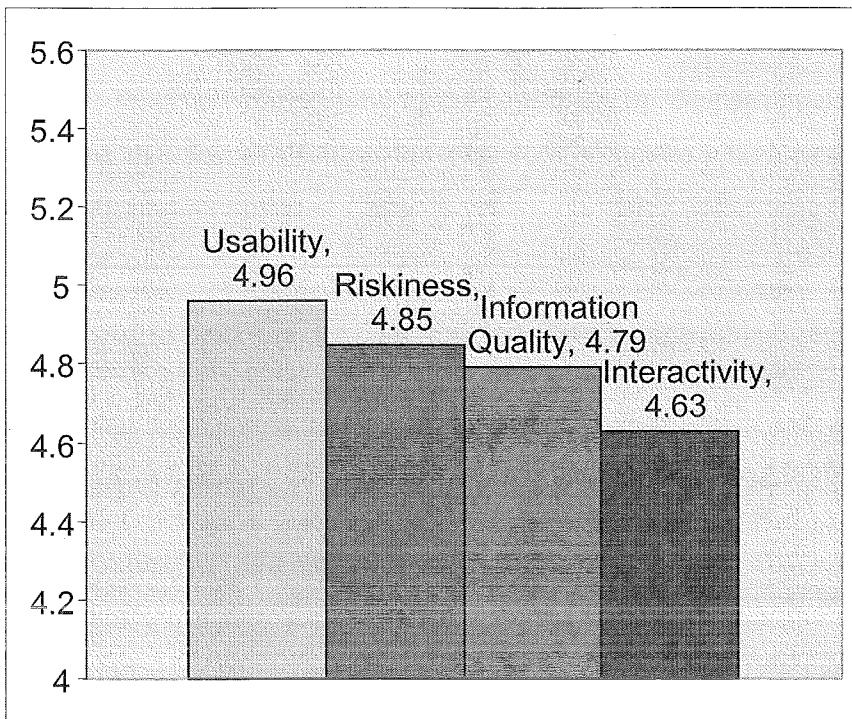
6.6.1   Usability

The participants evaluated E&Y site for usability where variables were rated as follows:

- 'Learning' (5.20)

- 'Competency' (5.10)

- 'Ease of use' (4.95)

- 'Locating services' (4.86)

- 'Attractive Appearance' (4.84)

- 'Design appropriateness' (4.82).

A further analysis showed that the two variables 'Learning' and 'Competency' were statistically not different hence they portray similar level of perceived quality. The remaining variables formed the second level of quality. E&Y portrayed above average level of usability and particularly in relation to page layout and fonts. High quality level of usability acted as a guiding tool in addition to being a means of

helping participants in locating services more easily and with reasonable efforts. The participants located different services as shown in chapter 5.

Although the attractiveness of the site was on level II of the perceived quality the mean score was relatively high. Some of the comments by the participants supported the observations that features within the site were attractive which made it easy to read the details found on the site.

'Very easy to find the services but less information about services; Good use of colour code'; 'Site is simple but effective'; 'site is friendly to individuals and small companies'.
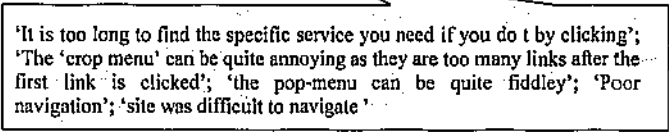
This may imply that the site was seen to be appropriate for smaller organisations. However, the design of the site had the lowest mean score which indicate that the participants found the design less appropriate for a professional accounting services site. The analysis revealed that the general appearance and design of the site were relative less attractive to the potential clients.

As shown by 'locating services' and 'easy of use' variables, the E&Y site supported the participants in the understanding of the site as evidenced by several observations. First, this is the site with the highest number of services located, (22 different services), and secondly participants commented positively about the site. In addition, the site was commended for being appropriate for medium and small organisations. Some comments from the participants include:

'Site is simple'; 'friendly to small individuals'; 'less sophisticated menu'.

The participants evaluated the breath and depth of the E&Y navigational links. The rating of variables such as 'competency', 'learning' and 'ease of use' indicates how well the pages and links are displayed. The site supported participant in the use and understanding of the site. However, the site design was less appropriate for a professional site as the potential clients found the site less attractive and difficult to navigate. This means site design may require some attention. More than half of

comments in relation to E&Y site dealt with navigation. Some comments extracted include:

> 'It is too long to find the specific service you need if you do t by clicking'; 'The 'crop menu' can be quite annoying as they are too many links after the first link is clicked'; 'the pop-menu can be quite fiddley'; 'Poor navigation'; 'site was difficult to navigate '

As noted earlier, poor navigation may imply time wasting while locating services and 'frequently getting lost' within the site. Business managers should be able to use the resources optimally, hence a time wasting site will result to 'annoyed managers'.

6.6.2   Interactivity

The degree to which clients of the E&Y can communicate, have control over, and exchange information, as they use the site was established using interactivity construct variables:

- 'Search facilities' (5.34)

- 'Seeking services' (4.66)

- 'Site interaction efforts' (4.60)

- 'Ease of communication' (4.51)

- Sense of personalization' (4.35

- 'Reputation' (4.34).

Of the interactivity variables, 'sense of personalisation', 'site interaction' and 'reputation' were statistically not different hence they reflect the same level of quality. The level of quality, however, was relatively low. This may imply that participants experienced difficulties in relation to balancing what their needs are with what the site provides. In addition, the participants may have found it less satisfying while choosing the timing, content and sequence of communicating with the site.

The moderate rating of 'ease of communication' variable indicates that responses from the site was not adequately meeting the needs of the participants. However, the

participants rated the quality of communication above average. The ratings show that E&Y site can be improved to make easy for the firm to respond and communicate with clients.

As revealed by the analysis, 'reputation' was the lowest rated variables within interactivity. This may imply that, although the participants were willing to seek services from the firm, reputation clues within the site were either missing or not convincing or inadequate. This may be improved by focusing to such areas as competency portrayed by the site and management/partners testimonials, visible and clear positive historical performance and third party reputation.

6.6.3   Information Quality

Six variables of Information construct were used to evaluate the information quality of the site. They were rated as follows:

- 'Believable' (5.13)
- 'Accuracy' (4.82)
- 'Helpful in understanding' (4.79)
- 'Format appropriateness' (4.75)
- 'Level of detail' (4.66)
- 'Relevancy' (4.58).

As explained in chapter 5, ratings reflecting the quality differ as shown by the mean scores. The variables formed three levels of quality where 'believable' reflected the highest quality. Level II included 'accuracy', 'helpful in understanding' and 'format appropriateness' which were statistically not different. The final level consisted of 'level of detail' and 'relevancy'.

The mean scores of E&Y indicate that the information accuracy was above average which supported the locating and/or seeking accounting services within the site with a reduced level of error. In addition, the analysis shows that information was accurate enough to support a high level of 'believable' information. This may imply that the E&Y site has links that provide relevant, accurate and useful

information. However, the ratings show that E&Y has room for improving these variables; one of the participants commented that:

'Easy to find the services provided but limited info regarding the services'

The relative low rating of the 'relevancy' variable indicates that participants found E&Y web sites could waste time while trying to access and use relevant information. A participant observed that:

'Search engine should provide more exact information'

This may indicates a lack of relevant information to enable the participant to source accounting services. However, the firm can improve its site in relation to providing current information with a reasonable level of updates and detail. The moderate rating of 'level of detail' and 'format appropriateness' indicate that the information available to the participants was, on the average, able to help them understand the site including the services offered. While the site provided most of the services on the Australian home page, there was not enough information which caused participants 'delving deeper' into the site. The participants noted:

'was very easy to find the services but less information provided about the services', 'too much information on some pages' and 'It took too long to find the specific service needed, if you do it by clicking'.

6.6.4   Riskiness

Of the four constructs, the riskiness construct was rated second highest to usability. Riskiness of E&Y web sites was evaluated using six variables as follows:

- 'Access security' (5.11)

- 'Information usage security' (5.00)

- 'Service delivery security' (4.99)

- 'Privacy measures' (4.69)

- 'Transactions security' (4.68)

- 'Communication security' (4.62).

While evaluating the perceived risk, the participants considered 'service delivery' and 'transaction security' when completing the task of sourcing for an accounting service. The two variables were significantly different with 'service delivery' being rated higher than 'transaction security'. This means that although participants determined that the firms could deliver services as promised they were less keen to complete a transaction if required. The site requires improvement in relation to security measures to support and enhance the completion of transactions.

The participants rated the 'communication security' variable above the mid-point but it had the lowest mean score indicating that the participants felt less secure while communicating with the firms. However, 'access security' was the highest rated variable. In combination, this indicates that although the participants accessed the site securely, they were less willing to continue with the communication. This may affect the completion of transactions and 'deep delving' into the site.

The participants in this study perceived low level of quality of risk associated with 'privacy measures'. However, 'information usage security' was rated relatively high. This may motivate a client to release confidential information online and hence promote and support online business with the firm.

6.7 Quality assessment for KPMG

The construct ratings by the participants is shown in figure 6.5 and are discussed below.

Figure 6.5: Constructs Determining the Web Site Quality of KPMG
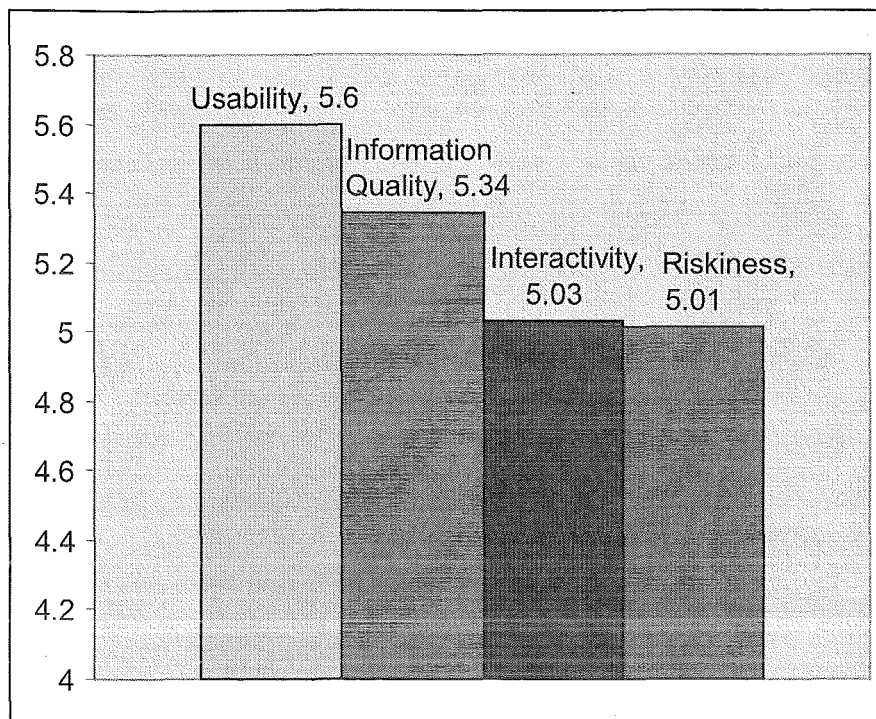
As indicated in the figure the usability construct has the highest quality on the KPMG site. The statistical analysis showed that the quality level of usability and information quality was statistically different form the other constructs. On the other hand, riskiness and interactivity were statistically not different hence reflected the similar quality level.

6.7.1 Usability

The rating of the usability variables for KPMG was as follows

- 'Locating services' (5.82)

- 'Ease of use' (5.63)

- 'Learning' (5.60)

- 'Design appropriateness' (5.58)

- 'Competency' (5.57)

- 'Attractive appearance' (5.37).

On average the KPMG web site demonstrates the ability to meet the needs of the clients as the mean scores of all the usability variables are above the mid-point. The variables portrayed three levels of quality where 'locating services' formed the first level, level two consisted of 'ease of use', 'learning', 'design appropriateness' and 'competency' while 'attractive appearance' formed the last level.

KPMG portrayed all above average level of usability thereby facilitating the locating of services, easily and with a reasonable effort. The site was easy to read as shown by some of the comments by participants:

'Easy to read the first page – not too much information, it's more clean'; 'Categorization of the services is very well done'; 'Good site'; 'the home page gives a well-organized layout of the critical 'services' needed by a client'; 'Services classified very well'.

This shows that the site was seen to be appropriate for a professional accounting site. The general appearance and design of the site appeared to be attractive to potential clients. A site which is appealing to clients may increase the perceived 'competency' and encourage 'deep delving' within the site.

As shown by the ratings for 'locating services' and 'easy of use' the KPMG site supported participants in the understanding the nature of the site. This is further supported by the observations and comments by the participants which include:

'They have clear view of services which the user can read easily'; 'Clear site'; 'Easy to look for and find 'service icon''; 'Good site for ease of understanding'; 'Services classified very well'; 'Excellent and easily understood'.

The site portrayed consistency from one page to another, a quality which helps the user to feel in control of the site. Observed qualities, like 'clear site', makes it easy to understand, locate and identify services offered. The high rating of variables also indicate that the navigational links within the site made it easy for participants to navigate, use and understand the site. This in turn enhances the perceived level of competency. This is supported by participants' comments such as:

> 'Good use of pages and navigation and also site autonomy'; 'follow best practice'; 'Very clean and easily navigatable site'; 'Easy site to navigate'; 'Good navigation menu – easy to use – not clustered'.

Good navigation helped the participants to locate services quickly and easily and keeping track of where about they were within the site. In addition it would have encouraged them to interact more with the site.

6.7.2   Interactivity

The rating of the interactivity construct was analysed earlier and consisted of the following variables:

- 'Ease of communication' (5.43)
- 'Site interaction efforts' (5.20)
- 'Search facilities' (5.17)
- 'Seeking services' (5.08)
- 'Sense of personalization' (4.77)
- 'Reputation' (4.50).

The high rating of 'site interaction efforts' and moderate rating of 'sense of personalisation' indicates that participants were able to experience a personalised interaction with reasonable efforts in searching and finalising tasks. participants appeared to be able to utilise such facilities as search for service identification but with mild difficulties. This is supported by some of the comments:

> 'The only way to contact the company - e-mail'; 'Visible search must be included'; 'Good layout and contact information'; 'No search box'; 'Search bar not search link'; 'it has an ' event' page which shows upcoming events such as speeches which is a good way for those interested to learn about various areas of interest'.

The high rating of the 'ease of communication' variable shows that the KPMG site responded to participants adequately. Varieties of communication facilities were

available to participants (such as e-mail, telephone, fax and 'contact us') which improved their satisfaction levels. However, the moderate rating of 'sense of personalisation' implies that although communication facilities are supported by the site, they were below participant's expectation. Some participants commented that:

'Search results were poor'; 'info not relevant to my search'

A client's satisfaction can be improved by offering effective search and communication facilities. Search results should meet the personalised needs of clients.

'Reputation' was the lowest rated variable within interactivity. This may indicate that, although the participants were willing to seek services from the firm, they were not convinced of the firm's reputation. This may be enhanced by focusing on such areas as competency portrayed by the site and improving the visibility of other reputation clues.

6.7.3   Information Quality

Six variables were used to rate the information construct in relation to KPMG site which consist of:

- 'Level of detail' (5.51)

- 'Relevancy' (5.36)

- 'Format appropriateness' (5.34)

- 'Helpful in understanding' (5.30)

- 'Believable' (5.29)

- 'Accuracy' (5.26).

The variable 'level of detail' had the highest quality level while 'accuracy' rated lowest although on average all variables were highly rated, given information accuracy was above average which supported the locating and /or seeking accounting services within the site at low level of error. Information was accurate enough to support a high level of 'believable' and 'helpful' information.

The high rating of 'relevancy' variable indicates that the KPMG web site provides current information with reasonable level of updates and detail. The rating shows that the site provided timely and relevant information, as supported by participants' observations:

> 'Good information'; 'Simpler site with less information – you can click on reports/additional information if you chose'; 'Site provides lots of information and pays attention to details'; 'Site structure is easy to find information'

Overall information appeared to be believable as well as relevant to locating accounting services. As a result 19 different services were identified by the participants (see chapter 5). The high ratings of 'level of detail' and 'format appropriateness' further help potential clients to understand the site including the services offered.

6.7.4   Riskiness

Riskiness of KPMG sites was evaluated using six variables which were rated as follows:

- 'Service delivery security' (5.25)
- 'Information usage security' (5.17)
- 'Privacy measures' (4.92)
- 'Transactions security' (4.92)
- 'Communication security' (4.90)
- 'Access security' (4.88).

The two highest rated variables, 'service delivery' and 'information usage security', formed the first level of quality. All the other variables formed the second level. This shows that the participants determined that the firm could deliver services as promised and were keen to complete a transaction if required to. The site provides

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more than adequate security measures to support and enhance completion of transactions and security clues were visible to the participants.

Participants rated 'communication security' high (i.e. above the mid-point) but lower than most of the other variables. However, 'access security' was the lowest rated variable indicating that although the participants were willing to continue with the communication with the site, this could be affected by the feeling of insecurity as they access the site. Improved visibility of security clues at the initial stages of site access may encourage further communication. One participant commented that;

| 'Security needs to be shown' |

The study perceived a low level of risk associated with 'privacy measures'. In addition, 'information usage security' was rated high. This may motivate participants to transact online due to increased level of confident with the firm. Participants readily observed that the site 'has an online privacy statement' which shows that it is concerned about its customers' privacy and security concerns.

6.8 Quality Assessment for Deloitte

The participants rated the quality of the Deloitte site, resulting in different levels of quality as shown in figure 6.6.

Figure 6.6: Constructs Determining the Web Site Quality of Deloitte
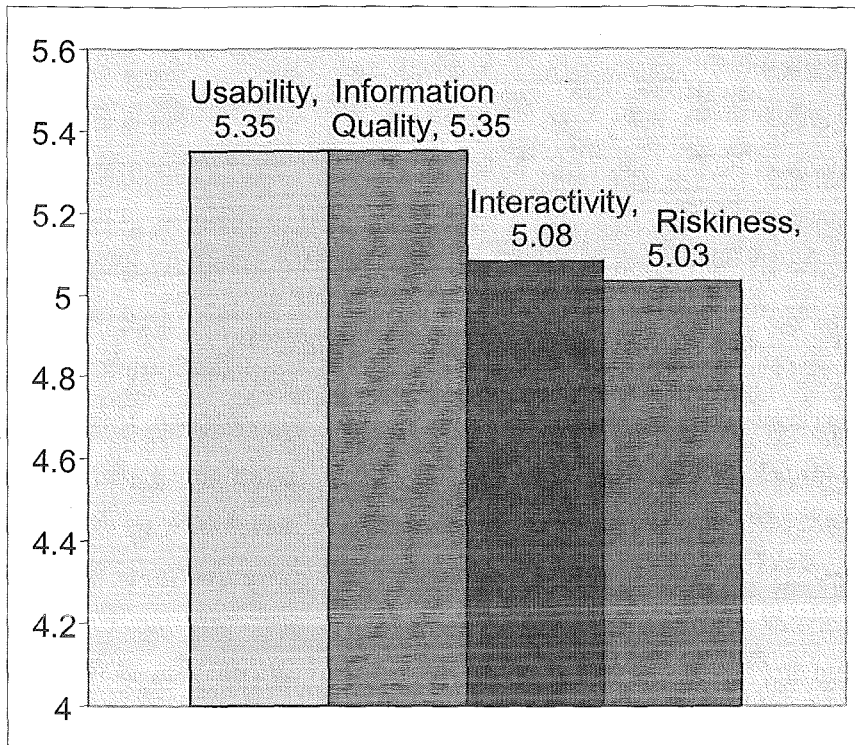
Figure 6.6 highlights information quality and usability as the constructs with the highest quality and at the same level and statistically not different from interactivity. Riskiness has the lowest quality level. Examining the mean scores of Deloitte, they reflect a web site quality level which is above average.

6.8.1 Usability

As usability is concerned with the ability of the web site meeting the user's need, the following variables were used:

- 'Ease of use' (5.56)

- 'Locating services' (5.49)

- 'Learning' (5.44)

- 'Design appropriateness' (5.27)

- 'Competency' (5.25)

- 'Attractive appearance' (5.11).

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The ratings indicate that the Deloitte site has the ability to meet the needs of clients as all the mean scores are above 5.00. The variables portrayed four levels of quality where 'ease of use' formed the first level, while level two consisted of 'learning' and 'locating services'. The variables 'competency' and 'design appropriateness' were statistically not different hence formed level three and level four consisted of 'attractive appearance' which was the least rated variable.

The site portrayed an above average level of usability particularly in relation to ease of using the site and locating accounting services. The site was easy to use as shown by some of the comments:

'Easy to find out either what you are looking for or all the services provided', 'Good site', 'Colour code good', 'It's a great site', 'I was unable to change the font size, however the default font size (size of text chosen by designer) was large and therefore easier to read than the previous two web sites'

The site was seen to be appropriate for a professional accounting service site although a few less positive comments were raised by the participants such as:

'Too abstract about what company is'. 'Error on the Deloitte dream team page', 'Good 'news and research' page credibility'

The analysis revealed that the general appearance and design of the site were attractive to participants. This is likely to have positive impact on perceived 'competency' and encourage the clients to 'delve deeper' within the site. The site supported the participants in their understanding of the site as evidenced by the high rating of ease of using and Learning the site. In addition, some participants observed that:

'The site is well structured regarding the services provided', 'Focuses on five industries and shows how Deloitte specialises in the different industries and have web casts',

The high ratings of 'design appropriateness', 'competency' and 'attractive appearance' indicates that the site portrayed consistency from one page to another, a

quality which helps the user to 'keep within the site'. In addition, the high ratings of usability variables further imply that the breath and depth of the Deloitte navigational links were reasonable at a quality level acceptable to the participants. This further enhances the perceived level of competency and design appropriateness. Good navigation provides time savings to clients while locating services and 'keeping track of where about' within the site.

6.8.2   Interactivity

The extent to which the Deloitte site communicates and responds to the user's communication needs was evaluated using six variables as follows:

- 'Ease of communication' (5.52)

- 'Search facilities' (5.25)

- 'Seeking services' (5.12)

- 'Sense of personalization' (5.07)

- 'Site interaction efforts' (4.83)

- 'Reputation' (4.68).

These variables formed three levels of quality where 'ease of communication' reflected the highest level. Level two consisted of three variables namely 'search facilities', 'seeking services' and 'sense of personalization'. The lowest level was made-up of 'site interaction efforts' and 'reputation'. All the interactivity variables had a mean score above 5.0 which indicates a high level of communication with the users.

The high rating of 'ease of communication' is enhanced by the presence of such facilities as e-mail, telephone, fax or 'contact us'. In addition the site allowed participants to search for specific information in a friendly setting. Several participants observed that the site was 'user' friendly. Examples of such comments are:

'The site was user friendly and useful to whoever uses it – student/professional'; 'easy to use site'.

Like other interactivity variables, 'sense of personalisation' and 'site interaction efforts' were highly rated. Participants were able to personalise the site visible search facilities and search results adequately meeting participants' expectations.

The analysis showed that, reputation was the lowest rated variable within the interactivity construct although the rating was above average. On the other hand, participants were willing to seek services. In other words reputation clues supported by the site were at a level adequate enough to encouraged participants to communicate and seek services.

6.8.3   Information Quality

The site was rated for information quality using six variables as follows:

- 'Accuracy' (5.45)

- 'Level of detail' (5.43)

- 'Believable' (5.42)

- 'Helpful in understanding' (5.38)

- 'Relevancy' (5.28)

- 'Format appropriateness' (5.11).

These variables formed two levels of quality where level one consisted of the first four variables while 'relevancy' and 'format appropriateness' were in level two. The high rating of 'level of detail' and 'format appropriateness' variables indicated that the information available to the participants was able to help them understand the site including the services offered. The site provided most of the services on the Australian home page, which minimised the need for the participants to delve deeper in the site. The participant noted that:

'Excellent home page – not too much info'; 'Good home page – not too cluttered'; 'I am not satisfied with the structure of the design although they have a clear view, information that is given not enough, too brief explanation'

Accuracy in relation to information quality was high indicating that the site supported a low error level and high reliability level. As noted earlier, the information variables are inter-related. This explains why the mean scores are clustered closely together. For instance accurate information enhanced the 'believable' quality which further enhanced the site's 'understandability' and relevancy. In summary, the site provides relevant, accurate and useful information, coupled with a well organised information format and detail which enabled the participant to determine or locate information accuracy clues.

6.8.4   Riskiness

Riskiness of the Deloitte site was evaluated using six variables which were rated as follows:

- 'Information usage security' (5.20)
- 'Service delivery security' (5.15)
- 'Communication Security' (5.09)
- 'Privacy measures' (5.02)
- 'Access security' (4.88)
- 'Transactions security' (4.83).

As perceived risk is generally concern with the degree of safety associated with the site, it plays a crucial role in determining whether or not the client will conclude online transactions. As indicated by the mean score, the variables portrayed different levels of quality. However, statistical analysis revealed two levels consisting of three variables each. Although the perceived risk was low, two of the variables had mean scores below 5.0

The relatively high ratings shown above imply that the firm could deliver services as promised, and the participants were keen to complete a transaction if required to do so. The usage, delivery and communication security were rated highly indicating that participants felt secure while in contact with the firm. Good accessibility enhances the reliability of online service sourcing and encourages potential and existing clients to continue with 'transaction' processing. Participants felt relatively less secure when

they accessed the site. 'Privacy measures' were highly rated. This may imply a 'safe' environment for the participant to transact online as indicated by comments below.

'I liked that the 'privacy policy' link was provided with the feedback /email page'

The relative low rating of the level two variables shows that the firm has room to enhance the quality of access and transaction security. Recommendations in this respect will be provided in the next chapter.

6.9   Quality Assessment for Investor Group

The perceived quality dimensions of Investor group site are summarised in figure 6.7. The figure highlights information as the construct with the highest quality but the quality level of all the constructs were statistically not different. More importantly however is that all the constructs had a below average quality level.

Figure 6.7: Constructs Determining the Web Site Quality of the Investor Group
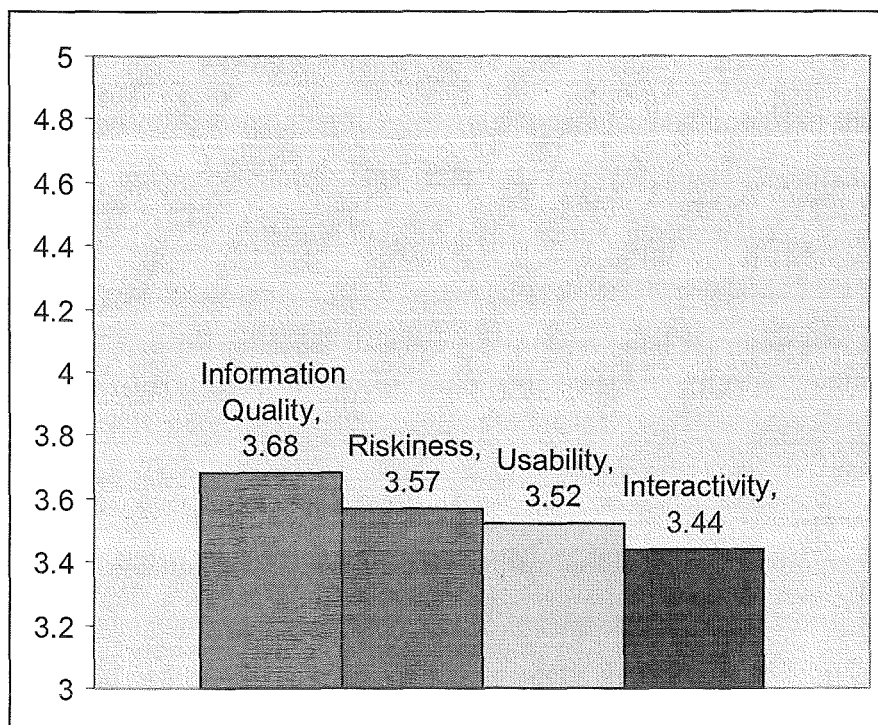
6.9.1   Usability

The usability quality in relation to the Investor Group site was evaluated using six variables:

- 'Learning' (3.89)

- 'Ease of use' (3.53)

- 'Competency' (3.51)

- 'Attractive appearance' (3.45)

- 'Design appropriateness' (3.43)

- 'Locating services' (3.29).

The variables portrayed three levels of quality where 'learning', formed the first level. 'design appropriateness', 'competency', 'ease of use' and 'attractive appearance' formed the second level while Level three consisted of 'Locating services'. All the variables were rated below the mid-point indicating a below average level of usability quality. This may indicate that the site has an inadequate ability to meet the needs of clients. For example this may inhibit the locating of services thereby discouraging clients. One participant commented that:

> 'Finding what you want is a bit hard'

The analysis further revealed that the general appearance and design of the site were less attractive to participants. This affected the perceived 'competency' and discouraged 'deep delving' within the site. Participants observed that:

> 'It seem good site for personal users'; 'Not professional its more like an advertisement'; 'Not convincing to a company looking for accounting services'

The ratings of 'locating services' and 'easy of use' indicate that participants found it difficult to understand and use the site. This is further evidenced by several observations and comments by the participants which include:

'No 'service' icon appear on the 1ˢᵗ screen'; 'Service provided not clear, not enough details about them'; "Service' not well described'; 'Nature of services offered is not clear eg taxation'; 'page layout is not consistent'

The site portrayed inconsistencies from one page to another, an attribute which made participants feel a lack control of the site. Some observed qualities like 'page layout is not consistent' and makes it hard to understand, locate and identify services offered. This further makes it difficulty for participant to keep track of their 'whereabouts' within the site. The below average mean scores indicate that the site's features such as page components, textual description, label prompts, colour and messages were not well regarded by the participants.

Another aspect of usability deals with ease of navigation which is evaluated by the breath and depth of navigational links. The low rating of usability variables indicates that the navigational links within the site made it difficult for participants to use and understand the site. This in turn may reduce the perceived level of competency. Poor navigational possibilities also cause time wasting and may result in clients giving up and expressing negative sentiments which in turn affect the firm's reputation. This The Investor group needs to improve the site to an average level in order to remain competitive.

6.9.2   Interactivity

The rating of this construct was analysed using six variables as follows:

- 'Ease of communication' (3.90)

- 'Search facilities' (3.81)

- 'Seeking services' (3.40)

- 'Sense of personalization' (3.42)

- 'Site interaction efforts' (3.10)

- 'Reputation' (3.02).

Although 'ease of communication' had the highest quality within the site, the rating was below average. This shows that the site lacked adequate means of responding to the participants. The inadequacy may include the absence of such facilities as e-mail, telephone, fax or 'contact us', which made it difficult for the participants to locate the firm. In cases where the facilities were used the results did not adequately meet the expectations of the participants. Observations by participants include:

'The site does not provide 'contact menu' for customers' easy use'; 'Very difficult to locate required information and services'; 'get rid of advanced search'; 'has a search facility but results didn't match query'

Like the other interactivity variables, 'sense of personalisation', and 'site interaction efforts' were rated lowly. 'Reputation' was rated lowest which implies that reputation clues within the site were either missing or not convincing or inadequate. In addition, participants found it difficult to evaluate previous performance of the site and hence lacked 'indirect' support material to positively facilitate transaction initiation and completion. This can be improved by the firm focusing on such areas as competency portrayed by the site, management testimonials, visible and clear positive historical performance and third party reputation including clients. An example of a reputation clue observed by a participant was:

'There is a message from the CEO which is always good'

6.9.3   Information Quality

Information quality in relation to Investor Group was rated using six variables as follows:

- 'Level of detail' (3.80)
- 'Accuracy' (3.79)
- 'Believable' (3.78)
- 'Helpful in understanding' (3.69)
- 'Relevancy' (3.68)

- 'Format appropriateness' (3.33).

Although the mean score show that the perceived quality of these variables differ, 'format appropriateness' is the only variable which was statistically different. However, all the ratings were below average. Information quality variables were inter-related as seen by narrow range of mean scores from 3.80 to 3.33. The level of quality of one variable affects a related variable. For instance, less accurate information implies less attractive and inappropriate format which hinders the site understandability. In addition, low information accuracy made it difficult for participants to locate and /or seek accounting services within the site. This further resulted to low level of 'believable' information.

The low rating of the 'relevancy' variable indicates that the information available to participants within the site was inadequate in terms of currency, level of detail and timeliness. Participants' observations indicated that the information was less relevant to locating accounting services. They commented that:

'Very difficult to locate relevant information'; 'Site has a lot of information but could improve on the layout'; 'Hard to know where to start'; Overall, still got a long way to go to catch up with today's online market'

The low rating of 'level of detail' and 'format appropriateness' indicates that the information available to the participants was, on the average, less helpful in supporting the understanding of the site including the services offered. This may further imply that the participant failed to find all the information (and services) they required. Generally, clients become discouraged when they lack complete information to meet their expectations. Participants commented that:

'very hard and strenuous site to find the services', 'inadequate information was provided about the services', 'too much information on some pages' and 'lack of specific information to describe services I needed', 'Full of information first page i.e. too much information', 'Menu structure should provide more information'

Overall, the site portrayed an accounting site of below average information quality.

6.9.4　Riskiness

Riskiness of the Investor Group web site was evaluated using six variables namely:

- 'Access security' (3.75)
- 'Communication security' (3.55)
- 'Service delivery security' (3.62)
- 'Information usage security' (3.68)
- 'Privacy measures' (3.49)
- 'Transactions security' (3.32).

The rating of all the variables was below the mid-point which indicates that the participants perceived relatively high risk. 'Access security' was rated highest while 'communication security' was in the second level of quality. Both imply that the participants felt less secure while communicating and accessing the site. This is further supported by the participants' comments which include:

'I don't feel secure, cookies blocked my explorer'; 'Good site but needs to do some work specially in there security and visibility section'

Two variables, 'service delivery' and 'transaction security', were significantly different. This means although the participants perceived a relatively lower risk related to firm's services delivery as promised they were less keen to complete a transaction if required to. The participants in this study perceived a high level of risk associated with 'privacy measures' and 'information usage security'. This will affect the participant's willingness to disclose information which inhibits online transacting and lowers client's confidence with the firm.

6.10 Quality Assessment for PKF Australia

Figure 6.8 shows the rating of the constructs in relation to the PKF Australia site. The figure highlights usability as the construct with the highest quality as shown by the mean score. The statistical analysis revealed that the quality level of usability is

statistically different from the other three constructs which form the second level of quality. The mean scores reflect a web site quality level above average.

Figure 6.8: Constructs Determining the Web Site Quality of PKF firm
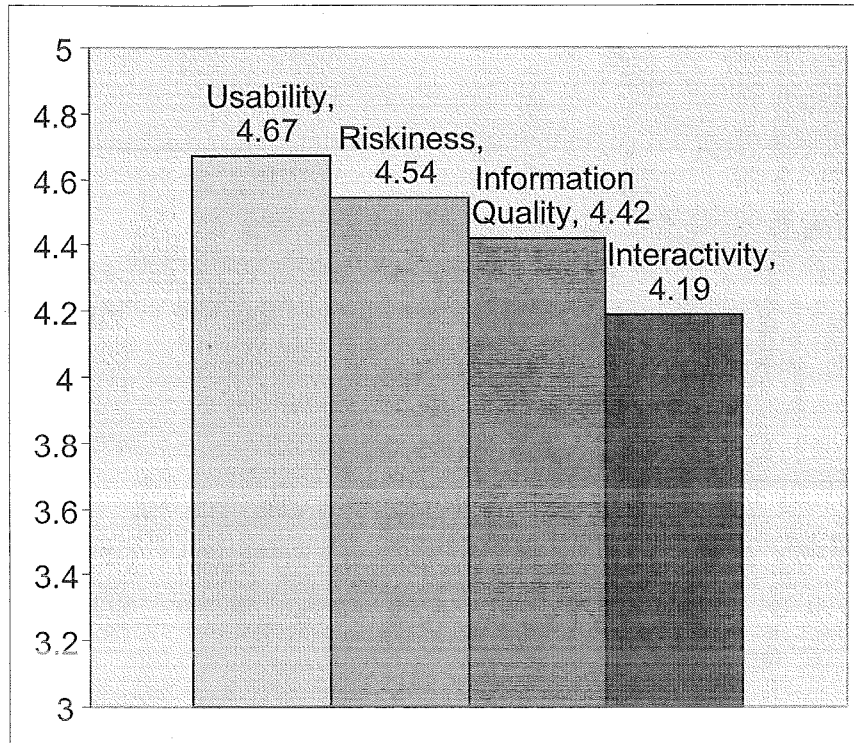
6.10.1   Usability

The ratings of the usability variables were as follows:

- 'Design appropriateness' (4.82)

- 'Competency' (4.69)

- 'Learning' (4.69)

- 'Locating services' (4.66)

- 'Ease of use' (4.61)

- 'Attractive appearance' (4.52).

The variables portrayed two levels of quality where 'design appropriateness' was the only variable statistically different from the others but still only slightly above average. This implies that participants must have used some effort to locate services.

However, the site was easy to read as shown by the comments by the participants which include:

> 'Easy and pleasant site to use'; 'Easy site to use'

Since the scores are relatively close to average the site's quality has room for improvement. This is further supported by observation by the participants:

> 'Should improve the web site outlook i.e. make it more attractive to users'; 'Nice graphics but limit size of screen available to display text'; 'Design is really good but can be more professional in the way to put information'

The general appearance and design of the site were attractive to participants although some improvements can make it even better. The implementation of improvement features should enhance the 'appeal' level of the site and advance the perceived level of 'competency' and encourage clients as they use and 'delve deeper' within the site.

As shown by the rating of 'locating services' and 'easy of use', the PKF site supported participants in their understanding of the site. However, the site had mean scores only slightly above the average or mid-point. Participants may therefore experience some difficulties as they tried to use the site in the process of locating accounting services. This is further evidenced in several observations and comments:

> 'Very poor use of frames (over–use) – very poor use of fonts + sizes too small amount of space on screen for actual content'; 'Site is a jack of all trades – it took me a bit of time to understand'; 'Appearance discouraging to interact with the site – too crowded site'; 'The picture on the right side of the web site is too big compared to the rest of the site. It is a waste of space'; 'Services on the menu not clear'; 'I couldn't tell at a glance what the range of services was'

The site has the essential qualities of an accounting firm but requires a 'clean-up' to increase ease of understanding, locating and identifying services. The average ratings of variables indicate that the navigational links within the site made it easy for participants to navigate within the site. However, participants experienced some

difficulties while using the links within the site. This is supported by the comments such as:

> 'Difficult to navigate but fonts very discouraging – once I go to the link it was difficult to go back to the 'home' page'; 'Takes long to connect to each link – There is no search function that takes viewers to the relevant section – The overall appearance does not encourage me to read further – content too crowded'; 'Short cuts take ages to load'; 'Far too little space in the main content frame and too much scrolling required'

6.10.2 Interactivity

The interactivity construct was rated using the following variables:

- 'Ease of communication' (4.85)
- 'Seeking services' (4.39)
- 'Site interaction efforts' (4.21)
- 'Sense of personalization' (4.05)
- 'Search facilities' (3.94)
- 'Reputation' (3.72).

As shown in chapter 5, 'ease of communication' and 'reputation' formed the first and the third levels of quality respectively. The other four variables are statistically not different and hence formed the second level. It is shown by the moderate ratings of the 'ease of communication' variable that the PKF site can improve on the adequacy of responding to participants. Accessibility of facilities such as e-mail, telephone, fax or 'contact us' was one of the concerns raised by the participants:

> 'The web site did offer 'search' function which made it had to identify specific types of information within the media release section'; 'Should provide search engine for fast info access'; 'I couldn't find a 'search' feature'; 'The search button was not easy to locate on this site'; 'Search column not readily available'

Visibility of communication tools, such as search facilities, was an issue to participants. This may explain why the participants had a low control of the site. This is reflected by the low rating of 'sense of personalisation' and 'site interaction

efforts'. Clients are likely to experience difficulties while choosing the timing, content and sequence of communicating with the site.

As revealed by the analysis, 'reputation' is the lowest rated variable within interactivity. Although the participants were willing to seek services from the firm, they could not adequately locate additional motivating factors in the form of reputation clues. Like other PA firms, PKF should be concerned about their reputation. This aspect may be improved by focusing on features which enhance the competency portrayed by the site (such as design, site appearance) and 'internally' generated management testimonials, and visible and positive historical performances.

6.10.3   Information Quality
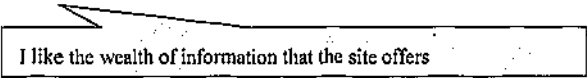
As service provider the quality of information is essential to support clients. The six variables for this construct were rated as follows:

- 'Believable' (4.68)
- 'Format appropriateness' (4.67)
- 'Relevancy' (4.44)
- 'Helpful in understanding' (4.41)
- 'Accuracy' (4.26)
- 'Level of detail' (4.25).

Except for 'believable' variable, which formed the first level of quality, all the other variables are statistically not different, hence they reflect the same level of quality. Although the mean scores are all above average, they are closely inter-related as reflected by the range of the ratings. The ratings show that the information provided by the site had a high level of believability quality but relatively low ratings for relevancy, accuracy and detail. The participants noted that;

'The site is quite well done though there is not much details about the services provided at first glance'; 'Can't have a full view of the information requested – site overload with images and no 'room' for text, slow download'

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The relative low rating of the 'relevancy' and 'level of detail' variables indicates that the PKF web site may require attention in relation to providing current information with reasonable level of updates and detail. On average, the site provided timely and relevant information, as supported by the observations of one participant:

I like the wealth of information that the site offers

6.10.4 Riskiness

Riskiness of PKF web site was evaluated using six variables namely:

- 'Service delivery security' (4.69)
- 'Information usage security' (4.56)
- 'Access security' (4.55)
- 'Communication security' (4.52)
- 'Privacy measures' (4.54)
- 'Transactions security' (4.36).

All the variables reflected the same level of quality except 'transaction security' which formed level II. This means that although the participants determined that the firms could deliver services as promised they were less keen to complete a transaction if required to as they perceived a higher risk level in relation to task completion. Furthermore the site has a relatively less perceived communication security quality. Participants would have felt less secure while communicating with the firm. In addition, 'access security' was rated at the same level as 'communication security' which further increases the level of insecurity. This affects both the initial and continued interaction with the site.

The participants in this study perceived moderate level of risk associated with 'privacy measures'. They thus felt that the firm was capable of preventing unauthorised access to information provided by clients. In addition, 'information usage security' quality was rated relatively high indicating that the participants were willing to release their information, if required to do so, in order to complete a task.

6.11 Moderating Factors

Moderating factors were investigated to see how they affect the perceived quality of PA web sites. In this study, moderators refer to a participant's gender, year of study and area of specialisation.

6.11.1 Gender

From the analysis, there was no significant difference between the two gender groups. Gender therefore did not influence the perceived quality of the PA web sites. This is in line with the recent study of Weiser (2000) who noted that "gender gap in Internet use has steadily declined" and that "Internet users are now becoming evenly divided among gender lines" (pp169-170). This study confirms the trend that the gender factor does not appear to influence the perception of website quality.

6.11.2 Year of Study

In regard to respondent's year of study, this moderator affected three constructs; usability, information quality and riskiness. In all the three constructs the level of perceived quality was negatively related to the year of study, i.e. the higher the years of study, the lower is the level of perceived web site quality.

The researcher can only speculate on the reasons why these differences existed. To obtain valid data in this respect further research would be required such as interviewing students. However, one of the reasons may be that online services require a good understanding of not only business but also of the underlying technology. It could be that those students with more advanced studying are able to be more 'critical' of there aspect of online services offered by the firm in respect of usability, information quality and riskiness.

6.11.3 Area of Specialisation

Area of specialisation influenced the perceived quality of the web site in respect of two constructs, i.e. information quality and riskiness. As seen in Table 5.48 in chapter 5 quality ratings valid across the various study areas. For example information quality was rated the highest by students undertaking the Master of Professional Finance and Banking while Master of Professional Marketing Students

rated riskiness as the highest. Why this would be the case can only be established by further research, most likely of a qualitative nature.

6.12 Summary

This chapter presented the discussion of the experiment findings of six Participating firms. The discussion included the background of participants and the constructs and variables making up the constructs. Where possible, the ratings that were established were associated with comments that the participants provided. In the next chapter, the findings of the study will be used to provide recommendations for the sector and each of the firms in a formal manner.

CHAPTER SEVEN

CONCLUSION, RECOMMENDATION, LIMITATION AND

FUTURE RESEARCH

7.1 Introduction

The previous chapter provided the discussion of the study's findings on the perceived quality of web sites in the PA sector as well as those of the top six firms in Australia. These discussions form a foundation for drawing conclusions and offering recommendations. The chapter also reflects on design science and what role it played and should play in supporting this type of research. This reflection introduced a further philosophy on research, namely pragmatism, which, it will be argued, is well suited to the process of disseminating the outcomes of the study. The chapter continues by offering conclusions on the study's findings, recognising study limitations and identifying further research opportunities.

7.2 Reflections

7.2.1 On the Execution of the Study

In the age of the internet and electronic commerce, professional service firms need a means of assessing the effectiveness of their web site. This study developed a valid and reliable instrument for measuring PA web site quality. The study was based on a literature review, which resulted in the use of design science as lens for evaluating web site quality. The instrument used to measure quality was based on previously used ones (especially WebQual 4.0) and led to the development of WebQual/ PA. The instrument consisted of 4 research constructs and 24 research variables as shown in Figure 7.1.
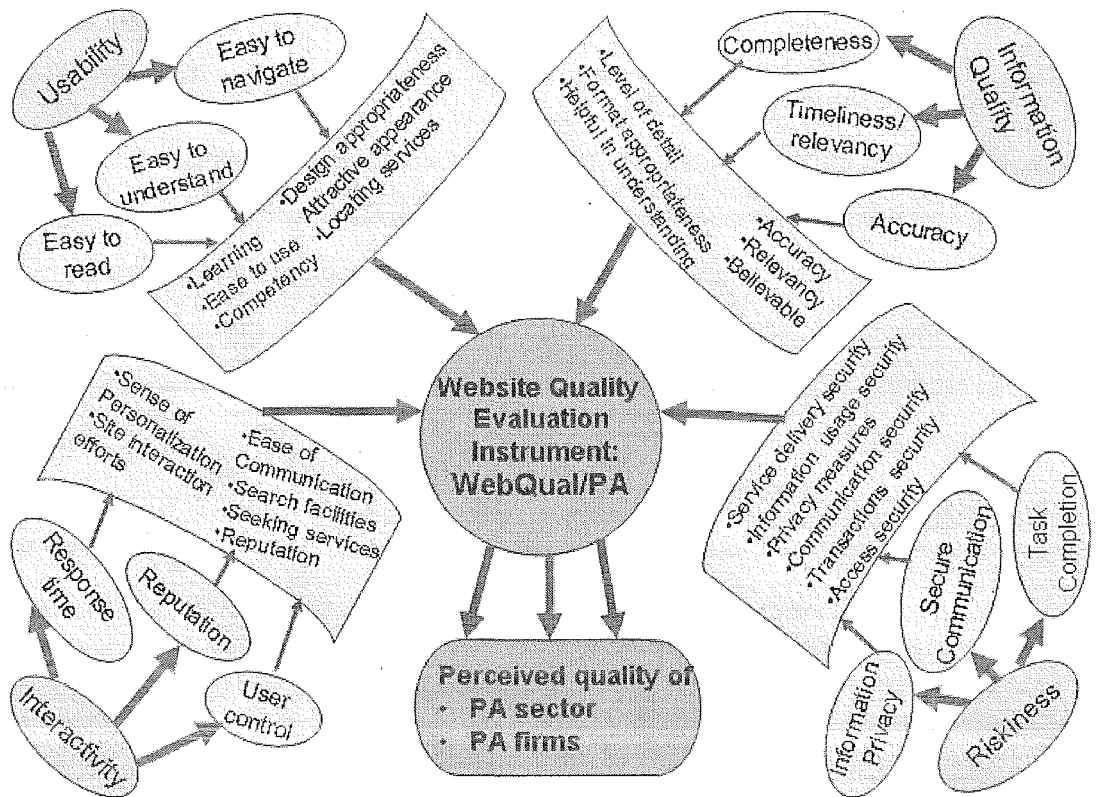
Figure 7.1: Research Construct and Variables in WebQual/PA

The study was based on the assumption that for professional service providers to enhance, strengthen and improve online services, web site quality is a key factor. A further assumption was that perceived quality of the site can best be determined by the clients ('the users of services'). Data was therefore collected from post-graduate university students, potential clients of PA firms, using a questionnaire in a controlled experiment setting. Data was analysed using quantitative analysis techniques to assess the reliability and validity of the instrument and quality of the PA web sites. Moderating factors were investigated in relation to their effect on the constructs and variables determining PA web site quality.

This chapter marks the final step in the research and provides answers to the research questions presented in chapter one. That is, can conclusions be drawn on the web site quality dimensions deemed important to clients of PA firms? Further, can recommendations be made regarding the strength and weaknesses of web site quality established in the study for the PA sector and individual firms? The analysis of the

data indicated constructs and variables requiring attention within the sector and individual firms, which will form the basis for recommendation.

The study process was completed satisfactorily. First, the data collection period was relatively short (two weeks) which was reasonable for the researcher to monitor any changes within the sites. There were none. Second, the response rate met the target of 100 participants which resulted in 612 valid questionnaires being completed and analysed. Third, validity, reliability and distribution tests indicted that confidence could be placed on data collected as well as use of parametric statistical tests used in the analysis.

7.2.2 On Underlying Theory

The study has its origins in design science as advocated by Hevner et al., (2004) which provided the focus for developing web site dimensions and determining the quality of the artefact, namely web sites. This initial approach to the research is outlined in an earlier chapter and reflected in figure 7.2.
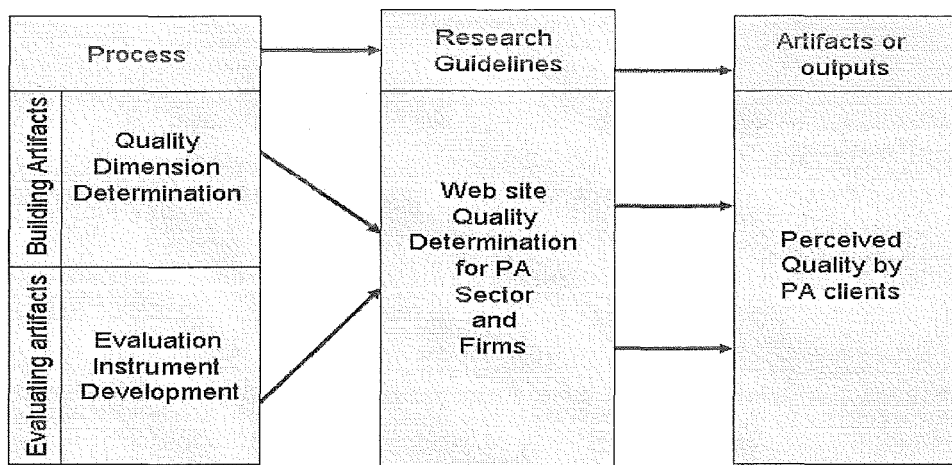
Figure 7.2: Application of Design Science to Web Site Evaluation in the PA Sector

However, as the study progressed, the researcher became aware of the limitations of design science and on reflecting on her own values offers the following discussion on the interaction of the study with underlying theory and paradigms. The reflection enables the researcher to address identified weaknesses in design science as well as provide a theoretical framework for presenting the output of the research in the form

of recommendations to the PA profession. An overview of how the researcher's use of underlying theory progressed as the study evolved is shown in figure 7.3.
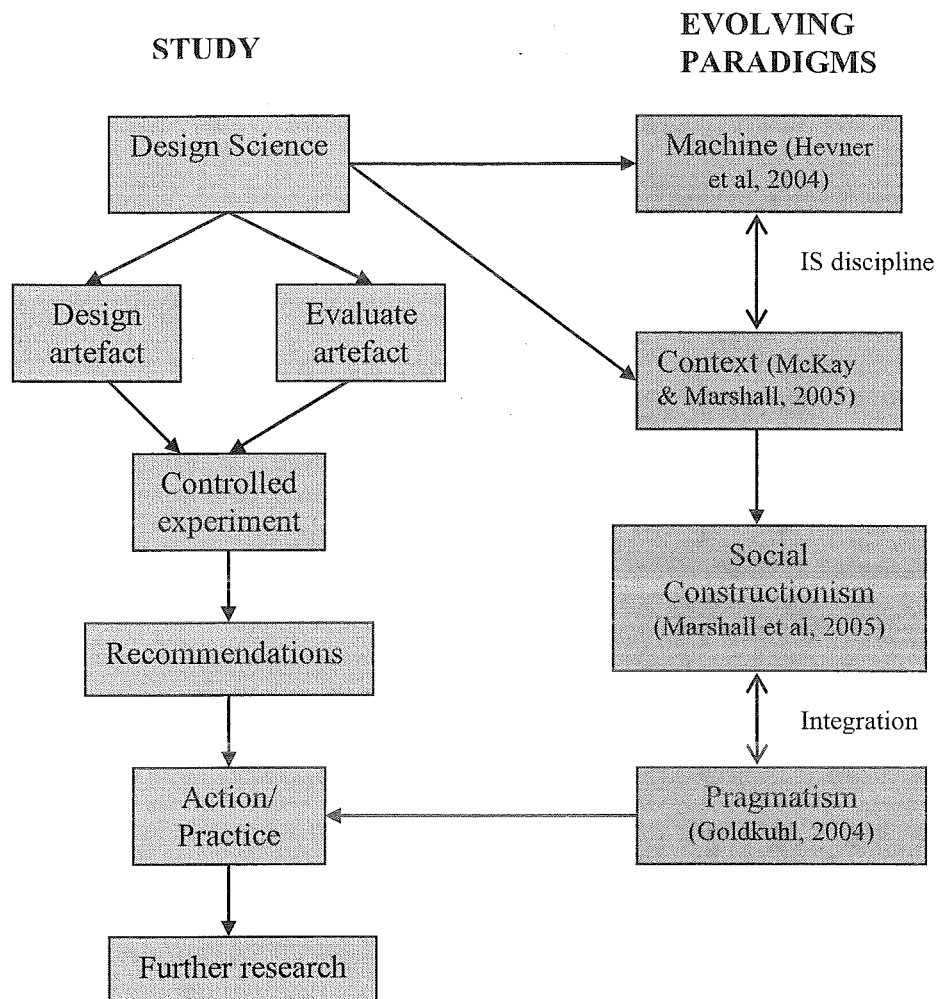
Figure 7.3: Interaction of Study Conduct and Underlying Theory

As stated in chapter 2, design science as envisaged by Hevner et al (2004) provided the initial basis on which the research was designed. Hevner et al (2004), as pointed out by McKay and Marshall (2005), however take a narrow perspective to design science research by purposefully omitting societal issues; "we do not include people or elements of organisations in our definition…artefacts constructed in design science research are rarely full-grown information systems that are used in practice." (pp. 82-83). On reflection, this is rather limiting since the key purpose of this research was to provide feedback to the PA sector on the quality of its web sites.

By treating the artefact as a machine, Hevner et al (2004) largely ignore the context of the evaluation. This is important for research in the IS discipline. As articulated by McKay and Marshall (2005), "the essence of IS lies in the contextualisation of the machine in the social systems" (p. 3). They go further in qualifying the usefulness of design science by stating:

> "If design science is to occupy an important place in building the IS discipline's knowledge base, then rigorous and deliberate ways of enquiring into the design process and outcome need to be articulated and agreed upon by the community of research scholars." (p7).

McKay and Marshall (2005) however see a dilemma in meeting this ambition in that "design science researchers face the dual challenge of solving a real world problem while at the same time conducting rigorous research." (p7). This study attempts to meet this challenge by drawing on the philosophies of social contructionism and pragmatism as discussed below.

Social constructionism reflect the context in which this study is conducted since it reflects the views of groups of people (i.e. clients of PA firms) and how they make sense of realty (PA web sites). Thus it helps to address the weakness of contextualisation in the Hevner et al (2004) perspective of design science. However, as pointed out by Marshall et al (2005), "social constructionism is thoroughly relativist. That is, it does not privilege any particular picture of reality" (p. 3). They go on to advocate "Pragmatism gives us a way of approaching the dilemma or problem of relativism" (p. 4). The philosophy is particularly useful to IS because of its emphasis on relevance and usefulness (in this study to the PA sector) and also takes into account the values of the researcher outlined in a later section.

According to Tashakkori and Teddlie (1998 p30) pragmatism is appealing because it eschews the use of metaphysical concepts (truth and reality) "that have caused much endless (and often useless) discussion and debate" and "it presents a very practical ands applied research philosophy: Study what interest and is of value to you, study it in the different ways that you deem appropriate, and use the results in ways that can bring about positive consequences within your value system".

Under the philosophy of pragmatism knowledge is strongly linked to action; "Pragmatism can be understood as a philosophy that fully acknowledges this mutual

permeation of knowledge and action". Furthermore, "Pragmatism has a clear foundation in empiricism, but goes beyond a pure orientation to observation of a given reality. The basis in human action gives pragmatism an orientation towards a prospective, not yet realised world" (Goldkhul, 2004, p.13). These aspects are reflected in the current study since knowledge is translated into action via recommendations made to each of the firms (see later section) thereby addressing the future quality of their web sites (the 'not yet realised world').

According to Goldkhul (2004), since action permeates on knowledge, there have to be linkages "to an actable world." (p. 18). A simple test for this is to be able to trace "concrete consequences" (p. 19). This will occur when PA firms take up the recommendations made in this study. Goldkhul (2004) further extends actionable knowledge by linking it to practice. "Pragmatism means an interest for actions in their practice context." (p. 16) In the case of this study, this means professional accounting practice.

It is worth concluding this discussion on underlying theory by referring to Goldkhul's (2004) key conclusions on pragmatism and IS research. "There is continuous change in IS practice!" (p. 20). "A pragmatist is interested in change and action" (p. 20). "Why should we else bother about having IS research?" (p. 21).

7.2.3   Value System of Researcher

The study fits within the value systems of the researcher who graduated with a Bachelors degree in Accounting and Master in Business and Administration (MBA in Finance and Accounting). The Bachelors and Masters degree provided the necessary theories and accounting foundation courses for the accounting profession. The researcher continued with the interest in this area and started a career in academic. As a young academia, the researcher was part of a team who developed and launched the Daystar University Accounting department in Kenya. This sustained and promoted the researcher's close involvement and interest in accounting as a profession. In early 1990's, the researcher undertook a Post-graduate Diploma in Computer Science, an area which strengthened the desired accounting profession. This opened new 'doors' in the business and consultancy world.

In the early part of the 1990's, the researcher worked as a finance and administration officer for a Non-Governmental Organisation (NGO) where her activities included (and were not limited to) preparing accounting books for audit and working with external auditors. While the position was quite attractive, it involved lots of travelling including trips outside Kenya. After thorough consideration the researcher gave up the position for more the flexible academic appointment with Kenyatta University (KU), as a lecturer in the Accounting department.

However, this did not last for long. Due to the researcher's qualification and experience, she was deployed as the University's Finance Officer in 1996. Taking over a department with systems which required reconstruction, she faced the challenge of not only being the head of the 'finance and accounting system restoration' team but also overseeing the day-to-day operations of the department. Her interest in the accounting profession was maturing but she was too busy to realise her ambitions. The work did not favour embarking on a professional doctoral programme. This was exacerbated by the shortage of doctoral supervisors in accounting, social demands/expectations, family ties, financial constraints and church involvement. All these factors contributed negatively to her professional advancement. At the back of her mind she wanted to purse a doctoral programme in accounting but in reality it was becoming more and more difficult to 'penetrate' the system and overcome the 'road blocks'.

As a way of preparing her 'take-off', she went back to academia at her request. Almost immediately she was appointed the Head of Accounting department, examination co-ordinator for the faculty and the faculty representative on the ICT board of KU. As the head of department, she facilitated the 'birth' of the Finance and Banking department thus heading two departments for a period of time.

Her ambition to pursue doctoral research in professional accounting and information system reached when her husband and she agreed to both pursue doctoral programmes in Australia. They started the process of articulating such decisions in terms of possible universities, schools for the children, housing and finance. The death of her husband in the same year changed the whole scenario. It took her three years to reconstruct her life, reorganise finances and make a final decision to continue with her accounting profession at the highest possible level.

It was through the ECU promotion visits to Kenya that she became aware of the DBA (IS) programme. Although she had two other acceptances to a doctoral programme, her choice for ECU, Perth took preference. While the administration of the Kenyatta University was unwilling to realise her on a study leave or give any financial support, this did not hinder her ambition. As a single parent she took the challenge of pursing a personally financed doctoral programme in a foreign country together with taking care of her five children, four of whom are currently undertaking bachelor degrees in various fields. Looking back now on the three year programme it all adds up to this simple conclusion as put in her words: "I am eager to put my learning into action in a field where my heart has always desired – professional accounting".

7.3 Conclusion

A number of conclusions can be drawn from the outcome of the study. They cover practical as well as theoretical aspects. First, the study provided PA practitioners with validated, reliable web site quality dimensions. With the increase of online professional services PA firms will increasingly seek to evaluate the quality of their web sites. This study has provided a suitable instrument that focuses on four constructs, namely usability, interactivity, information quality and riskiness. They are the dimensions that the literature review indicated are of high significance. Furthermore, taking the client's perspective, the quality aspects are enhanced in that there is a greater likelihood of the successful completion of a transaction as well as subsequent ones.

Second, this study adds to our understanding of WebQual, an instrument that has been widely used in IS research. WebQual/PA has its origins in WebQual version 4 but was refined to meet the needs of the PA sector. Previous WebQual instruments have been applied in a variety of industries but none in the PA sector. WebQual/PA increases the diagnostic power of WebQual thereby forming a basis for the effective prognosis of web site quality in this important professional services sector. WebQual/PA provides a deeper analysis of a site's strength and shortcomings by extending the instrument to 4 research constructs and 24 variables. This provides greater insight to possible sources of problems; for instance whether the riskiness

quality problem arises from 'access security' or 'communication security' or 'service delivery security' or 'information usage security measures' or combination of them.

Third, the results of a relative assessment of quality provide valuable feedback to professional practices. Table 7.1 shows levels of quality that were determined in chapter 5; level 1 indicates the highest level. The table shows that 'usability' was ranked highest by clients of all the firms and indicates that this dimension is the most developed dimension within the PA sector. It is followed by 'information quality'. 'interactivity' and 'riskiness' are areas requiring attention as they seem to lag behind. Recommendations to that effect will be made in a subsequent section.

Table 7.1: Results of Web Site Quality Assessment for the Constructs

	Usability			Interactivity			Information			Riskiness		
	I	II	III	I	II	III	I	II	III	I	II	III
PA Sector	√				√		√				√	
PricewaterhouseCoopers (PWC)	√			√			√				√	
Ernst & Young (E&Y)	√			√			√			√		
KPMG	√					√		√				√
Deloitte	√				√		√				√	
Investor Group	√			√			√			√		
PKF Australia	√				√			√			√	

PA firms now have a sector-specific instrument for assessing a web site's quality. They have an instrument that can be used to evaluate the quality of their site and even those of competitors. A poor quality web site will inevitably result in client dissatisfaction and even client loss and work against the success of offering services online. With WebQual/PA serving as a guide, PA firms can now develop more high quality web sites that meet their clients' expectations. They can use WebQual/PA to 'client test' potential sites and detect which dimensions need improvement prior to public release. Other professional service firms, such as lawyers and financial advisors, may gain benefits by learning about and applying the principles of

WebQual/PA. Not only can WebQual/PA serves as a means of benchmarking against competitors but also determine business strategy, for example on the degree of risk the firm is prepared to accept.

7.4 Recommendations

Table 7.2 provides a comparative analysis of the six web sites in relation to the quality evaluation constructs and variables. The 'leading' firm in terms of construct

Table 7.2: Mean Scores of PA Web Sites

Constructs/ Variables	Description	PA Firms					
		PWHC	E&Y	KPMG	Deloitte	Investor	PKF
Usability		**5.18**	**4.96**	**5.60**	**5.35**	**3.52**	**4.67**
Learning	Learning to operate the site is easy	5.17	5.20	5.60	5.44	3.89	4.69
Locating services	Locating the service was clear and understandable	5.29	4.86	5.82	5.49	3.29	4.66
Ease of use	The site was easy to use	5.13	4.95	5.63	5.56	3.53	4.61
Design appropriateness	The design is appropriate to professional service site	5.32	4.82	5.58	5.27	3.43	4.82
Competency	The site conveys a sense of competency	5.22	5.10	5.57	5.25	3.51	4.69
Attractive appearance	The display pages within the site have an attractive appearance	4.94	4.84	5.37	5.11	3.45	4.52
Interactivity		**4.92**	**4.63**	**5.03**	**5.08**	**3.44**	**4.19**
Sense of personalisation	The site created a sense of personalisation to meet my needs	4.51	4.35	4.77	5.07	3.42	4.05
Seeking services	I am encouraged by the web appearance to seek services from this firm	4.64	4.66	5.08	5.12	3.40	4.39
Reputation	The site has a good reputation e.g. testimonials, goals, owners	4.48	4.34	4.50	4.68	3.02	3.72
Search facilities	The site has adequate Search facilities	5.27	5.34	5.17	5.25	3.81	3.94
Ease of communication	The site makes it easy to communicate with the firm e.g. e-mail address, telephone	5.51	4.51	5.43	5.52	3.90	4.85
Site interaction efforts	My efforts in interacting with the site were strenuous	5.09	4.60	5.20	4.83	3.10	4.21
Information		**5.12**	**4.79**	**5.34**	**5.35**	**3.68**	**4.42**
Level of detail	The site provides information at the right level of detail	5.01	4.66	5.51	5.43	3.80	4.25

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Construct	Description						
Accuracy	The information on the site was accurate e.g. evidence of source, update	4.93	4.82	5.26	5.45	3.79	4.26
Relevancy	The information was relevant to the task e.g. to my search	5.31	4.58	5.36	5.28	3.68	4.44
Believable	The information was believable	5.30	5.13	5.29	5.42	3.78	4.68
Helpful in understanding	The information was helpful in understanding the site.	5.16	4.79	5.30	5.38	3.69	4.41
Format appropriateness	The information format was appropriate for the task e.g. layout, headings	5.03	4.75	5.34	5.11	3.33	4.47
Riskiness		**4.88**	**4.85**	**5.01**	**5.03**	**3.57**	**4.54**
Access security	My access to the site feels secure	4.76	5.11	4.88	4.88	3.75	4.55
Communication Security	I feel communicating with the firm is secure and promising	5.01	4.62	4.9	5.09	3.55	4.52
Transactions security	I feels secure to complete transactions, if wanted	4.68	4.68	4.92	4.83	3.32	4.36
Service delivery security	I feel the firm will deliver the service as promised	5.04	4.99	5.25	5.15	3.62	4.69
Information usage security	I feel the firm will use the information as intended	4.94	5.00	5.17	5.20	3.68	4.56
Privacy measures	I feel the information privacy measures are adequate	4.85	4.69	4.92	5.02	3.49	4.54
General		5.09	4.81	5.4	5.4	3.5	4.58
Overall view	What is your overall view of the site	5.09	4.81	5.40	5.40	3.50	4.58

and variable quality is shown by the shadings. The table as well as diagram 7.4 provide the basis for recommendations that follow.

Table 7.2 shows clearly that the KPMG site ranks above its close competitors, Deloitte, PWC and E&Y in 'usability'. In relation to 'interactivity', Deloitte leads while both Deloitte and KPMG reflected a similar level of 'riskiness'. The lowest rated site was Investor Group where all constructs and variables showed a score below 4.00. The quality ratings shown in the table are diagrammatically presented in figure 7.2. The figure indicates that usability constructs reflected the highest quality at all levels. On the other hand the sector and the firms have riskiness as the construct with the lowest quality level. A further observation shows that PKF firm and Investor Group had the lowest quality level in relation to all the constructs.

Figure 7.4: Radar Chart of PA Web Site Quality
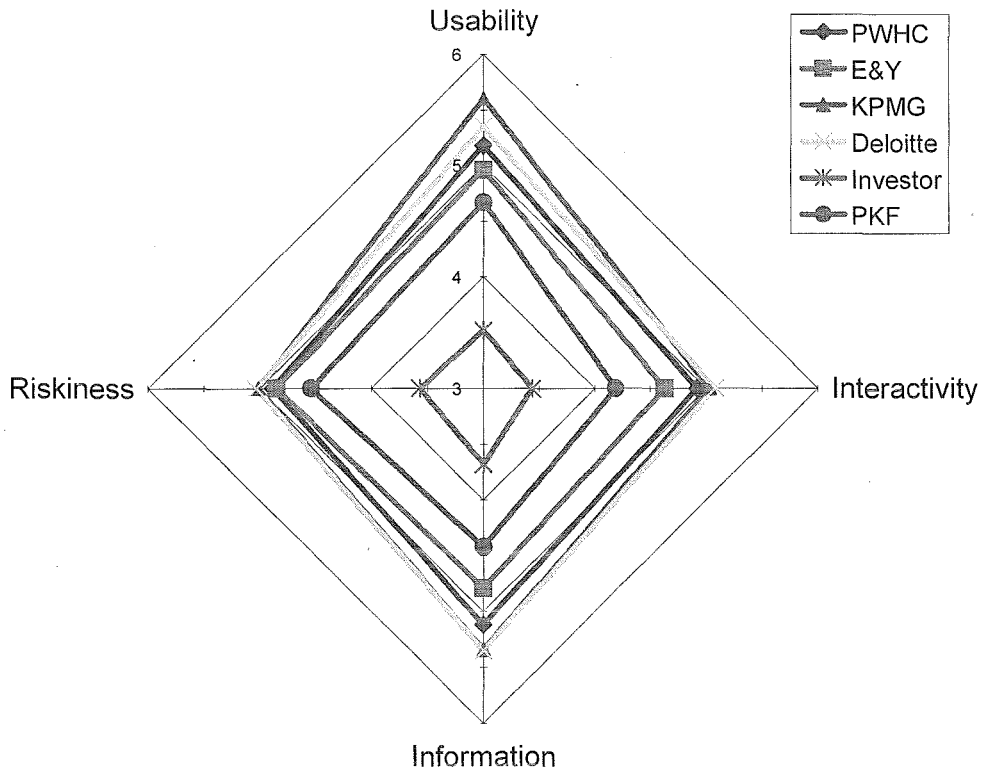
From the above, it was possible to develop recommendations for the PA sector and each of firms that were evaluated. The recommendations address those areas that indicated low levels of quality as determined in the study, namely those rated at levels 2 and 3.

Figure 7.5: Recommended Actions for PA Sector Web Site

Variables   Dimensions   Recommended action

Variables	Dimensions	Recommended action
Sense of personalisation Seeking services Reputation Search facilities Ease of communication Site were strenuous efforts	Interactivity	• Support client interaction via the web site and the capability to provide feedback • Design the web site to increase a positive client experience • Design the web site to reflect and support the sector's image • Make the web site just as easy, if not easier, for clients to use than other forms of interacting with the site • Provide appropriate, visible and convincing reputation clues and search facilities
Access security Communication Security Transactions security Service delivery security Information usage security Privacy measures	Riskiness	• Implement and promote security and privacy policies and procedures that make clients feel secure in dealing with the sector. • Improve visibility of security measures put in place • Provision of statement regarding information usage

Figure 7.6: Recommended Actions for PwC Web Site

Variables   Dimensions   Recommended action

Variables	Dimensions	Recommended action
Access security Communication Security Transactions security Service delivery security Information usage security Privacy measures	Riskiness	• Implement and promote security and privacy policies and procedures that make clients feel secure in accessing the site. • Improve visibility of security measures put in place • Provision of statement regarding information usage

Figure 7.7: Recommended Actions for Ernst & Young Web Site

Variables	Dimensions	Recommended action
Sense of personalisation Seeking services Reputation Search facilities Ease of communication Site were strenuous efforts	Interactivity	• Support client interaction via the Web site and the capability to provide feedback • Design the Web site to increase a positive and personalised client experience • Make the Web site just as easy, if not easier, for clients to use than other forms of interacting with the site • Provide appropriate, visible and convincing reputation clues and search facilities

Figure 7.8: Recommended Actions for KPMG Web Site

Variables	Dimensions	Recommended action
Sense of personalisation Seeking services Reputation Search facilities Ease of communication Site were strenuous efforts	Interactivity	• Support client interaction via the Web site and the capability to provide feedback • Design the Web site to increase a positive client experience • Make the Web site just as easy, if not easier, for clients to use than other forms of interacting with the site • Provide appropriate, visible and convincing reputation clues and search and contact facilities
Access security Communication Security Transactions security Service delivery security Information usage security Privacy measures	Riskiness	• Implement and promote security and privacy policies and procedures that make clients feel secure in dealing with the firm • Improve visibility of security measures put in place

Figure 7.9: Recommended Actions for Deloitte Web Site

Variables   Dimensions   Recommended action

Sense of personalisation Seeking services Reputation Search facilities Ease of communication Site were strenuous efforts	Interactivity

- Support client interaction via the Web site and the capability to provide feedback
- Design the Web site to increase a positive client experience
- Design the Web site to reflect and support the sector's image and services offered
- Make the Web site just as easy, if not easier, for clients to use than other forms of interacting with the site
- Provide appropriate, visible and convincing reputation clues and search facilities

Access security Communication Security Transactions security Service delivery security Information usage security Privacy measures	Riskiness

- Implement and promote security and privacy policies and procedures that make clients feel secure in dealing with the sector.
- Provision of statement regarding information usage

Figure 7.10: Recommended Actions for Investor Group Web Site

Variables	Dimensions	Recommended action

Usability

Variables:
- Learning
- Locating services
- Ease of use
- Design appropriateness
- Competency
- Attractive appearance

Recommended action:
- ➢ Use images and terminologies appropriate to the Accounting services and profession
- ➢ Design and support pages which are easy to read and understand
- ➢ Develop consistent navigation system that is easy to learn, master and use
- ➢ Use colours, graphics, and text that are pleasing to the client's eye
- ➢ Establish and promote consistent site design appropriate for the PA sector

Interactivity

Variables:
- Sense of personalisation
- Seeking services
- Reputation
- Search facilities
- Ease of communication
- Site were strenuous efforts

Recommended action:
- ● Support client interaction via the Web site and the capability to provide feedback
- ● Design the Web site to increase a positive and personalised client experience
- ● Design the Web site to reflect and support the sector's image
- ● Make the Web site just as easy, if not easier, for clients to use than other forms of interacting with the site
- ● Provide appropriate, visible and convincing reputation clues and search facilities

Information

Variables:
- Level of detail
- Accuracy
- Relevancy
- Believable
- Helpful in understanding
- Format appropriateness

Recommended action:
- ➢ Provide mechanism to support "tailor made" and relevant information
- ➢ Avoid information "overload" especially on home page.
- ➢ Make visible clues supporting currency and believable information quality
- ➢ Undertake market research to determine what information PA clients expect

Riskiness

Variables:
- Access security
- Communication Security
- Transactions security
- Service delivery security
- Information usage security
- Privacy measures

Recommended action:
- ● Implement and promote security and privacy policies and procedures that make clients feel secure in dealing with the firm.
- ● Make security measures visible to allow clients to initiate and conclude business transactions over the Web.
- ● Improve visibility of security measures put in place
- ● Provision of statement regarding information usage

Figure 7.11: Recommended Actions for PKF Web Site

Variables	Dimensions	Recommended action
Sense of personalisation Seeking services Reputation Search facilities Ease of communication Site were strenuous efforts	Interactivity	• Promote and support client interaction via the Web site and the capability to provide visible feedback mechanism • Design the Web site to increase a positive and personalised client experience • Design the Web site to reflect and support the sector's business and image • Make the Web site just as easy, if not easier, for clients to use than other forms of interacting with the site
Level of detail Accuracy Relevancy Believable Helpful in understanding Format appropriateness	Information	• Provide mechanism to support "tailor made" information • Avoid information "overload" especially on home page. • Make visible clues supporting currency, accuracy and believable information quality • Undertake market research to determine what information PA clients want on the Web site to support on-line transactions
Access security Communication Security Transactions security Service delivery security Information usage security Privacy measures	Riskiness	• Implement and promote security and privacy policies and procedures that make clients feel secure in dealing with the sector. • Make security measures visible to allow clients to initiate and finish off business transactions over the Web with confidence. • Improve visibility of security measures at all levels of site use and interaction • Provision of statement regarding information usage

7.5 Limitations

While careful attention was given to achieving a high level of validity and reliability, some study limitations need to be acknowledged. One potential weakness is associated with the research method. The first concern is in relation to the participating students. The selection of students was done on a convenience rather

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than random basis in which every student has an equal chance of being selected to participate in the study. As part of the research process, the researcher attended classes in which she invited students to participate in her research. However, the ability to approach students was dependent on the agreement of the lecturers in charge of the unit to allow the researcher to address the class.

The choice of students as surrogates for clients of PA firms has potential weaknesses. While it is generally accepted as a valid research approach, there is no assurance that students would necessarily be representative of all the types of clients that a PA has contact with. However, these limitations are typical of those facing most researchers for the reason that such work often needs to be carried out in a setting where subjects are readily available.

While the choice of research constructs and variables was largely determined by the preceding WebQual instrument and a review of literature, there is always an element of researcher bias involved. This is not necessarily a weakness as was explained in an earlier section because under the pragmatic philosophy, the researcher's values come into play. In this respect it is worthwhile quoting Tashakkori and Teddlie, (1998, pp. 26-27)

> "Thus pragmatists decide what they want to research, guided by their personal value systems, that is, they study what they think is important to study. They then study the topic in a way that is congruent with their value system, including variables and units of analysis that they feel are the most appropriate for finding an answer to their research question. They also conduct their studies in anticipation of results that are congruent with their value systems."

There are well recognised limitations associated with design science as already outlined in an earlier section. As observed by some researchers (McKay & Marshall, 2005; Vaishnavi & Kuechler, 2004), the approach separates the technological artifacts from people and the organisation. In other words, the approach does not adequately consider the entire system of designing the artifact, the underlying technology, the role of people, the nature of the organisation and other contextual issues. Furthermore, it is a rather static representation of the phenomena studied and suffers from the "failure to respond to changing organisational realities with respect to IS" (McKay and Marshall, 2005, p. 5). This study determined web site quality at a

particular moment in time, i.e. at the time the experimental sessions were conducted, and in the particular setting of the computer laboratory.

7.6 Future Research

As Marshall et al (2005) succinctly articulate, while pragmatism has strengths as discussed in an earlier section, its "usefulness cannot be asserted by simple claims to experience, but must be established by dialogue and argument" (p. 4). It is therefore proposed that follow-up research be conducted to confirm the findings with the PA firms and to monitor any action and reaction taken by them. In other hands, the findings of the study should be presented to the 'owners' of the web sites to seek their feedback and collect information to develop and refine the WebQual/PA instrument further.

The research is considered a beginning of a cumulative research program where WebQual/PA could be used to evaluate perceived quality of other professional service providers. The weaknesses of the current study can be addressed in future research. For example, rather than using students, the real life clients of the professional services firms could be involved. Furthermore, while this study investigated the perceived quality of PA web sites using four quality dimensions derived from literature, future empirical research could derive new constructs and/or variables reflecting the dynamic nature of the online business environment and new technologies.

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APPENDIX 1: RESEARCH INSTRUMENT

ARE YOU A POST-GRADUATE STUDENT IN THE FACULTY OF BUSINESS AND LAW, ECU?

YOU ARE INVITED TO TAKE PART IN A WEB SITE QUALITY RESEARCH STUDY

WHEN?

Week 1:

Day/ Time	Monday 29th Aug. 2005	Tuesday 30th Aug. 2005	Wednesday 31st Sept. 2005	Thursday 1st Sept. 2005	Friday 2nd Sept 2005
12.00 – 13.00					
16.00 – 17.00					

Week 2:

Day/ Time	Monday 5th Sept. 2005	Tuesday, 6th Sept 2005	Wednesday 7th Sept. 2005	Thursday 8th Sept. 2005	Friday 9th Sept 2005
12.00 – 13.00					
16.00 – 17.00					
17.30 – 18.30					
18.30 – 19.30					
19.30 – 20.30					

Any other time, please specify (including weekend)

Day/date	Time

Venue? **15.101 (Masters Lab), CH**

Any benefit? **Yes! Learn how, as a business client you would interact with**

**web sites of professional
service providers**

WHAT MORE? A token for your participation

Pass your details please:

Name:-------------------------Email-------------------------

Contact?   Mrs Casty Nyaga, DBA(IS) Candidate, ECU, WA 6027
E-mail:cnyaga@student.ecu.edu.au

OR

Associate Prof. Dieter Fink, Supervisor, ECU, WA 6027
E-mail: d.fink@ecu.edu.au

A1.2 Information Letter to Participants

Dear Participant,

Thank you for participating in this study about web site quality. I am undertaking an investigation to evaluate the web site quality of Public Accounting firms. This study is being undertaken as part of the requirement of a Doctor of Business Administration (Information System) at Edith Cowan University. The title of the study is "Determining, Developing, and Applying the Requirement of "WEBQUAL^{TM}" for the Public Accounting Profession". For this study, I need to obtain information relating to the web sites of public accounting firms.

The reason for this letter is to invite you to participate in this study in the laboratory experiment stage. The study will entail collecting some data from you through a questionnaire and the use of PA web sites. The data collection procedure includes a schedule of questions (schedule of questions to be attached) which will be filled in a computer laboratory. The questionnaire contains the detailed procedure to facilitate your participation.

The data collection process has two main parts namely laboratory experiment and focus group interviews which related to the Accounting service clients and providers respectively. Due to your involvement with the business and or accounting services either in the university or/and working environment, you have been selected as a surrogate for the Professional Accounting (PA) clients.

The research will assist professional firms to improve their web business offerings. There will be no risk whatsoever for each participant in this study. We hope that each participant will increase his/her interest in online accounting services.

Any information that you give to me whether in writing, by e-mail or verbally, will be kept strictly confidential and will only be used for the purpose of the project. After the study is completed, you will also receive a copy of the published research findings, if you wish, when they become available.

If you agree to participate in this study, your involvement will not influence the assessment of the course you are enrolled. You are also allowed to withdraw in this study at any time, if you so wish. In recognition of time spent in this study, you will be offered a $2 "scratch" ticket for participation

Instructions

Please keep this letter for your information. If you would like to participate in this study, sign the Informed Consent Document (participant consent letter) and kindly

hand over the questionnaire once completed. This evaluation process is expected to take approximately one hour.

Questions and/or further information

If you have any questions or require any further information about the research project, please contact:

i) Student: Mrs Casty Nyaga
                 DBA(IS) Candidate, School of Management Information Systems, Faculty of Business and Public Management, Edith Cowan University, Pearson street, Churchland, WA 6027.
                 E-mail:cnyaga@student.ecu.edu.au
                 Telephone: +61 8 9273 8218

And/Or

ii) Supervisor: Associate Prof. Dieter Fink
                 Business and Public Management, Management Information Systems
                 Edith Cowan University, ChurchLand, WA 6027.
                 E-mail: d.fink@ecu.edu.au
                 Telephone: 9273 8726

Research approval and Independent contact person

This study has been approved by the ECU Human Research Ethics Committee. If you have any concerns or complaints about the research project and wish to talk to an independent person, you may contact:

Professor Craig Standing
Head of School
School of Management Information Systems
Edith Cowan University
100 Joondalup Drive,
Building 2, Room 470
Joondalup Western Australia 6027
Tel: +61 (0)8 6304 5545
Fax: +61 (0)8 6304 5988
E-mail: c.standing@ecu.edu.au

Your help in making this study possible is greatly appreciated.

Thank you,

This research project is being undertaken as part of the requirements of a DBA(IS) at Edith Cowan University.

A1.3 Participants Consent Form

Dear Participant,

Thank you for participating in this study which is about the quality of Public Accounting web sites when used for serving clients online.

The reason for this letter is to invite you to participate in this study. As a participant you will evaluate eight web sites on a computer terminal in about 1 hour. The study will entail collecting some data from you through a questionnaire and the use of PA web site. The data collection procedure includes a schedule of questions (schedule of questions attached) which you will fill in a computer laboratory. The questionnaire contains the detailed procedure to facilitate your participation.

The research will assist professional firms to improve their web business offerings. There will be no risk whatsoever for each participant in this study. We hope that each participant will increase his/her interest in online accounting services.

In recognition of time spent in this study, you will be offered a $2 "scratch" ticket for participation. If you wish to collect the ticket please fill in the following information

Name: _____

Signature: _____

Date: _____

If you are willing to take part in the above-named study, please tick in the box

Yes ☐   No ☐

If you wish to know more about the study please feel free to contact Casty Nyaga on 0402 696 581 or Ass. Prof. Dieter Fink, my supervisor, on 9273 8726

Sincerely,

Casty Nyaga   DBA(IS) Candidate

A1.4 Questionnaire

Determining, Developing and Applying the Requirement of "WEBQUAL™" for the Public Accounting Profession"

Research Aim:

This research is about the quality of Public Accounting web sites when used for serving clients online. The findings of the study will assist professional firms to improve their web business offerings.

You are asked to:

1. Use each of the six web sites and examine the web pages for the following web site quality dimensions:
    *   **Usability:** refer to the ability of the web site meeting user's need e.g. finding the right information quickly, easily and without error
    *   **Interactivity:** the extent to which the web site communicates to the users and the response to the user's communication needs.
    *   **Information quality:** This includes aspects of quality such as accuracy, currency, relevancy, ease of understanding and level of detail e.g. uniqueness and depth of material coverage
    *   **Riskiness:** encompass issues such as concern shown for the user, the confidentiality with which the user can communicate with the customer service personnel, and the security of the transaction

2. Review the web site as you examine the various features which indicate the quality of the web site. Imagine you are looking for accounting service. You may scroll up and down or open new pages starting with the specified home page. Follow the links and instructions up to the "final" stage of the transaction.

3. Complete the Background Data form and hand it over to the researcher.

4. For each of the six web sites,
    a. Identify accounting services
    b. Explore and evaluate each of the web site
    c. Complete the attached questionnaire appropriately

Confidentiality:

Your opinions are highly valued and appreciated. All data and information will be kept strictly confidential and your personal details will not be disclosed.

This study is being conducted by:
Casty Nyaga: Student in Doctor of Business Administration (Information Systems)

Under the supervision of:
Dr. Dieter Fink: Associate Professor, School of Management Information Systems

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Please fill out and tick (√) the box below as necessary.

Degree Program currently enrolled (Kindly tick (√) **appropriately**):

Area of Specialization

Master of Sport Management	
Master of Professional Accounting	
Master of Business Administration	
Master of International Business	
Master of Professional Finance and Banking	
Master of Human resource Management	
Master of Management Information Systems	
Master of Strategic Project Management	
Master of Professional Marketing	
PhD	
Other specify:	

Year of study (equivalent full time) ――――――――――――

Gender: Male ☐   Female ☐

Please note:
          Your personal details or participation in this study will
          not be disclosed

Professional firm: PricewaterhouseCoopers (PWC)

Spend 5 minutes exploring the site and the next 5 minutes completing the questions below

Which accounting service can you identify from this site? (Kindly **tick** (√) **appropriately**):

Taxation	
Auditing	
Consulting	
Financial Planning	
Risk management	
Performance improvement	
Investment	
Restructuring	
E-business solution	
Corporate reorganisation	
Business recovery services	
Forensic accounting	
Franchising	
Others specify:	

Please **circle** the appropriate number for each question and respond to all statements.

Usability

		Strongly disagree						Strongly agree
Q1.	Learning to operate the site is easy	1	2	3	4	5	6	7
Q2.	Locating services was clear and understandable	1	2	3	4	5	6	7
Q3.	The site was easy to use	1	2	3	4	5	6	7
Q4.	The design is appropriate to professional service site	1	2	3	4	5	6	7
Q5.	The site conveys a sense of competency	1	2	3	4	5	6	7
Q6.	The display pages within the site have an attractive appearance	1	2	3	4	5	6	7

Interactivity

		Strongly disagree						Strongly agree
Q7.	The site creates a sense of personalisation to meet my needs	1	2	3	4	5	6	7
Q8.	I am encouraged by the web appearance to seek services from this firm	1	2	3	4	5	6	7
Q9.	The site has a good reputation e.g. testimonials	1	2	3	4	5	6	7
Q10.	The site has adequate Search facilities	1	2	3	4	5	6	7
Q11.	The site makes it easy to communicate with the firm e.g. e-mail, telephone	1	2	3	4	5	6	7
Q12.	My effort in interacting with the site were strenuous	1	2	3	4	5	6	7

Information

		Strongly disagree					Strongly agree
Q13.	The site provides information at the right level of detail	1	2	3	4	5	6	7
Q14.	The information on the site was accurate e.g. evidence of source	1	2	3	4	5	6	7
Q15.	The information provided was relevant e.g. to my search	1	2	3	4	5	6	7
Q16.	The information was believable	1	2	3	4	5	6	7
Q17.	The information was helpful in understanding the site	1	2	3	4	5	6	7
Q18.	The information format was appropriate e.g. layout	1	2	3	4	5	6	7

Riskiness

		Strongly disagree					Strongly agree
Q19.	My access to the site feels secure	1	2	3	4	5	6	7
Q20.	I feel communicating with the firm is secure	1	2	3	4	5	6	7
Q21.	I feel secure to complete transactions, if wanted	1	2	3	4	5	6	7
Q22.	I feel the firm will deliver the service as promised	1	2	3	4	5	6	7
Q23.	I feel the firm will use my information as intended	1	2	3	4	5	6	7
Q24.	I feel the information privacy measures are adequate	1	2	3	4	5	6	7

General

Q25. Any other comment/observation(s) about this site

a)

b)

c)

Q26. What is your overall view of the site?

1=very poor   7=excellent

1	2	3	4	5	6	7

Please complete the questionnaire for the next web site. Again thank you for your effort so far.

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Professional firm: Ernst & Young

Spend 5 minutes exploring the site and the next 5 minutes completing the questions below

Which accounting service can you identify from this site? (Kindly **tick** (√) **appropriately**):

Taxation	
Auditing	
Consulting	
Financial Planning	
Risk management	
Performance improvement	
Investment	
Restructuring	
E-business solution	
Corporate reorganisation	
Business recovery services	
Forensic accounting	
Franchising	
Others specify:	

Please **circle** the appropriate number for each question and respond to all statements.

Usability

		Strongly disagree						Strongly agree
Q1.	Learning to operate the site is easy	1	2	3	4	5	6	7
Q2.	Locating services was clear and understandable	1	2	3	4	5	6	7
Q3.	The site was easy to use	1	2	3	4	5	6	7
Q4.	The design is appropriate to professional service site	1	2	3	4	5	6	7
Q5.	The site conveys a sense of competency	1	2	3	4	5	6	7
Q6.	The display pages within the site have an attractive appearance	1	2	3	4	5	6	7

Interactivity

		Strongly disagree						Strongly agree
Q7.	The site creates a sense of personalisation to meet my needs	1	2	3	4	5	6	7
Q8.	I am encouraged by the web appearance to seek services from this firm	1	2	3	4	5	6	7
Q9.	The site has a good reputation e.g. testimonials	1	2	3	4	5	6	7
Q10.	The site has adequate Search facilities	1	2	3	4	5	6	7
Q11.	The site makes it easy to communicate with the firm e.g. e-mail, telephone	1	2	3	4	5	6	7
Q12.	My effort in interacting with the site were strenuous	1	2	3	4	5	6	7

Information

		Strongly disagree						Strongly agree
Q13.	The site provides information at the right level of detail	1	2	3	4	5	6	7
Q14.	The information on the site was accurate e.g. evidence of source	1	2	3	4	5	6	7
Q15.	The information provided was relevant e.g. to my search	1	2	3	4	5	6	7
Q16.	The information was believable	1	2	3	4	5	6	7
Q17.	The information was helpful in understanding the site	1	2	3	4	5	6	7
Q18.	The information format was appropriate e.g. layout	1	2	3	4	5	6	7

Riskiness

		Strongly disagree						Strongly agree
Q19.	My access to the site feels secure	1	2	3	4	5	6	7
Q20.	I feel communicating with the firm is secure	1	2	3	4	5	6	7
Q21.	I feel secure to complete transactions, if wanted	1	2	3	4	5	6	7
Q22.	I feel the firm will deliver the service as promised	1	2	3	4	5	6	7
Q23.	I feel the firm will use my information as intended	1	2	3	4	5	6	7
Q24.	I feel the information privacy measures are adequate	1	2	3	4	5	6	7

General

Q25. Any other comment/observation(s) about this site

a)

b)

c)

Q26. What is your overall view of the site?

1=very poor   7=excellent

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Please complete the questionnaire for the next web site. Again thank you for your effort so far.

Professional firm: KPMG

Spend 5 minutes exploring the site and the next 5 minutes completing the questions below

Which accounting service can you identify from this site? (Kindly tick (√) **appropriately**):

Taxation	
Auditing	
Consulting	
Financial Planning	
Risk management	
Performance improvement	
Investment	
Restructuring	
E-business solution	
Corporate reorganisation	
Business recovery services	
Forensic accounting	
Franchising	
Others specify:	

Please **circle** the appropriate number for each question and respond to all statements.

Usability

		Strongly disagree						Strongly agree

Q1. Learning to operate the site is easy — 1 2 3 4 5 6 7

Q2. Locating services was clear and understandable — 1 2 3 4 5 6 7

Q3. The site was easy to use — 1 2 3 4 5 6 7

Q4. The design is appropriate to professional service site — 1 2 3 4 5 6 7

Q5. The site conveys a sense of competency — 1 2 3 4 5 6 7

Q6. The display pages within the site have an attractive appearance — 1 2 3 4 5 6 7

Interactivity

Strongly disagree   Strongly agree

Q7. The site creates a sense of personalisation to meet my needs — 1 2 3 4 5 6 7

Q8. I am encouraged by the web appearance to seek services from this firm — 1 2 3 4 5 6 7

Q9. The site has a good reputation e.g. testimonials — 1 2 3 4 5 6 7

Q10. The site has adequate Search facilities — 1 2 3 4 5 6 7

Q11. The site makes it easy to communicate with the firm e.g. e-mail, telephone — 1 2 3 4 5 6 7

Q12. My effort in interacting with the site were strenuous — 1 2 3 4 5 6 7

Information

		Strongly disagree						Strongly agree
Q13.	The site provides information at the right level of detail	1	2	3	4	5	6	7
Q14.	The information on the site was accurate e.g. evidence of source	1	2	3	4	5	6	7
Q15.	The information provided was relevant e.g. to my search	1	2	3	4	5	6	7
Q16.	The information was believable	1	2	3	4	5	6	7
Q17.	The information was helpful in understanding the site	1	2	3	4	5	6	7
Q18.	The information format was appropriate e.g. layout	1	2	3	4	5	6	7

Riskiness

		Strongly disagree						Strongly agree
Q19.	My access to the site feels secure	1	2	3	4	5	6	7
Q20.	I feel communicating with the firm is secure	1	2	3	4	5	6	7
Q21.	I feel secure to complete transactions, if wanted	1	2	3	4	5	6	7
Q22.	I feel the firm will deliver the service as promised	1	2	3	4	5	6	7
Q23.	I feel the firm will use my information as intended	1	2	3	4	5	6	7
Q24.	I feel the information privacy measures are adequate	1	2	3	4	5	6	7

General

Q25. Any other comment/observation(s) about this site

a)

b)

c)

Q26. What is your overall view of the site?

1=very poor   7=excellent

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Please complete the questionnaire for the next web site. Again thank you for your effort so far.

Professional firm: Deloitte

Spend 5 minutes exploring the site and the next 5 minutes completing the questions below

Which accounting service can you identify from this site? (Kindly **tick** (√) **appropriately**):

Taxation	
Auditing	
Consulting	
Financial Planning	
Risk management	
Performance improvement	
Investment	
Restructuring	
E-business solution	
Corporate reorganisation	
Business recovery services	
Forensic accounting	
Franchising	
Others specify:	

Please circle the appropriate number for each question and respond to all statements.

Usability

		Strongly disagree					Strongly agree	
Q1.	Learning to operate the site is easy	1	2	3	4	5	6	7
Q2.	Locating services was clear and understandable	1	2	3	4	5	6	7
Q3.	The site was easy to use	1	2	3	4	5	6	7
Q4.	The design is appropriate to professional service site	1	2	3	4	5	6	7
Q5.	The site conveys a sense of competency	1	2	3	4	5	6	7
Q6.	The display pages within the site have an attractive appearance	1	2	3	4	5	6	7

Interactivity

		Strongly disagree					Strongly agree	
Q7.	The site creates a sense of personalisation to meet my needs	1	2	3	4	5	6	7
Q8.	I am encouraged by the web appearance to seek services from this firm	1	2	3	4	5	6	7
Q9.	The site has a good reputation e.g. testimonials	1	2	3	4	5	6	7
Q10.	The site has adequate Search facilities	1	2	3	4	5	6	7
Q11.	The site makes it easy to communicate with the firm e.g. e-mail, telephone	1	2	3	4	5	6	7
Q12.	My effort in interacting with the site were strenuous	1	2	3	4	5	6	7

Information

		Strongly disagree						Strongly agree
Q13.	The site provides information at the right level of detail	1	2	3	4	5	6	7
Q14.	The information on the site was accurate e.g. evidence of source	1	2	3	4	5	6	7
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Q18.	The information format was appropriate e.g. layout	1	2	3	4	5	6	7

Riskiness

		Strongly disagree						Strongly agree
Q19.	My access to the site feels secure	1	2	3	4	5	6	7
Q20.	I feel communicating with the firm is secure	1	2	3	4	5	6	7
Q21.	I feel secure to complete transactions, if wanted	1	2	3	4	5	6	7
Q22.	I feel the firm will deliver the service as promised	1	2	3	4	5	6	7
Q23.	I feel the firm will use my information as intended	1	2	3	4	5	6	7
Q24.	I feel the information privacy measures are adequate	1	2	3	4	5	6	7

General

Q25. Any other comment/observation(s) about this site

a)

b)

c)

Q26. What is your overall view of the site?

1=very poor   7=excellent

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Please complete the questionnaire for the next web site. Again thank you for your effort so far.

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Professional firm: Investor Group

Spend 5 minutes exploring the site and the next 5 minutes completing the questions below

Which accounting service can you identify from this site? (Kindly tick (√) **appropriately**):

Taxation	
Auditing	
Consulting	
Financial Planning	
Risk management	
Performance improvement	
Investment	
Restructuring	
E-business solution	
Corporate reorganisation	
Business recovery services	
Forensic accounting	
Franchising	
Others specify:	

Please **circle** the appropriate number for each question and respond to all statements.

Usability

		Strongly disagree						Strongly agree
Q1.	Learning to operate the site is easy	1	2	3	4	5	6	7
Q2.	Locating services was clear and understandable	1	2	3	4	5	6	7
Q3.	The site was easy to use	1	2	3	4	5	6	7
Q4.	The design is appropriate to professional service site	1	2	3	4	5	6	7
Q5.	The site conveys a sense of competency	1	2	3	4	5	6	7
Q6.	The display pages within the site have an attractive appearance	1	2	3	4	5	6	7

Interactivity

		Strongly disagree						Strongly agree
Q7.	The site creates a sense of personalisation to meet my needs	1	2	3	4	5	6	7
Q8.	I am encouraged by the web appearance to seek services from this firm	1	2	3	4	5	6	7
Q9.	The site has a good reputation e.g. testimonials	1	2	3	4	5	6	7
Q10.	The site has adequate Search facilities	1	2	3	4	5	6	7
Q11.	The site makes it easy to communicate with the firm e.g. e-mail, telephone	1	2	3	4	5	6	7
Q12.	My effort in interacting with the site were	1	2	3	4	5	6	7

strenuous

Information

		Strongly disagree						Strongly agree
Q13.	The site provides information at the right level of detail	1	2	3	4	5	6	7
Q14.	The information on the site was accurate e.g. evidence of source	1	2	3	4	5	6	7
Q15.	The information provided was relevant e.g. to my search	1	2	3	4	5	6	7
Q16.	The information was believable	1	2	3	4	5	6	7
Q17.	The information was helpful in understanding the site	1	2	3	4	5	6	7
Q18.	The information format was appropriate e.g. layout	1	2	3	4	5	6	7

Riskiness

		Strongly disagree						Strongly agree
Q19.	My access to the site feels secure	1	2	3	4	5	6	7
Q20.	I feel communicating with the firm is secure	1	2	3	4	5	6	7
Q21.	I feel secure to complete transactions, if wanted	1	2	3	4	5	6	7
Q22.	I feel the firm will deliver the service as promised	1	2	3	4	5	6	7
Q23.	I feel the firm will use my information as intended	1	2	3	4	5	6	7
Q24.	I feel the information privacy measures are adequate	1	2	3	4	5	6	7

General

Q25. Any other comment/observation(s) about this site

a)

b)

c)

Q26. What is your overall view of the site?

1=very poor   7=excellent

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Please complete the questionnaire for the next web site. Again thank you for your effort so far.

Professional firm: PKF Australia

Spend 5 minutes exploring the site and the next 5 minutes completing the questions below

Which accounting service can you identify from this site? (Kindly **tick** ($\sqrt{}$) **appropriately**):

Taxation	
Auditing	
Consulting	
Financial Planning	
Risk management	
Performance improvement	
Investment	
Restructuring	
E-business solution	
Corporate reorganisation	
Business recovery services	
Forensic accounting	
Franchising	
Others specify:	

Please **circle** the appropriate number for each question and respond to all statements.

Usability

		Strongly disagree						Strongly agree
Q1.	Learning to operate the site is easy	1	2	3	4	5	6	7
Q2.	Locating services was clear and understandable	1	2	3	4	5	6	7
Q3.	The site was easy to use	1	2	3	4	5	6	7
Q4.	The design is appropriate to professional service site	1	2	3	4	5	6	7
Q5.	The site conveys a sense of competency	1	2	3	4	5	6	7
Q6.	The display pages within the site have an attractive appearance	1	2	3	4	5	6	7

Interactivity

		Strongly disagree						Strongly agree
Q7.	The site creates a sense of personalisation to meet my needs	1	2	3	4	5	6	7
Q8.	I am encouraged by the web appearance to seek services from this firm	1	2	3	4	5	6	7
Q9.	The site has a good reputation e.g. testimonials	1	2	3	4	5	6	7
Q10.	The site has adequate Search facilities	1	2	3	4	5	6	7
Q11.	The site makes it easy to communicate with the firm e.g. e-mail, telephone	1	2	3	4	5	6	7
Q12.	My effort in interacting with the site were strenuous	1	2	3	4	5	6	7

Information

		Strongly disagree					Strongly agree
Q13.	The site provides information at the right level of detail	1 2 3	4	5	6	7
Q14.	The information on the site was accurate e.g. evidence of source	1 2 3	4	5	6	7
Q15.	The information provided was relevant e.g. to my search	1 2 3	4	5	6	7
Q16.	The information was believable	1 2 3	4	5	6	7
Q17.	The information was helpful in understanding the site	1 2 3	4	5	6	7
Q18.	The information format was appropriate e.g. layout	1 2 3	4	5	6	7

Riskiness

		Strongly disagree					Strongly agree
Q19.	My access to the site feels secure	1 2 3	4	5	6	7
Q20.	I feel communicating with the firm is secure	1 2 3	4	5	6	7
Q21.	I feel secure to complete transactions, if wanted	1 2 3	4	5	6	7
Q22.	I feel the firm will deliver the service as promised	1 2 3	4	5	6	7
Q23.	I feel the firm will use my information as intended	1 2 3	4	5	6	7
Q24.	I feel the information privacy measures are adequate	1 2 3	4	5	6	7

General

Q25. Any other comment/observation(s) about this site

a)

b)

c)

Q26. What is your overall view of the site?

1=very poor   7=excellent

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Please complete the questionnaire for the next web site. Again thank you for your effort so far.

APPENDIX 2: DISTRIBUTION OF DATA

PUBLIC ACCOUNTING SECTOR

Usability: Learning to operate the site

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	.2	.2	.2
	2	15	2.5	2.5	2.6
	3	47	7.7	7.7	10.3
	4	101	16.5	16.5	26.8
	5	222	36.3	36.3	63.1
	6	210	34.3	34.3	97.4
	7	16	2.6	2.6	100.0
	Total	612	100.0	100.0	

Histogram

Frequency

Mean = 5
Std. Dev. = 1.081
N = 612

Learning
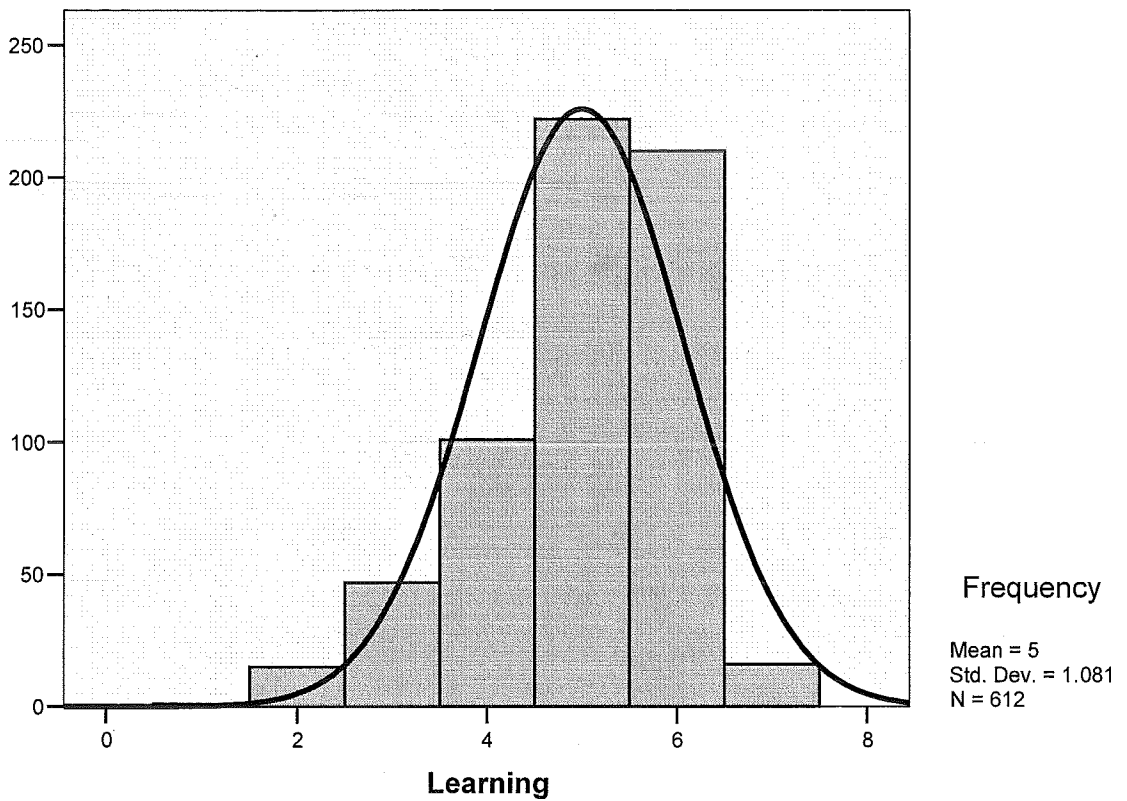
Usability: Locating services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	.7	.7	.7
	2	45	7.4	7.4	8.0
	3	50	8.2	8.2	16.2
	4	72	11.8	11.8	27.9
	5	222	36.3	36.3	64.2
	6	174	28.4	28.4	92.6
	7	45	7.4	7.4	100.0
	Total	612	100.0	100.0	

Histogram

Frequency

Mean = 4.9
Std. Dev. = 1.335
N = 612

Locating Services
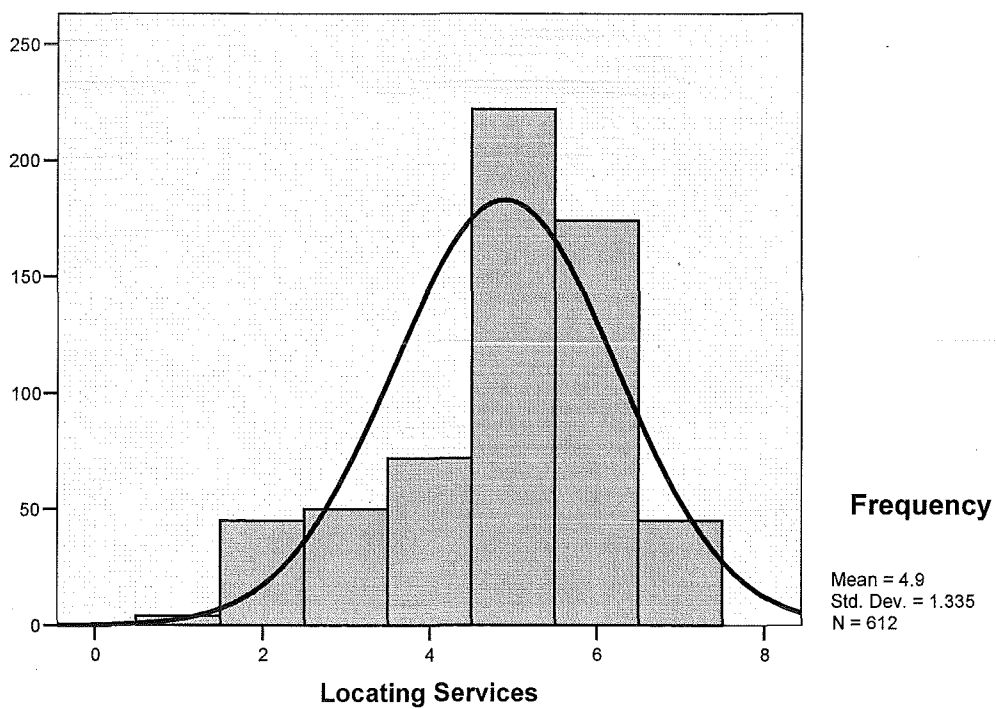
Usability: Ease of Use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	1.3	1.3	1.3
	2	23	3.8	3.8	5.1
	3	60	9.8	9.8	14.9
	4	98	16.0	16.0	30.9
	5	195	31.9	31.9	62.7
	6	198	32.4	32.4	95.1
	7	30	4.9	4.9	100.0
	Total	612	100.0	100.0	

Histogram

Ease of use
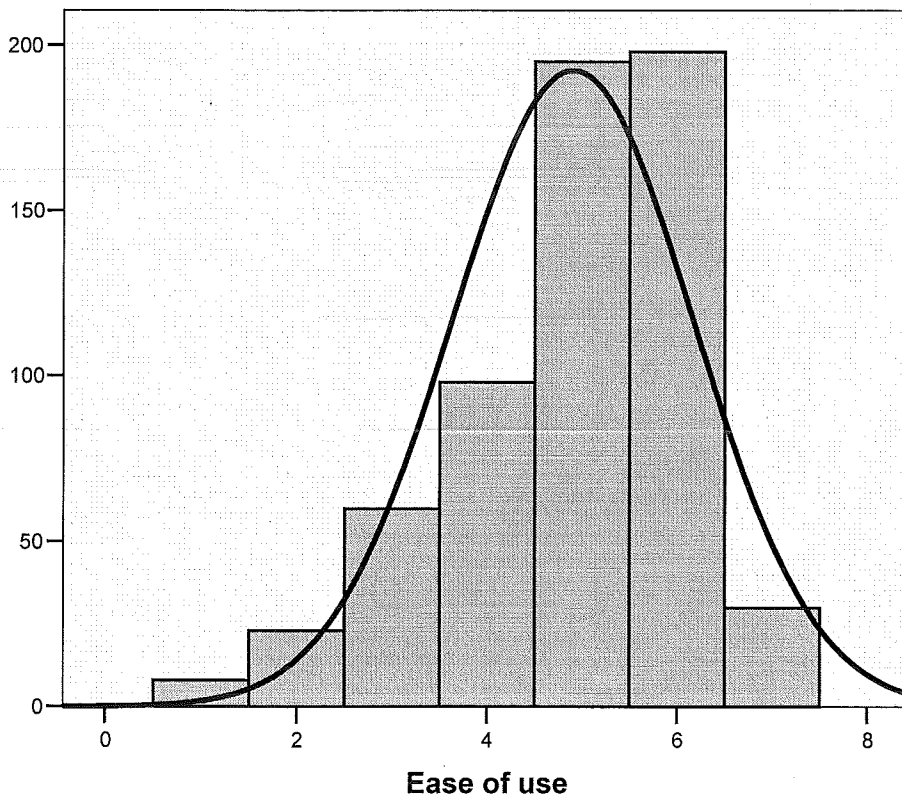
Frequency

Mean = 4.9
Std. Dev. = 1.27
N = 612

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Usability: Design appropriateness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	.2	.2	.2
	2	30	4.9	4.9	5.1
	3	76	12.4	12.4	17.5
	4	91	14.9	14.9	32.4
	5	193	31.5	31.5	63.9
	6	181	29.6	29.6	93.5
	7	40	6.5	6.5	100.0
	Total	612	100.0	100.0	

Histogram

Frquency

Mean = 4.88
Std. Dev. = 1.287
N = 612

Apropriateness of Design
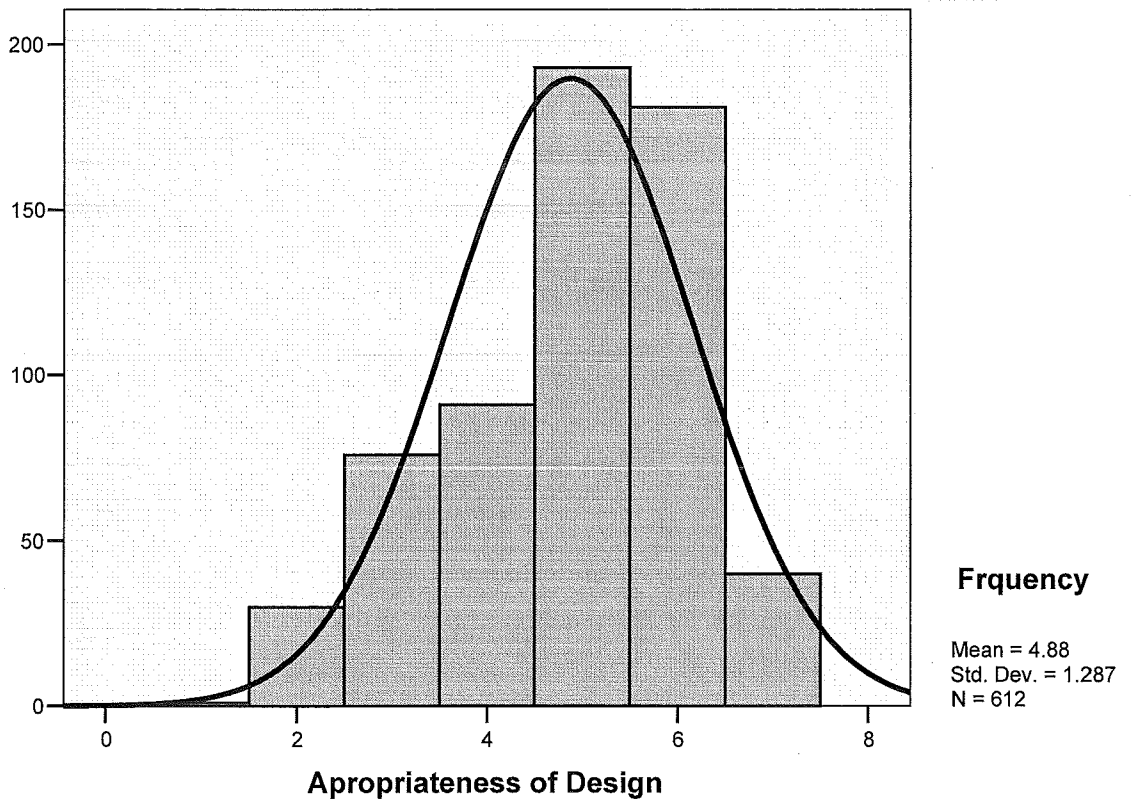
Usability: Competency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	.5	.5	.5
	2	24	3.9	3.9	4.4
	3	71	11.6	11.6	16.0
	4	111	18.1	18.1	34.2
	5	180	29.4	29.4	63.6
	6	177	28.9	28.9	92.5
	7	46	7.5	7.5	100.0
	Total	612	100.0	100.0	

Histogram

Frequency

Mean = 4.89
Std. Dev. = 1.287
N = 612
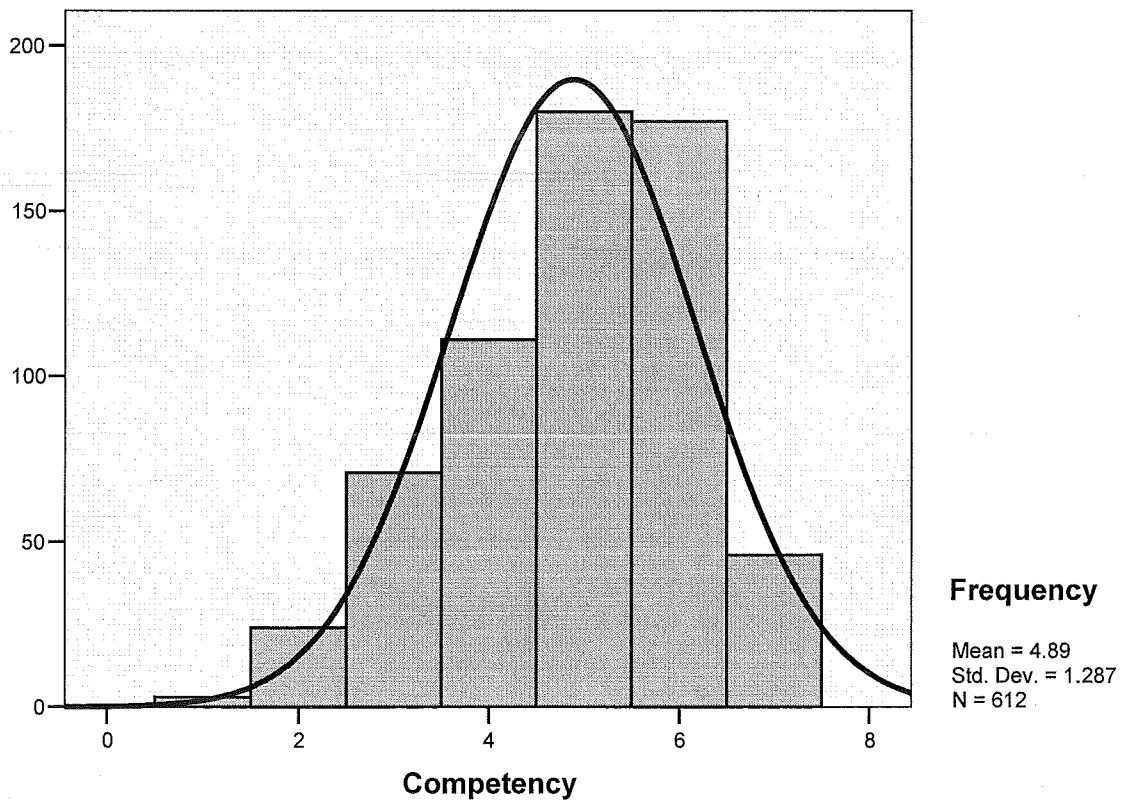
Usability: Attractive Appearance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	1.3	1.3	1.3
	2	48	7.8	7.8	9.2
	3	80	13.1	13.1	22.2
	4	104	17.0	17.0	39.2
	5	170	27.8	27.8	67.0
	6	144	23.5	23.5	90.5
	7	58	9.5	9.5	100.0
	Total	612	100.0	100.0	

Histogram

Frquency

Mean = 4.71
Std. Dev. = 1.463
N = 612

Appearance

241
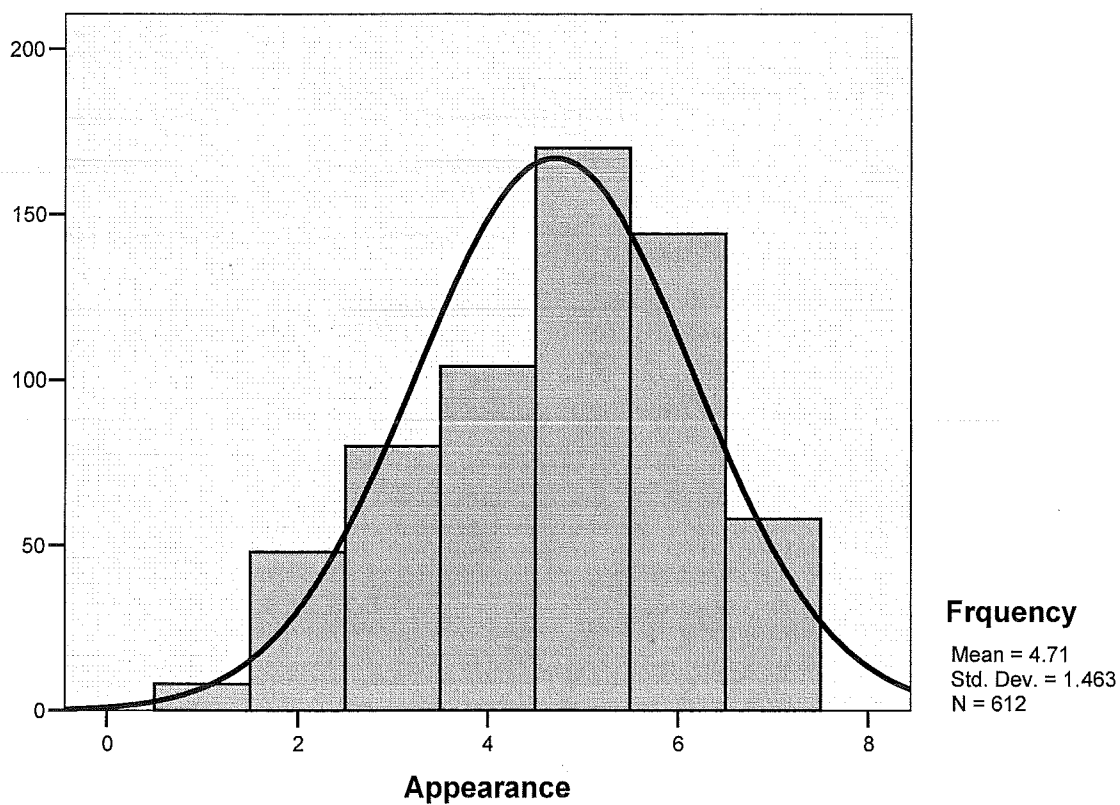
Interactivity: Sense of Personalisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	.2	.2	.2
	2	52	8.5	8.5	8.7
	3	138	22.5	22.5	31.2
	4	126	20.6	20.6	51.8
	5	140	22.9	22.9	74.7
	6	138	22.5	22.5	97.2
	7	17	2.8	2.8	100.0
	Total	612	100.0	100.0	

Histogram

Frequency

Mean = 4.36
Std. Dev. = 1.354
N = 612

242
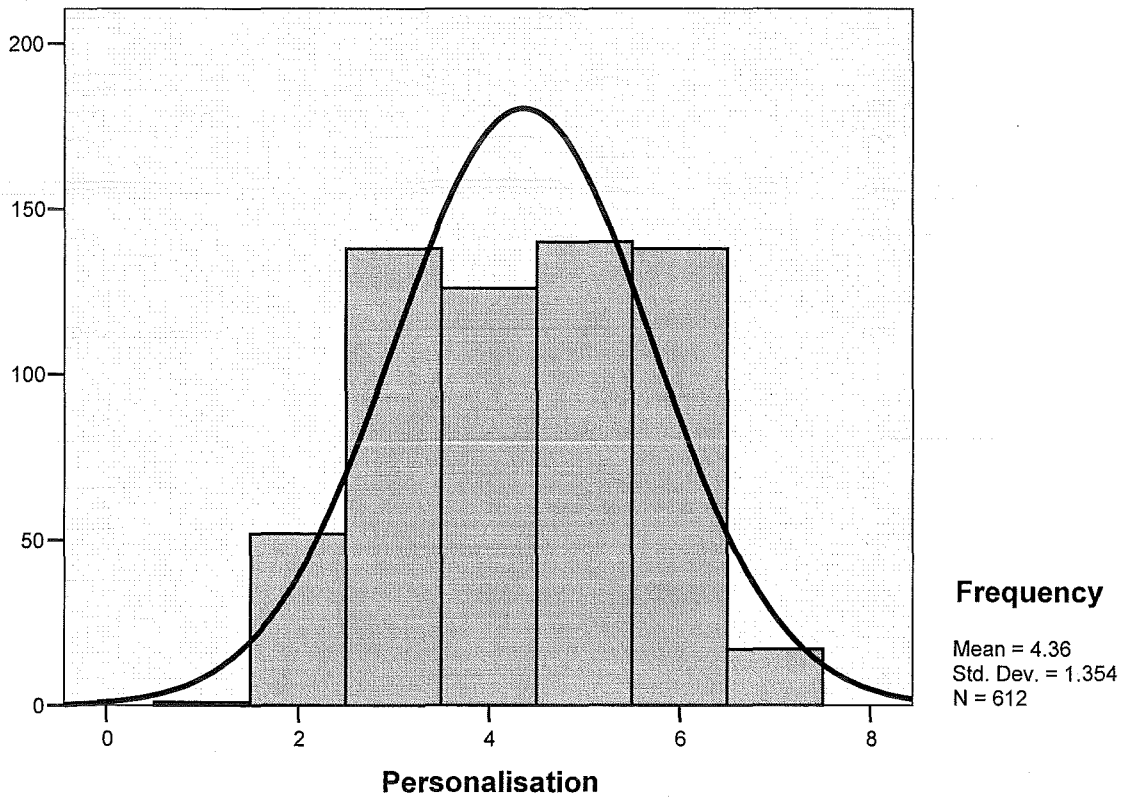
Interactivity: Encouragement to seek services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	.5	.5	.5
	2	43	7.0	7.0	7.5
	3	90	14.7	14.7	22.2
	4	143	23.4	23.4	45.6
	5	160	26.1	26.1	71.7
	6	159	26.0	26.0	97.7
	7	14	2.3	2.3	100.0
	Total	612	100.0	100.0	

Histogram

Frequency

Mean = 4.55
Std. Dev. = 1.297
N = 612
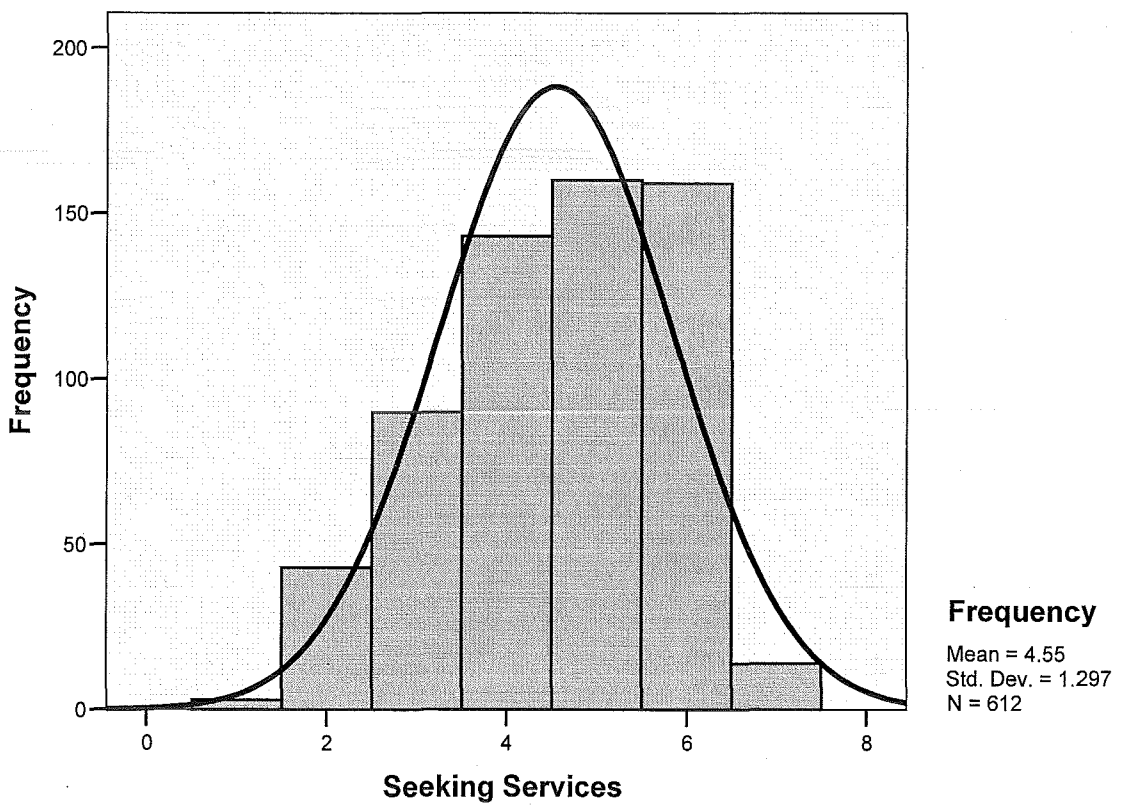
Interactivity: Good Reputation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	15	2.5	2.5	2.5
	2	65	10.6	10.6	13.1
	3	141	23.0	23.0	36.1
	4	119	19.4	19.4	55.6
	5	159	26.0	26.0	81.5
	6	107	17.5	17.5	99.0
	7	6	1.0	1.0	100.0
	Total	612	100.0	100.0	

Histogram

Mean = 4.12
Std. Dev. = 1.383
N = 612

244
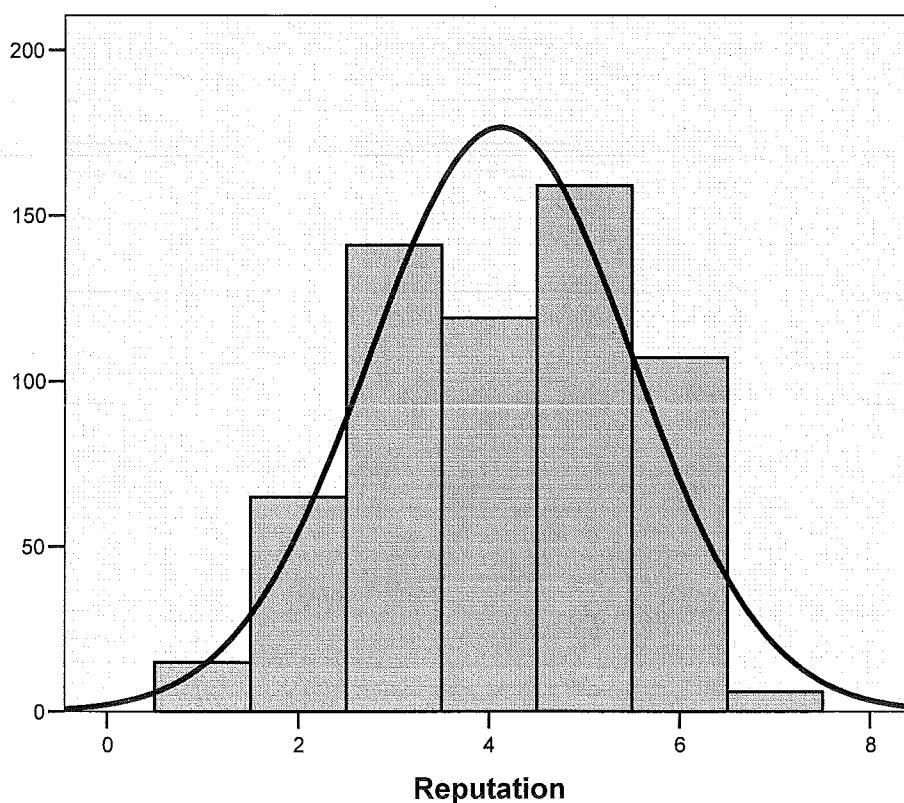
Interactivity: Adequacy of Search Facilities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	22	3.6	3.6	3.6
	2	32	5.2	5.2	8.8
	3	47	7.7	7.7	16.5
	4	102	16.7	16.7	33.2
	5	180	29.4	29.4	62.6
	6	201	32.8	32.8	95.4
	7	28	4.6	4.6	100.0
	Total	612	100.0	100.0	

Histogram

Mean = 4.8
Std. Dev. = 1.412
N = 612

245
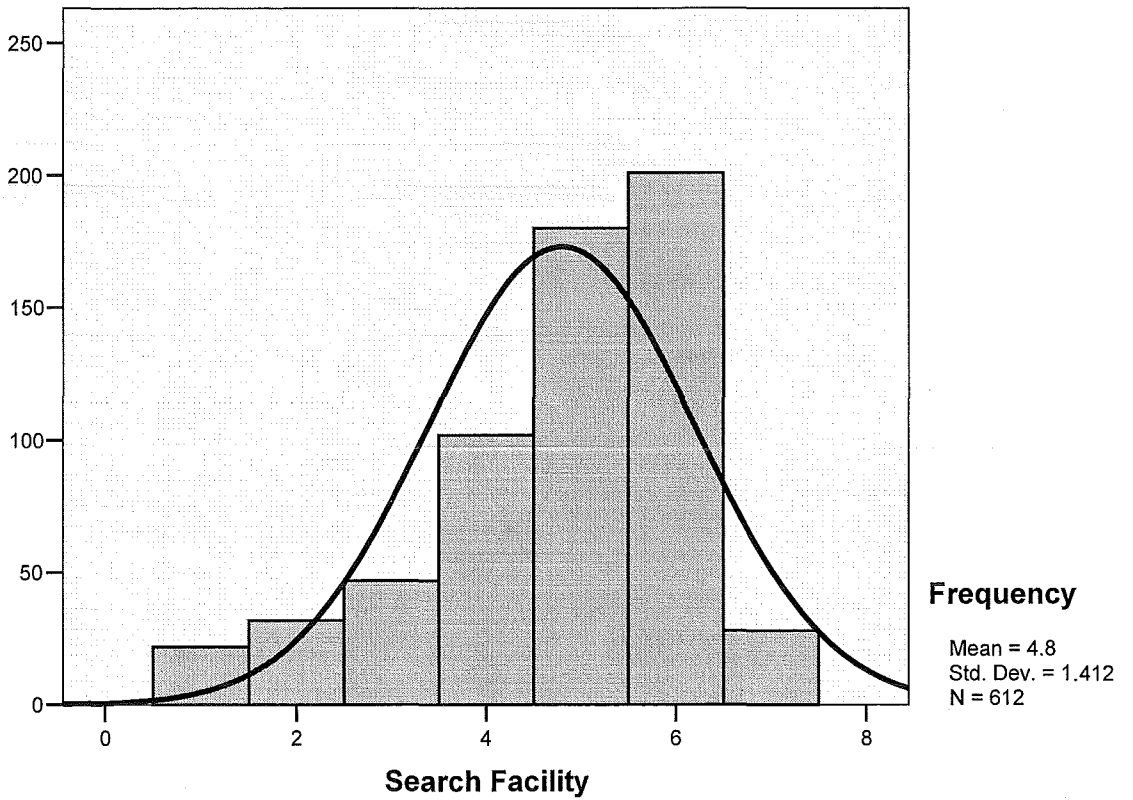
Interactivity: Ease of Communication

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	.7	.7	.7
	2	32	5.2	5.2	5.9
	3	67	10.9	10.9	16.8
	4	88	14.4	14.4	31.2
	5	172	28.1	28.1	59.3
	6	192	31.4	31.4	90.7
	7	57	9.3	9.3	100.0
	Total	612	100.0	100.0	

Histogram

Frequency

Mean = 4.95
Std. Dev. = 1.358
N = 612

Communication
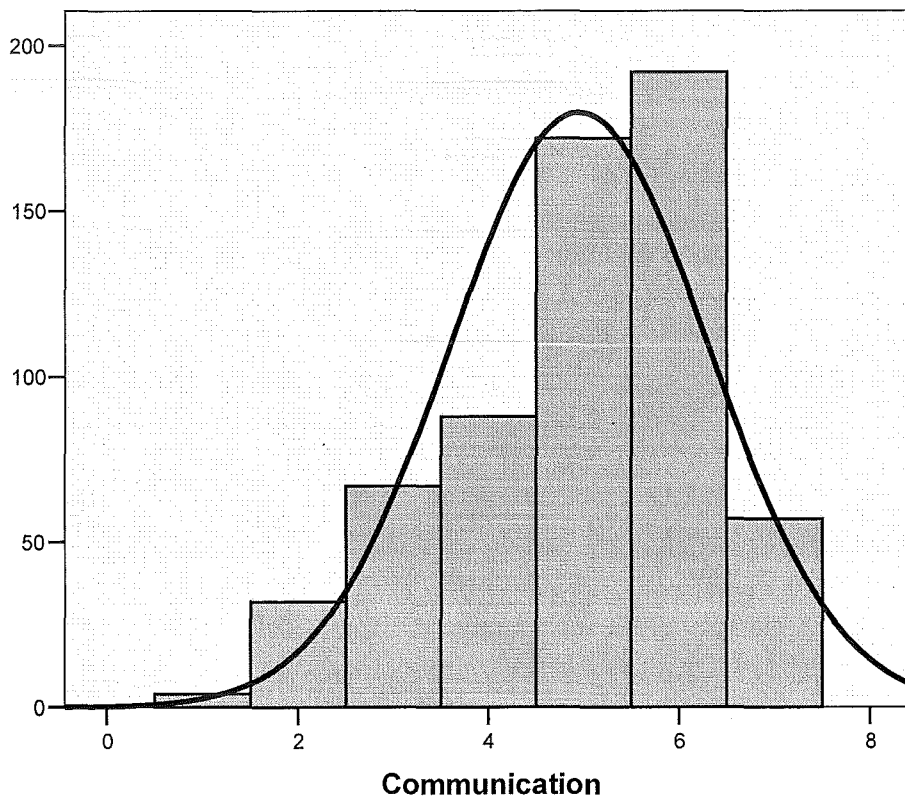
Usability: Strenuous effort

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	1.0	1.0	1.0
	2	58	9.5	9.5	10.5
	3	113	18.5	18.5	28.9
	4	132	21.6	21.6	50.5
	5	104	17.0	17.0	67.5
	6	146	23.9	23.9	91.3
	7	53	8.7	8.7	100.0
	Total	612	100.0	100.0	

Histogram

Mean = 4.5
Std. Dev. = 1.519
N = 612
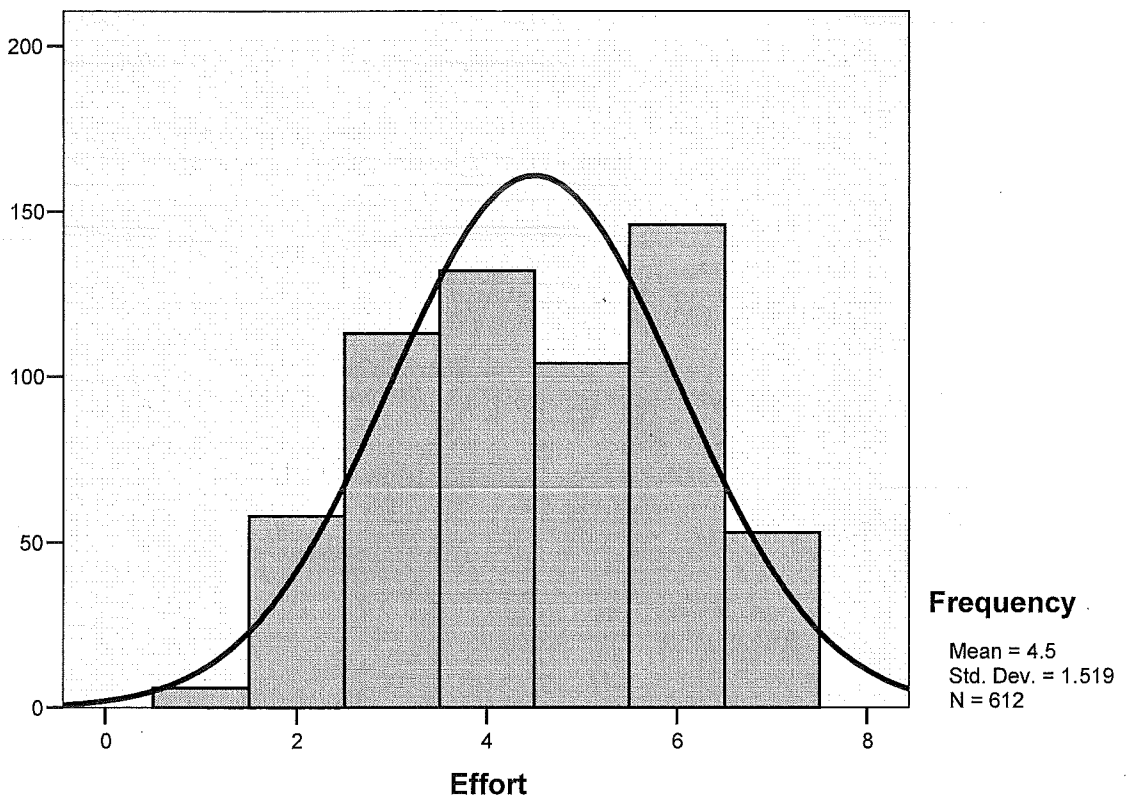
Information: Level of Detail

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	.5	.5	.5
	2	13	2.1	2.1	2.6
	3	98	16.0	16.0	18.6
	4	103	16.8	16.8	35.5
	5	221	36.1	36.1	71.6
	6	135	22.1	22.1	93.6
	7	39	6.4	6.4	100.0
	Total	612	100.0	100.0	

Histogram

Frequency
Mean = 4.78
Std. Dev. = 1.227
N = 612

Information Detail

248
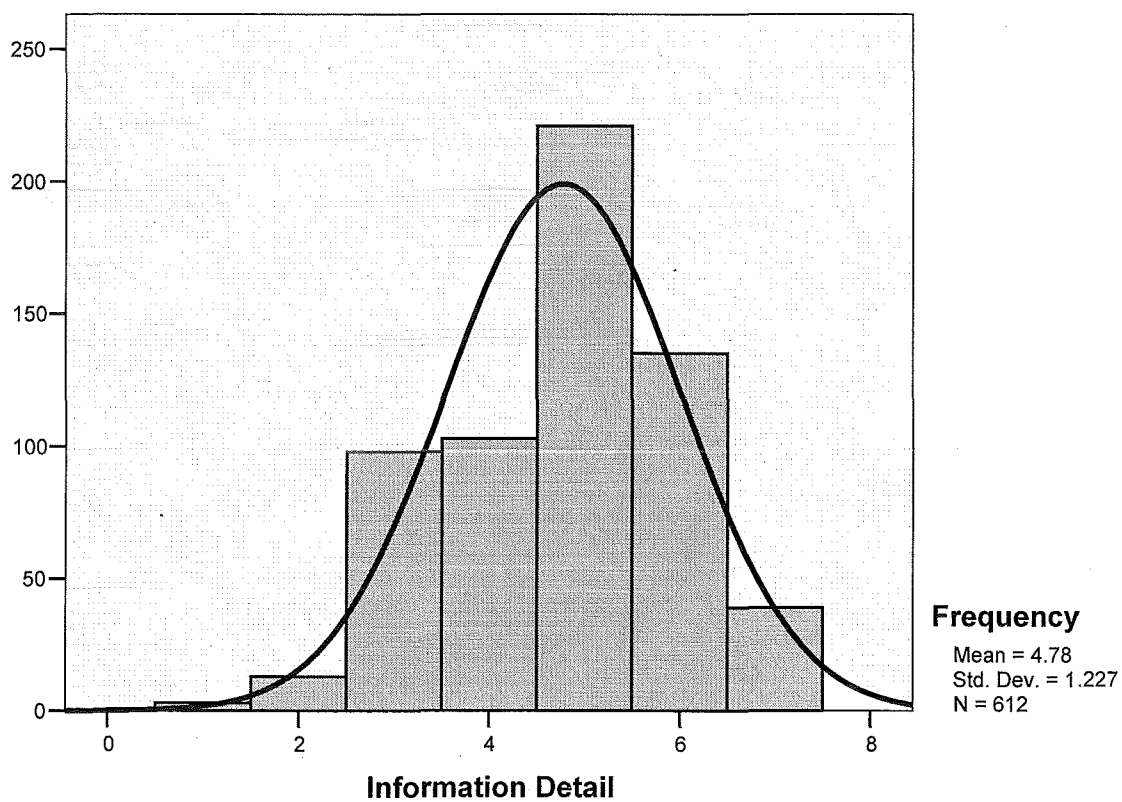
Information: Accuracy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	12	2.0	2.0	2.0
	3	62	10.1	10.1	12.1
	4	171	27.9	27.9	40.0
	5	206	33.7	33.7	73.7
	6	141	23.0	23.0	96.7
	7	20	3.3	3.3	100.0
	Total	612	100.0	100.0	

Histogram

Information Accuracy

Frequency

Mean = 4.75
Std. Dev. = 1.079
N = 612

249
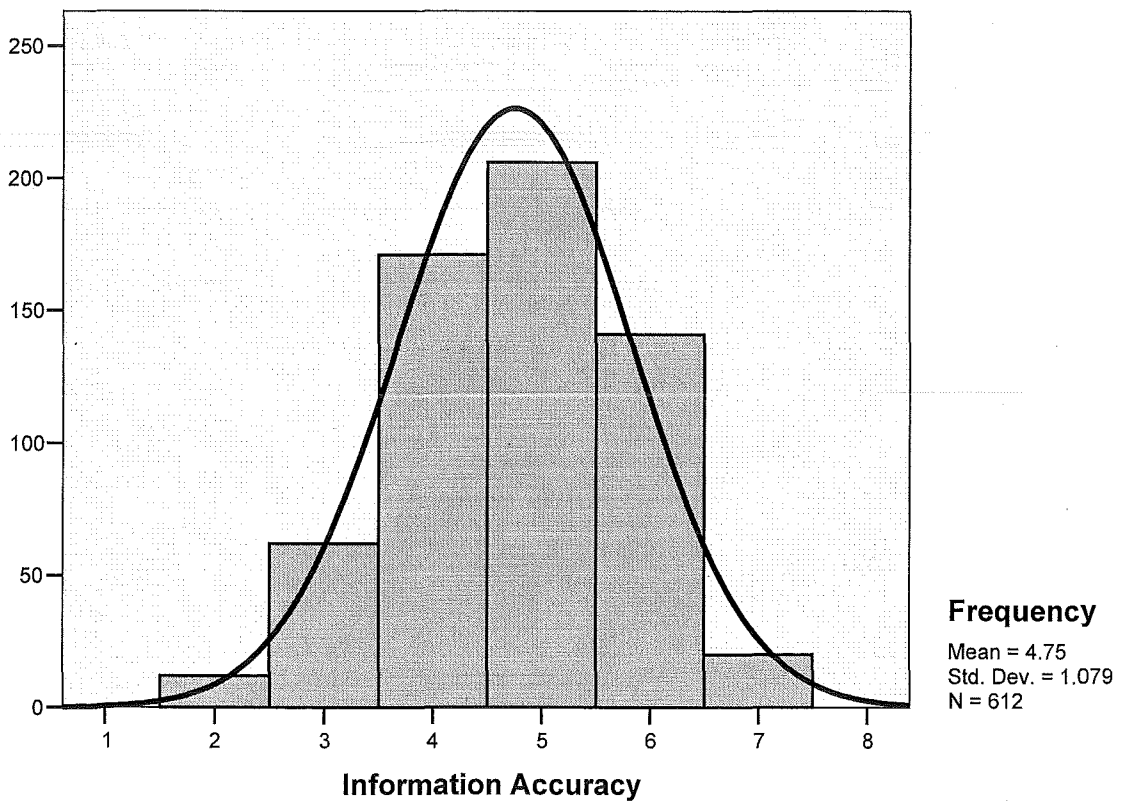
Information: Relevancy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	.5	.5	.5
	2	16	2.6	2.6	3.1
	3	70	11.4	11.4	14.5
	4	142	23.2	23.2	37.7
	5	199	32.5	32.5	70.3
	6	159	26.0	26.0	96.2
	7	23	3.8	3.8	100.0
	Total	612	100.0	100.0	

Histogram

Frequency

Mean = 4.78
Std. Dev. = 1.169
N = 612

Information Relevancy

250
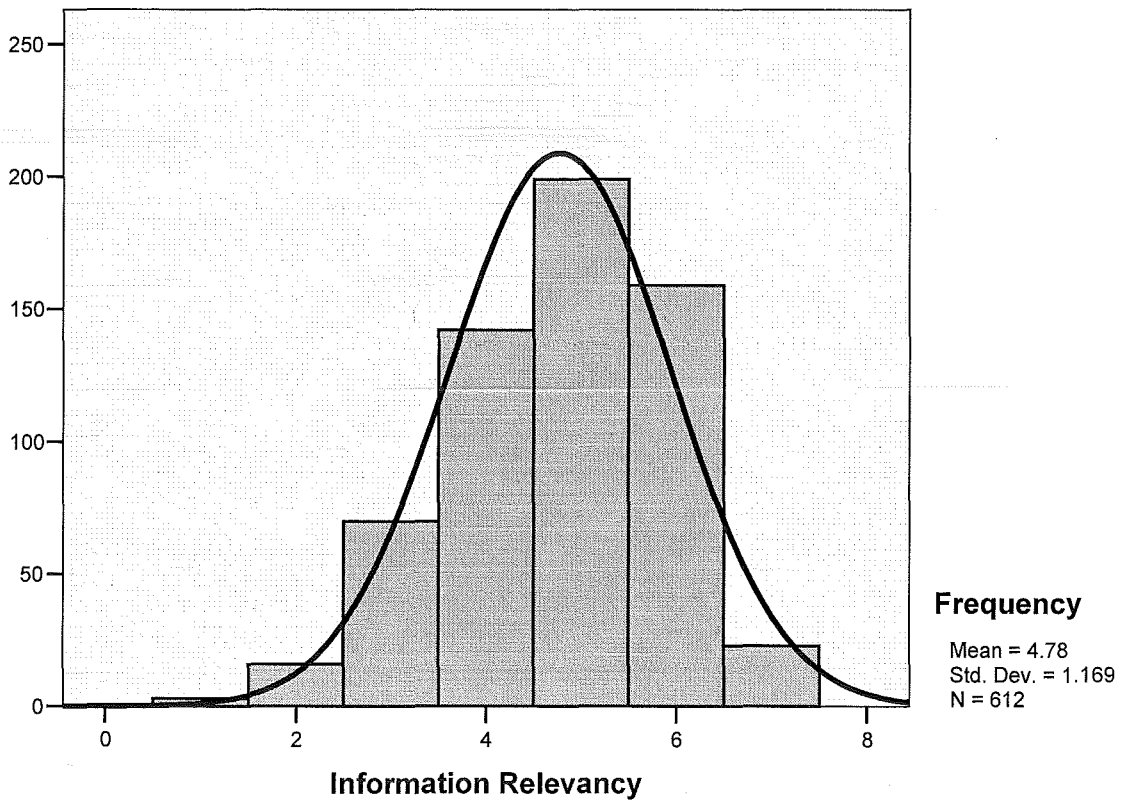
Information: Believable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	11	1.8	1.8	1.8
	3	52	8.5	8.5	10.3
	4	137	22.4	22.4	32.7
	5	201	32.8	32.8	65.5
	6	188	30.7	30.7	96.2
	7	23	3.8	3.8	100.0
	Total	612	100.0	100.0	

Histogram

Frequency

Mean = 4.93
Std. Dev. = 1.087
N = 612

Information Believability

251
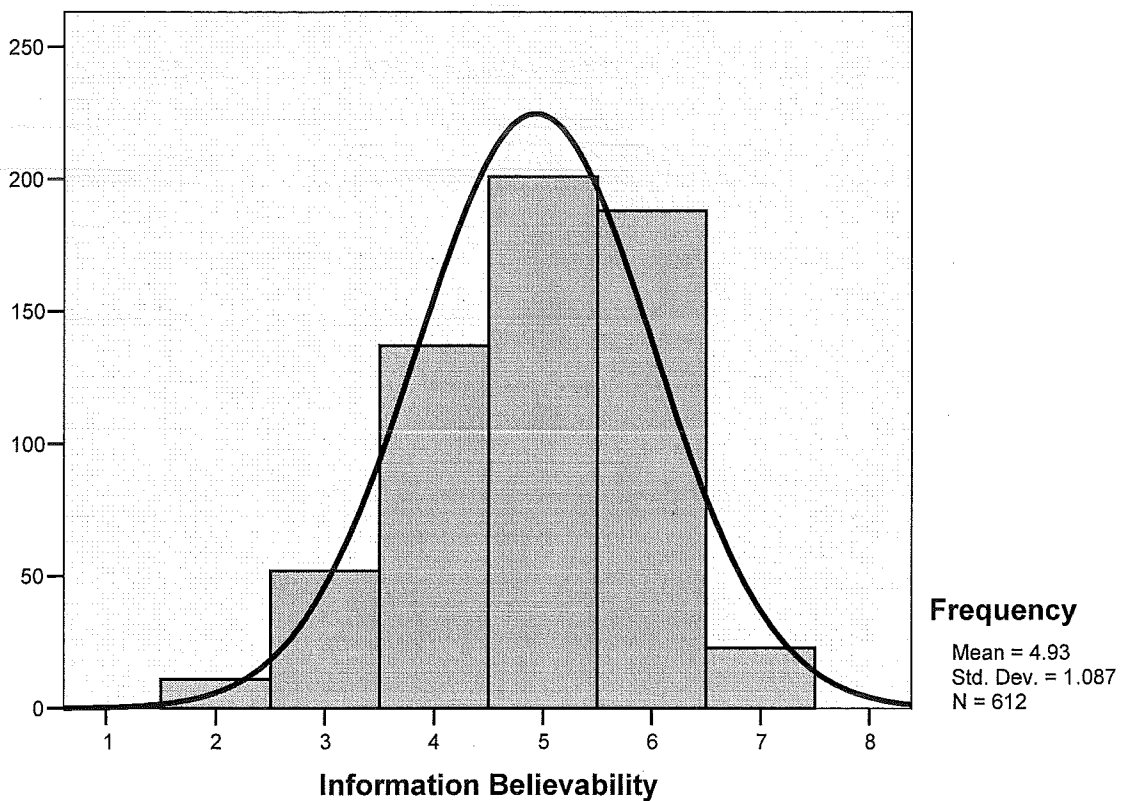
Information: Helpfulness to Understand

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	.5	.5	.5
	2	25	4.1	4.1	4.6
	3	72	11.8	11.8	16.3
	4	122	19.9	19.9	36.3
	5	189	30.9	30.9	67.2
	6	178	29.1	29.1	96.2
	7	23	3.8	3.8	100.0
	Total	612	100.0	100.0	

Histogram

Frequency
Mean = 4.79
Std. Dev. = 1.231
N = 612

Information Understandability

252
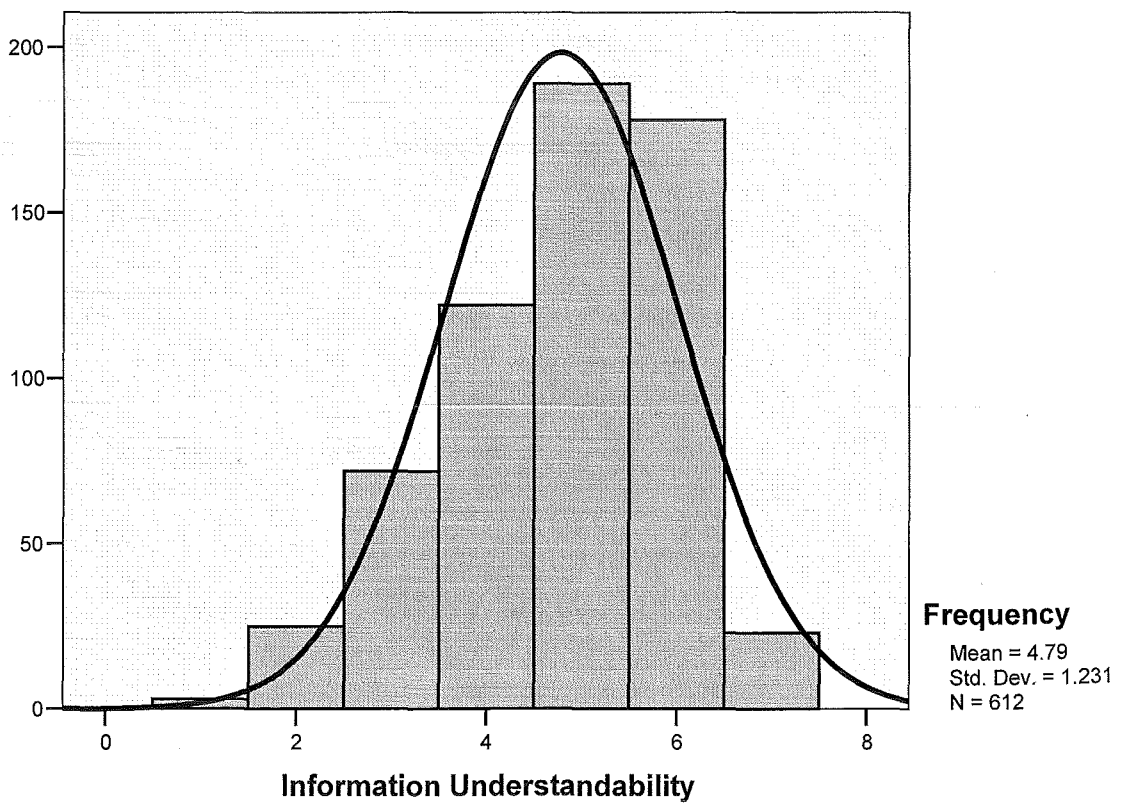
Information: Format Appropriateness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	.8	.8	.8
	2	63	10.3	10.3	11.1
	3	63	10.3	10.3	21.4
	4	107	17.5	17.5	38.9
	5	166	27.1	27.1	66.0
	6	175	28.6	28.6	94.6
	7	33	5.4	5.4	100.0
	Total	612	100.0	100.0	

Histogram

Frequency
Mean = 4.67
Std. Dev. = 1.429
N = 612

Information Format

253
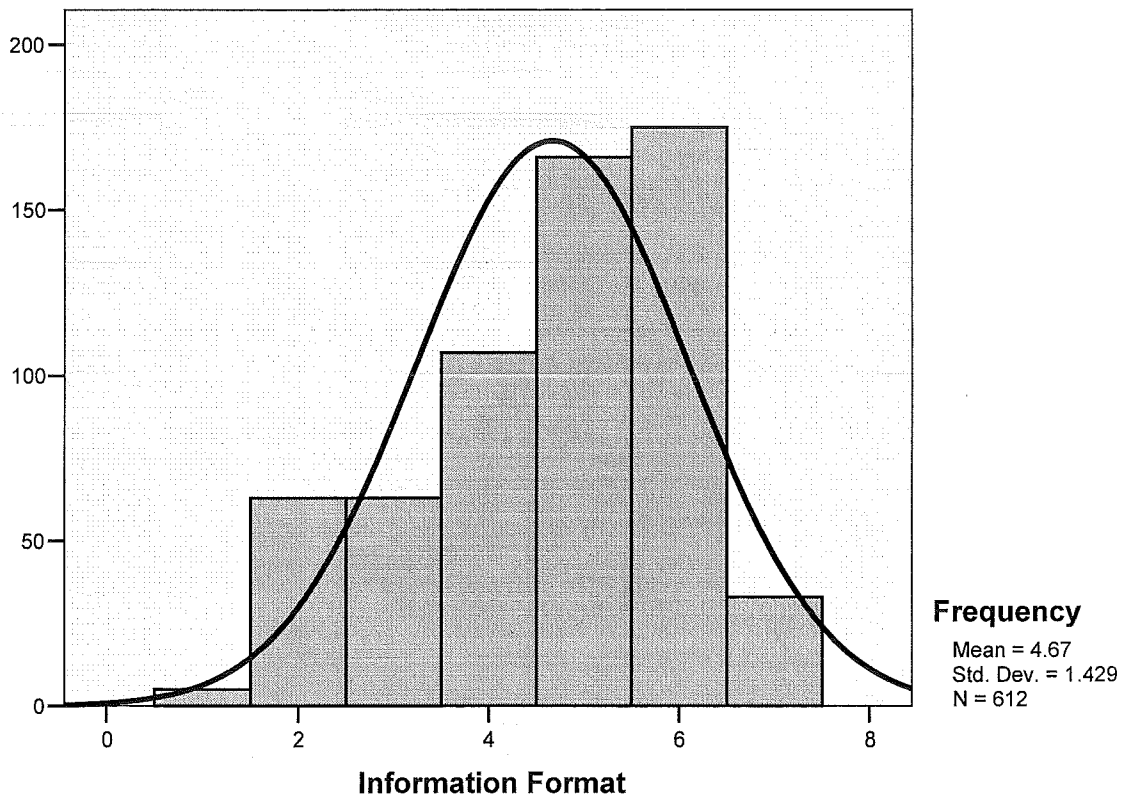
Riskiness: Access Security

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	.3	.3	.3
	2	28	4.6	4.6	4.9
	3	68	11.1	11.1	16.0
	4	143	23.4	23.4	39.4
	5	229	37.4	37.4	76.8
	6	124	20.3	20.3	97.1
	7	18	2.9	2.9	100.0
	Total	612	100.0	100.0	

Histogram

Frequency

Mean = 4.66
Std. Dev. = 1.16
N = 612

Acess Security

254
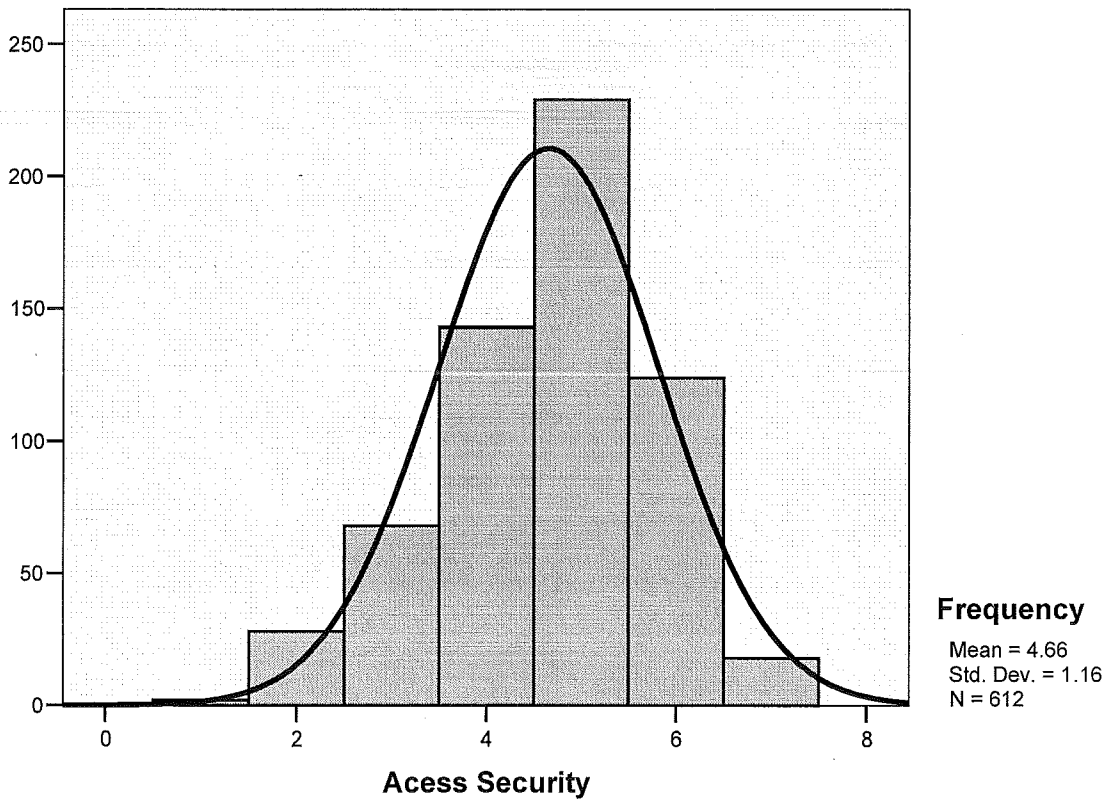
Riskiness: Communication Security

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	.7	.7	.7
	2	27	4.4	4.4	5.1
	3	86	14.1	14.1	19.1
	4	127	20.8	20.8	39.9
	5	229	37.4	37.4	77.3
	6	118	19.3	19.3	96.6
	7	21	3.4	3.4	100.0
	Total	612	100.0	100.0	

Histogram

Frequency

Mean = 4.61
Std. Dev. = 1.206
N = 612

Communicating Security

255
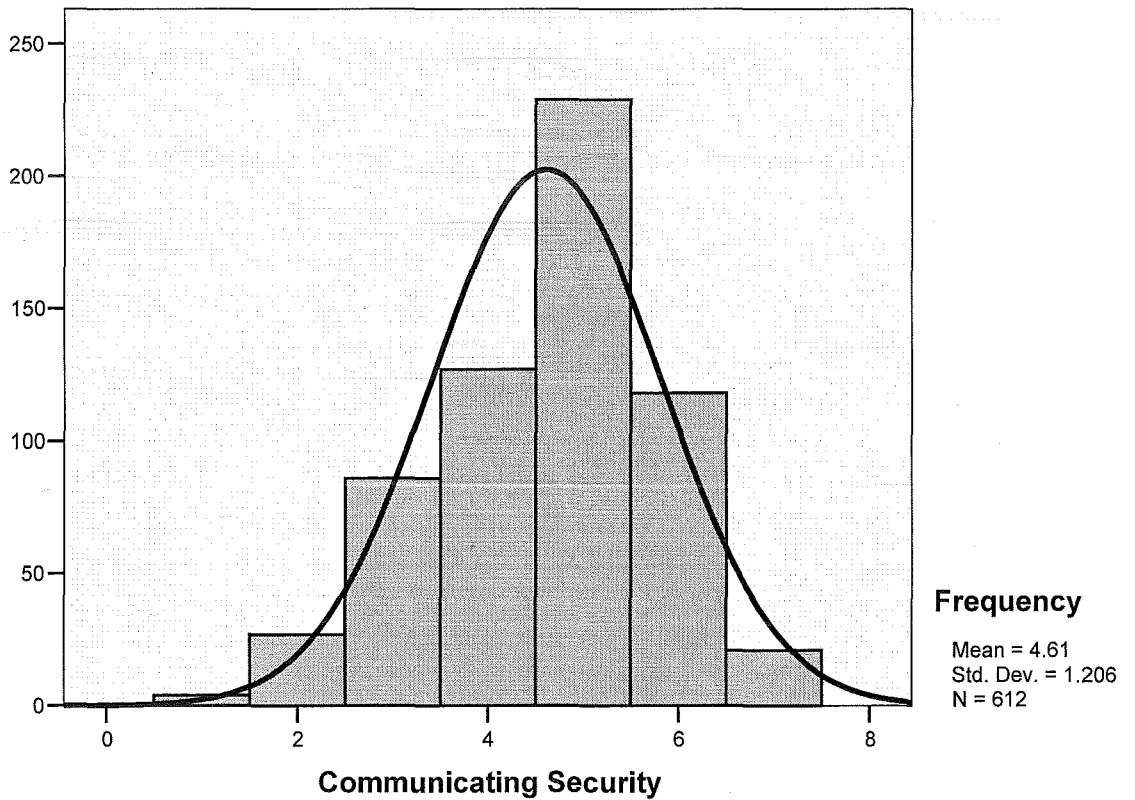
Riskiness: Transaction Security

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	1.5	1.5	1.5
	2	34	5.6	5.6	7.0
	3	92	15.0	15.0	22.1
	4	164	26.8	26.8	48.9
	5	165	27.0	27.0	75.8
	6	137	22.4	22.4	98.2
	7	11	1.8	1.8	100.0
	Total	612	100.0	100.0	

Histogram

Frequency

Mean = 4.47
Std. Dev. = 1.272
N = 612

Transaction Security

256
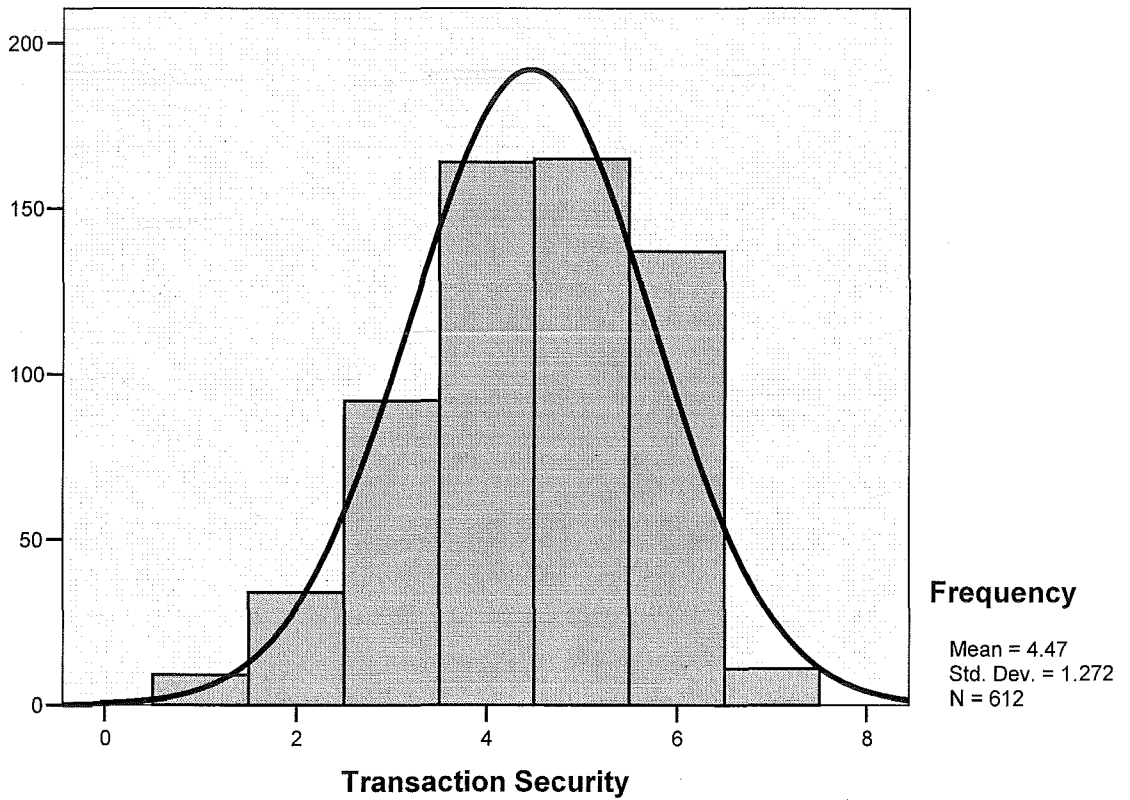
Riskiness: Service Delivery Security

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	.2	.2	.2
	2	16	2.6	2.6	2.8
	3	53	8.7	8.7	11.4
	4	181	29.6	29.6	41.0
	5	165	27.0	27.0	68.0
	6	182	29.7	29.7	97.7
	7	14	2.3	2.3	100.0
	Total	612	100.0	100.0	

Histogram

Frequency

Mean = 4.79
Std. Dev. = 1.118
N = 612

Service Delivery
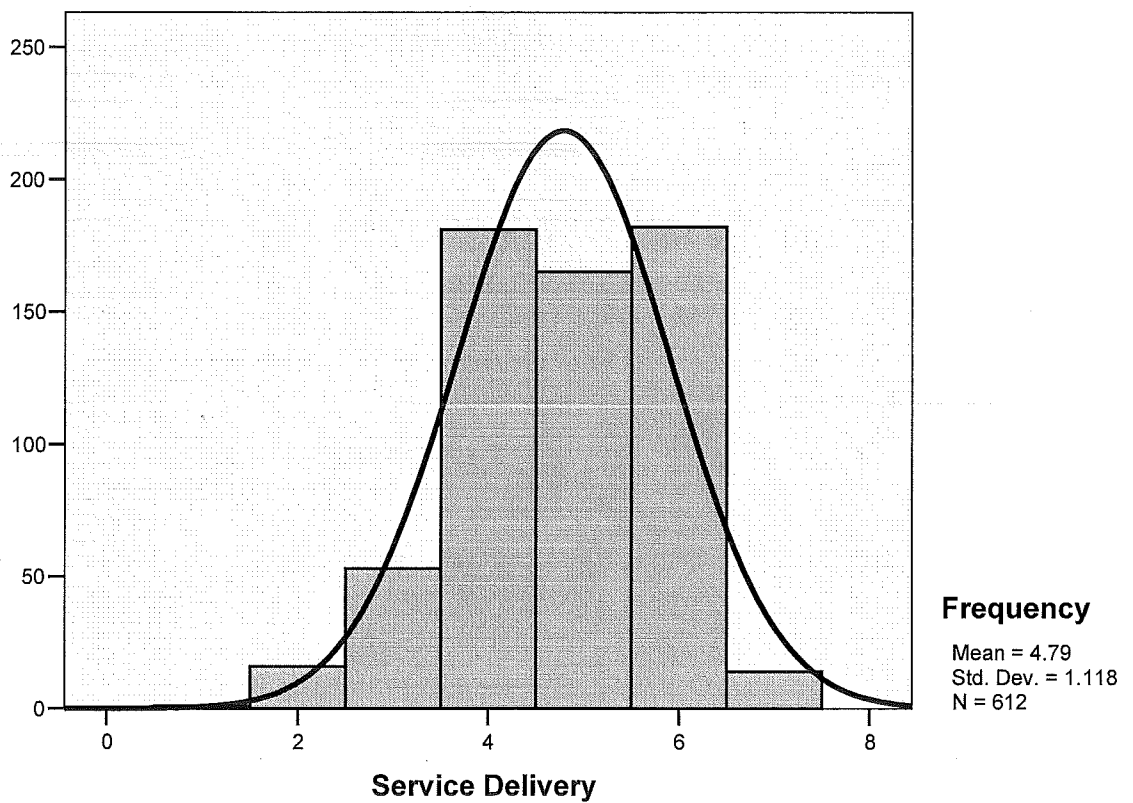
Riskiness: Information Usage Security

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	.3	.3	.3
	2	17	2.8	2.8	3.1
	3	54	8.8	8.8	11.9
	4	163	26.6	26.6	38.6
	5	212	34.6	34.6	73.2
	6	147	24.0	24.0	97.2
	7	17	2.8	2.8	100.0
	Total	612	100.0	100.0	

Histogram

Mean = 4.76
Std. Dev. = 1.103
N = 612

258
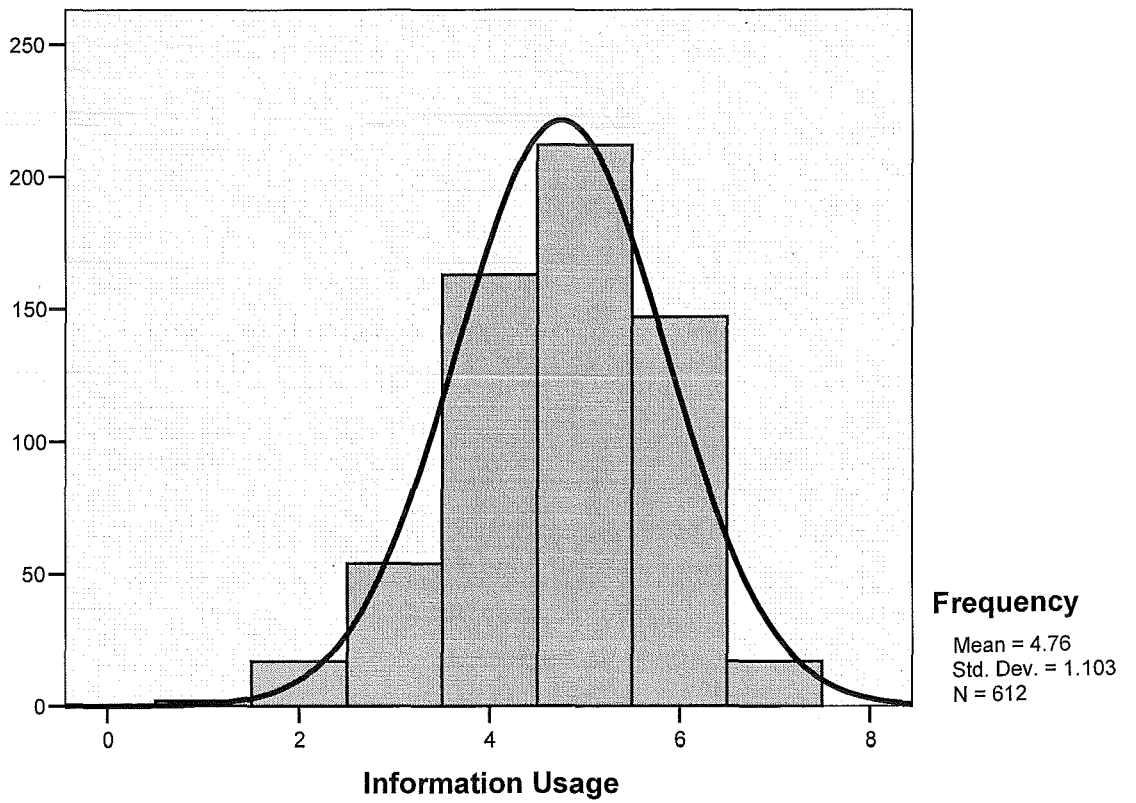
Riskiness: Adequacy of Privacy Measures

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	.5	.5	.5
	2	30	4.9	4.9	5.4
	3	94	15.4	15.4	20.8
	4	137	22.4	22.4	43.1
	5	192	31.4	31.4	74.5
	6	139	22.7	22.7	97.2
	7	17	2.8	2.8	100.0
	Total	612	100.0	100.0	

Histogram

Frequency

Mean = 4.58
Std. Dev. = 1.235
N = 612

Information Privacy

259
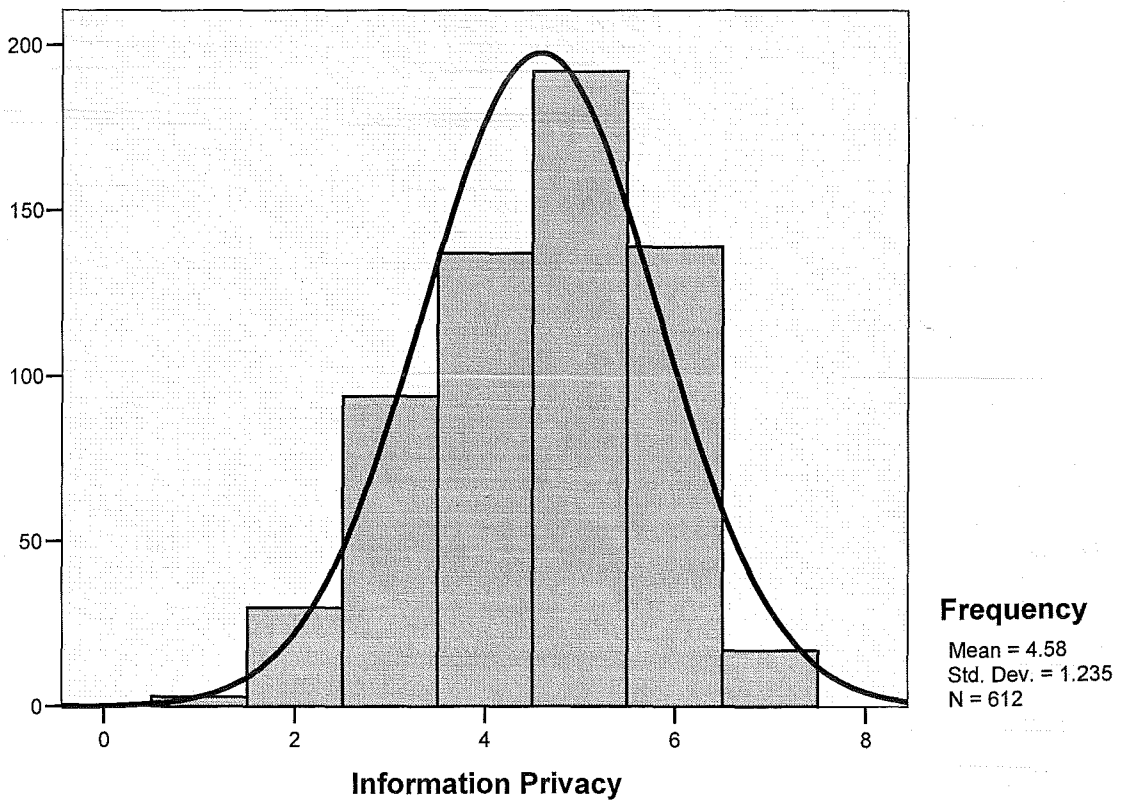
General: Overall View of the Site

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	.2	.2	.2
	2	27	4.4	4.4	4.6
	3	80	13.1	13.1	17.6
	4	114	18.6	18.6	36.3
	5	176	28.8	28.8	65.0
	6	193	31.5	31.5	96.6
	7	21	3.4	3.4	100.0
	Total	612	100.0	100.0	
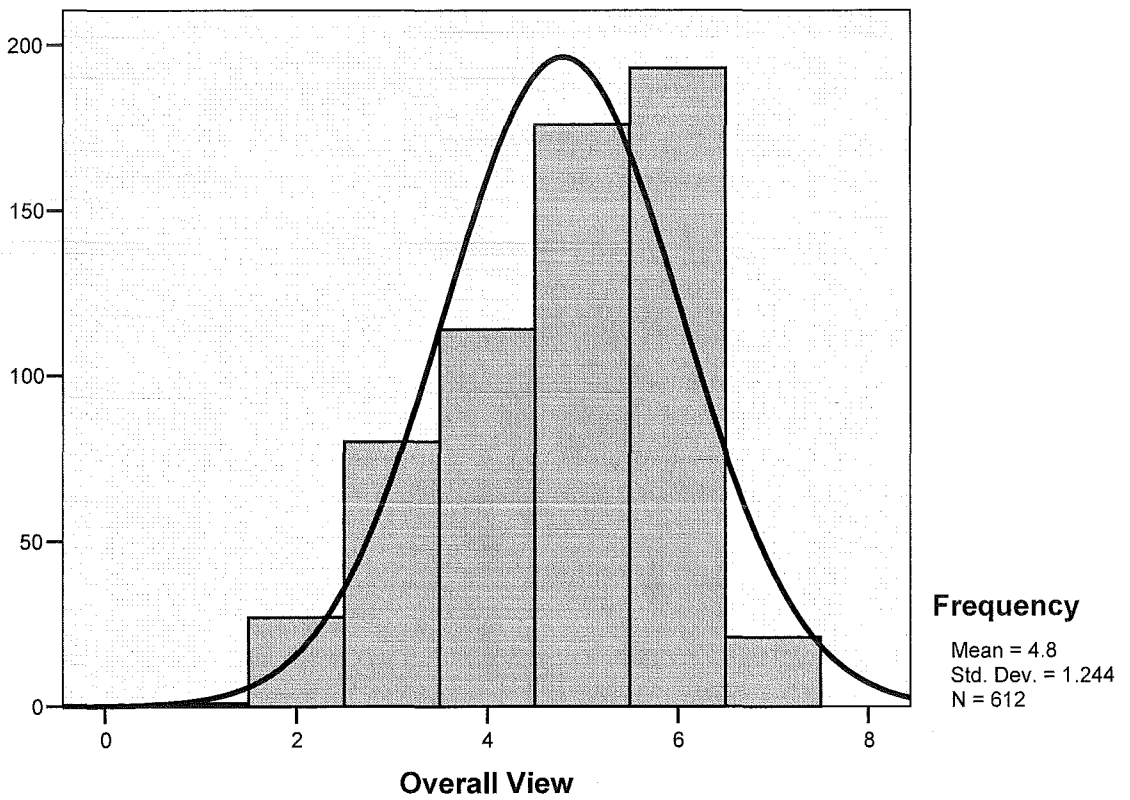
Histogram

Frequency

Mean = 4.8
Std. Dev. = 1.244
N = 612

Overall View

APPENDEX 3: SKEWNESS OF VARIABLES

PricewaterhouseCoopers: Skewness of variables

		Mean	Skewness
Usability			
Learning	Learning to operate the site is easy	5.17	-.929
Locating services	Locating the service was clear and understandable	5.29	-.357
ease of use	The site was easy to use	5.13	.162
Design appropriateness	The design is appropriate to professional service site	5.32	-.014
Competency	The site conveys a sense of competency	5.22	-.399
Attractive appearance	The display pages within the site have an attractive appearance	4.94	-.539
Interactivity			
sense of personalisation	The site created a sense of personalisation to meet my needs	4.51	-.264
Seeking services	I am encouraged by the web appearance to seek services from this firm	4.64	-.172
Reputation	The site has a good reputation e.g. testimonials, goals, owners	4.48	-.417
Search facilities	The site has adequate Search facilities	5.27	-.757
ease of communication	The site makes it easy to communicate with the firm e.g. e-mail address, telephone	5.51	-.769
site were strenuous efforts	My efforts in interacting with the site were strenuous	5.09	-.400
Information			
Level of detail	The site provides information at the right level of detail	5.01	-.203
accuracy	The information on the site was accurate e.g. evidence of source, update	4.93	.021
Relevancy	The information was relevant to the task e.g. to my search	5.31	-.115
Believable	The information was believable	5.30	-.438
Helpful in understanding	The information was helpful in understanding the site.	5.16	-.489
Format appropriateness	The information format was appropriate for the task e.g. layout, headings	5.03	-.797
Riskiness			
Access security	My access to the site feels secure	4.76	-.785
Communication Security	I feel communicating with the firm is secure and promising	5.01	-.253
Transactions security	I feels secure to complete transactions, if wanted	4.68	-.001
Service delivery security	I feel the firm will deliver the service as promised	5.04	.084
Information usage security	I feel the firm will use the information as intended	4.94	-.192
Privacy measures	I feel the information privacy measures are adequate	4.85	.066
General			
overall view	What is your overall view of the site	5.09	-.291

E&Y: Skewness of Variables

		Mean	Skewness
Usability			
Learning	Learning to operate the site is easy	5.20	-1.061
Locating services	Locating the service was clear and understandable	4.86	-.516
ease of use	The site was easy to use	4.95	-.650
Design appropriateness	The design is appropriate to professional service site	4.82	-.542
Competency	The site conveys a sense of competency	5.10	-.215
Attractive appearance	The display pages within the site have an attractive appearance	4.84	-.484
Interactivity			
sense of personalisation	The site created a sense of personalisation to meet my needs	4.35	-.151
Seeking services	I am encouraged by the web appearance to seek services from this firm	4.66	-.446
Reputation	The site has a good reputation e.g. testimonials, goals, owners	4.34	.004
Search facilities	The site has adequate Search facilities	5.34	-1.503
ease of communication	The site makes it easy to communicate with the firm e.g. e-mail address, telephone	4.51	-.306
site were strenuous efforts	My efforts in interacting with the site were strenuous	4.60	.004
Information			
Level of detail	The site provides information at the right level of detail	4.66	-.392
accuracy	The information on the site was accurate e.g. evidence of source, update	4.82	-.292
Relevancy	The information was relevant to the task e.g. to my search	4.58	.083
Believable	The information was believable	5.13	-.636
Helpful in understanding	The information was helpful in understanding the site.	4.79	-.652
Format appropriateness	The information format was appropriate for the task e.g. layout, headings	4.75	-.626
Riskiness			
Access security	My access to the site feels secure	5.11	-.619
Communication Security	I feel communicating with the firm is secure and promising	4.62	-.464
Transactions security	I feels secure to complete transactions, if wanted	4.68	-.474
Service delivery security	I feel the firm will deliver the service as promised	4.99	.020
Information usage security	I feel the firm will use the information as intended	5.00	-.392
Privacy measures	I feel the information privacy measures are adequate	4.69	-.156
General			
overall view	What is your overall view of the site	4.81	-.621

KPMG: skewness of Variables

		Mean	Skewness
Usability			
Learning	Learning to operate the site is easy	5.60	-.655
Locating services	Locating the service was clear and understandable	5.82	-.114
ease of use	The site was easy to use	5.63	-.791
Design appropriateness	The design is appropriate to professional service site	5.58	-.442
Competency	The site conveys a sense of competency	5.57	-.336
Attractive appearance	The display pages within the site have an attractive appearance	5.37	-.685
Interactivity			
sense of personalisation	The site created a sense of personalisation to meet my needs	4.77	-.592
Seeking services	I am encouraged by the web appearance to seek services from this firm	5.08	-.552
Reputation	The site has a good reputation e.g. testimonials, goals, owners	4.50	-.549
Search facilities	The site has adequate Search facilities	5.17	-1.156
ease of communication	The site makes it easy to communicate with the firm e.g. e-mail address, telephone	5.43	-.626
site were strenuous efforts	My efforts in interacting with the site were strenuous	5.20	-.371
Information			
Level of detail	The site provides information at the right level of detail	5.51	-.316
accuracy	The information on the site was accurate e.g. evidence of source, update	5.26	-.354
Relevancy	The information was relevant to the task e.g. to my search	5.36	-.959
Believable	The information was believable	5.29	-.071
Helpful in understanding	The information was helpful in understanding the site.	5.30	-.086
Format appropriateness	The information format was appropriate for the task e.g. layout, headings	5.34	-.627
Riskiness			
Access security	My access to the site feels secure	4.88	-.335
Communication Security	I feel communicating with the firm is secure and promising	4.90	-.403
Transactions security	I feels secure to complete transactions, if wanted	4.92	-.889
Service delivery security	I feel the firm will deliver the service as promised	5.25	-.595
Information usage security	I feel the firm will use the information as intended	5.17	-.124
Privacy measures	I feel the information privacy measures are adequate	4.92	-.701
General			
overall view	What is your overall view of the site	5.40	-.368

Deloitte: Skewness of variables

		Mean	Skewness
Usability			
Learning	Learning to operate the site is easy	5.44	-.143
Locating services	Locating the service was clear and understandable	5.49	.031
ease of use	The site was easy to use	5.56	-.328
Design appropriateness	The design is appropriate to professional service site	5.27	-.371
Competency	The site conveys a sense of competency	5.25	.048
Attractive appearance	The display pages within the site have an attractive appearance	5.11	-.629
Interactivity			
sense of personalisation	The site created a sense of personalisation to meet my needs	5.07	-.241
Seeking services	I am encouraged by the web appearance to seek services from this firm	5.12	-.675
Reputation	The site has a good reputation e.g. testimonials, goals, owners	4.68	-.644
Search facilities	The site has adequate Search facilities	5.25	-.535
ease of communication	The site makes it easy to communicate with the firm e.g. e-mail address, telephone	5.52	-.645
site were strenuous efforts	My efforts in interacting with the site were strenuous	4.83	-.803
Information			
Level of detail	The site provides information at the right level of detail	5.43	-.897
accuracy	The information on the site was accurate e.g. evidence of source, update	5.45	-.496
Relevancy	The information was relevant to the task e.g. to my search	5.28	-.418
Believable	The information was believable	5.42	-.665
Helpful in understanding	The information was helpful in understanding the site.	5.38	-1.152
Format appropriateness	The information format was appropriate for the task e.g. layout, headings	5.11	-.970
Riskiness			
Access security	My access to the site feels secure	4.88	-.552
Communication Security	I feel communicating with the firm is secure and promising	5.09	-.524
Transactions security	I feels secure to complete transactions, if wanted	4.83	-.861
Service delivery security	I feel the firm will deliver the service as promised	5.15	-.521
Information usage security	I feel the firm will use the information as intended	5.20	-.609
Privacy measures	I feel the information privacy measures are adequate	5.02	-1.288
General			
overall view	What is your overall view of the site	5.40	-.727

Investor Group: Skewness of Variables

		Mean	Skewness
Usability			
Learning	Learning to operate the site is easy	3.89	.411
Locating services	Locating the service was clear and understandable	3.29	.505
ease of use	The site was easy to use	3.53	.432
Design appropriateness	The design is appropriate to professional service site	3.43	.959
Competency	The site conveys a sense of competency	3.51	.365
Attractive appearance	The display pages within the site have an attractive appearance	3.45	.798
Interactivity			
sense of personalisation	The site created a sense of personalisation to meet my needs	3.42	.418
Seeking services	I am encouraged by the web appearance to seek services from this firm	3.40	.451
Reputation	The site has a good reputation e.g. testimonials, goals, owners	3.02	.418
Search facilities	The site has adequate Search facilities	3.81	-.163
ease of communication	The site makes it easy to communicate with the firm e.g. e-mail address, telephone	3.90	-.132
site were strenuous efforts	My efforts in interacting with the site were strenuous	3.10	.654
Information			
Level of detail	The site provides information at the right level of detail	3.80	.257
accuracy	The information on the site was accurate e.g. evidence of source, update	3.79	.420
Relevancy	The information was relevant to the task e.g. to my search	3.68	.631
Believable	The information was believable	3.78	.163
Helpful in understanding	The information was helpful in understanding the site.	3.69	.155
Format appropriateness	The information format was appropriate for the task e.g. layout, headings	3.33	.521
Riskiness			
Access security	My access to the site feels secure	3.75	-.167
Communication Security	I feel communicating with the firm is secure and promising	3.55	.082
Transactions security	I feels secure to complete transactions, if wanted	3.32	.461
Service delivery security	I feel the firm will deliver the service as promised	3.62	-.077
Information usage security	I feel the firm will use the information as intended	3.68	-.176
Privacy measures	I feel the information privacy measures are adequate	3.49	.290
General			
overall view	What is your overall view of the site	3.50	.680

PKF Australia: Skewness of Variables

		Mean	Skewness
Usability			
Learning	Learning to operate the site is easy	4.69	-.783
Locating services	Locating the service was clear and understandable	4.66	-.712
ease of use	The site was easy to use	4.61	-1.032
Design appropriateness	The design is appropriate to professional service site	4.82	-.813
competency	The site conveys a sense of competency	4.69	-.716
Attractive appearance	The display pages within the site have an attractive appearance	4.52	-.586
Interactivity			
sense of personalisation	The site created a sense of personalisation to meet my needs	4.05	-.013
Seeking services	I am encouraged by the web appearance to seek services from this firm	4.39	-.518
Reputation	The site has a good reputation e.g. testimonials, goals, owners	3.72	-.062
Search facilities	The site has adequate Search facilities	3.94	-.344
ease of communication	The site makes it easy to communicate with the firm e.g. e-mail address, telephone	4.85	-.805
site were strenuous efforts	My efforts in interacting with the site were strenuous	4.21	-.027
Information			
Level of detail	The site provides information at the right level of detail	4.25	-.120
accuracy	The information on the site was accurate e.g. evidence of source, update	4.26	-.126
Relevancy	The information was relevant to the task e.g. to my search	4.44	-.584
Believable	The information was believable	4.68	.027
Helpful in understanding	The information was helpful in understanding the site.	4.41	-.435
Format appropriateness	The information format was appropriate for the task e.g. layout, headings	4.47	-.481
Riskiness			
Access security	My access to the site feels secure	4.55	-.532
Communication Security	I feel communicating with the firm is secure and promising	4.52	-.579
Transactions security	I feels secure to complete transactions, if wanted	4.36	-.494
Service delivery security	I feel the firm will deliver the service as promised	4.69	-.263
Information usage security	I feel the firm will use the information as intended	4.56	-.275
Privacy measures	I feel the information privacy measures are adequate	4.54	-.076
General			
overall view	What is your overall view of the site	4.58	-.574